UNIVERSITY OF CALIFORNIA,
IRVINE

Civic Engagement and Latinx Youth:
Friendship Networks, Motivation, and Perception of Inequities

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Education

by

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2021

DEDICATION

To my students

past, present, and future

who inspire me to be an idealist

and give me hope for the future.

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I am extremely grateful to my school partners who supported my research: Lee Fleming, Anthony Saba, Norah Sarsour, the school board members, and the rest of the school community. I can't imagine a more incredible and thoughtful group of collaborators. Relatedly, my dissertation would not have been possible without the selfless generosity of local philanthropists, especially Sandi Jackson. The opportunity to work with the school was not only a phenomenal learning experience, but the partnership gave meaning to my Ph.D. studies and deepened my commitment to impactful community research.

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There are no words to appropriately thank my family and friends, who have supported me in every way. They provided me with a foundation for my lifelong learning and contributed to the values that continue to guide my pursuit of justice. I am also grateful to my healthcare professionals who have helped me manage my cystic fibrosis and maintain my productivity.

I am humbled by the extent to which all of my achievements are attributable to a collective multitude. In recognition of my complete interdependence, as well as any inadvertent omissions from this document, I wholeheartedly give my gratitude to all others who have contributed to my personal and professional growth, intentionally or otherwise.

CURRICULUM VITAE

CHRISTOPHER M. WEGEMER

CORE PROFESSIONAL INTERESTS

Youth civic engagement – Research-practice partnerships – Educational equity – Social networks

EDUCATION

PhD	University of California, Irvine Education	Fall 2021
MA	University of California, Irvine Education	Spring 2018
MA	University of California, Santa Barbara Global and International Studies	Winter 2013
BS	Columbia University Electrical Engineering	Spring 2008
BS	Providence College Applied Physics	Spring 2008

PUBLICATIONS

Refereed Journal Articles

Wegemer, C. M. (2021). Critical civic motivation of marginalized youth: An expectancy-value model. *Youth & Society,* 0044118X211044522.

Wegemer, C. M. & Renick, J. R. (2021). Boundary spanning roles and power in educational partnerships. *AERA Open, 7*(2021), 23328584211016868.

Wegemer, C. M., & Sarsour, N. (2021). College services, sense of belonging, and friendships: The enduring importance of the high school context in supporting the college success of marginalized students. *Journal of Latinos and Education,* 1-19.

Wegemer, C. M., & Vandell, D. L. (2020). Attachment, temperament, and parenting as origins of political differences: Longitudinal evidence from early childhood to age 26. *Developmental Psychology, 56*(7), 1360–1371.

Wegemer, C. M., Tivarange, T., Hildreth, R. W., Pacheco, J., & Stewart-Sifuentes, M. (2020). The challenges of putting community first: Reflections on a university center's process. *Michigan Journal of Community Service Learning, 26*(1), 53-74.

Wegemer, C. M. (2020). Selflessness, depression, and neuroticism: An interactionist perspective on the effects of self-transcendence, perspective-taking, and materialism. *Frontiers in Psychology, 11,* 2556.

Wegemer, C. M., & Eccles, J. S. (2019). Gendered STEM career choices: Altruistic values, beliefs, and identity. *Journal of Vocational Behavior, 110,* 28-42.

Wegemer, C. M. (2019). Brain-computer interfaces and education: The state of technology and imperatives for the future. *International Journal of Learning Technology. 14*(2). 141-161.

Wegemer, C. M. & Hinze, K. (2013). Compromised stability and security in the 'race to the bottom'. *Journal of Critical Thought and Praxis*, *2*(1), 5.

Wegemer, C. M., Mecca, S., & Barber, R. (2011). Application of the MSB coupled embayment pollution-flushing model to Queenstown Creek. *Transactions on Ecology and the Environment*, *146*, 131-142.

Under review

Wegemer, C. M. (2021). Service, activism, and friendships in high school: A longitudinal network analysis of peer influence and critical beliefs. *Journal of Research on Adolescence.* Received R&R.

Wegemer, C. M. & von Keyserlingk, L. (2021). Dual pandemics of COVID-19 and systemic racism: The roles of perceptions of inequities, civic values, and conservatism in mask-wearing behavior. *Analyses of Social Issues and Public Policy.* Received R&R.

Books

Ahn, J., **Wegemer, C. M.,** & Van Steenis, E. (2021). *Community connected scholarship: Opportunities and tensions for community engaged research in the academy*. Prospectus submitted to the University of Chicago Press.

Edited Book Chapters

Wegemer, C. M. (2021). Framework for Understanding Roles in RPPs. In Conaway, C. & Wentworth, L. (Eds.), *NNERPP Brokers Handbook.* In press.

Vandell, D. L., Simpkins, S. D., & **Wegemer, C. M.** (2019). Parenting and children's activities. In Bornstein, M. H. (Ed.), *Handbook of Parenting, 5.* New York, NY: Routledge.

Nova, S, & **Wegemer, C. M.** (2015). Outsourcing horror: Why apparel workers are still dying, one hundred years after Triangle Shirtwaist. In Appelbaum, R. P. &

Lichtenstein, N. (Eds.), *Achieving Workers' Rights in the Global Economy* (pp. 17-31). Ithaca, NY: Cornell University Press.

Working Papers and Formal Reports

Arum, R., Eccles, J. S., Heckhausen, J., Orona, G., von Keyserlingk, L., **Wegemer, C. M.**, Wright, C. E., Yamaguchi-Pedroza., K. (2021). Ensuring a more equitable future: Assessing student learning and growth in higher education. White paper for the Institute for Higher Education Policy.

Davidson, K. L., Bell, A., Riedy, R., Sandoval, C., **Wegemer, C. M.**, Clark, T., Farrell, C. C., Fishman, B., Russell, J., Penuel, W. R. (2020). Preparing researchers to participate in collaborative research. White paper for the Spencer Foundation.

Wegemer, C. M. (2018). *Public impact review.* Internal report for CU Engage at the University of Colorado, Boulder.

Wegemer, C. M., & Arum, R. (2017). *Annual reports and formative memos.* Series of reports presented to the board of Samueli Academy as part of a research-practice partnership between 2017 and 2021.

Ross, R. J., & **Wegemer, C. M.** (2015). *Class not state: Disaggregating the rich and poor among nations.*

Ross, R. J., Patterson, D., Yadegari, B., & **Wegemer, C. M.** (2014). *A critical corporate profile of Li & Fung.* Most popular download from Clark University website in 2016 with over 5,000 downloads.

Wegemer, C. M. (2013). *Supply chains as interfaces for varieties of capitalisms.* Written for Jan Nederveen-Pieterse.

Worker Rights Consortium. (2013). Global wage trends for apparel workers, 2001-2011. *Center for American Progress*, 11 July 2013.

Popular Press

Arum, R., Eccles, J. S., Heckhausen, J., Orona, G., von Keyserlingk, L., **Wegemer, C. M.**, Wright, C. E., Yamaguchi-Pedroza., K. (2021). A framework for measuring undergraduate learning and growth. *Change: The Magazine of Higher Learning*. Forthcoming.

Wegemer, C. M. (2015). Nonprofit foundation rakes in Cystic Fibrosis drug revenues. *Truthout.* 7 October 2015.

Wegemer, C. M. (2014). Rent or tuition? The growing student dilemma. *Truthout.* 1 August 2014.

Wegemer, C. M. (2014). Working with threads: Realizing student activists' clout in the global labor movement. *Global Undertones.* Issue #1, Summer 2014.

Wegemer, C. M. (2012). Cheering against sweatshops: More exploitation is not less. *Against the Current,* Solidarity (U.S.). Issue #161, November/December 2012.

Research Acknowledgements

Giddens, A., Duneier, M., Appelbaum, R. P., & Carr, D. (2016). *Introduction to sociology, 10th edition*. Norton.

Herron, P., Mehta, A., Cao, C., & Lenoir, T. (2016). Research diversification and impact: The case of national nanoscience development. *Scientometrics*, 1-31.

Koppera, V., & Mehta, A. (2014). Gendered employment trends and the female college boom. *Available at SSRN 2367486*.

Mehta, A., & Jha, S. (2014). Pilferage from opaque food subsidy programs: Theory and evidence. *Food Policy*, *45*, 69-79.

Mehta, A. (2013). Why global students should study economics. *Global-e*, *7.*

McCarty, P. (2012). *Integrated Perspectives in Global Studies*. Cognella Press, San Diego.

Mecca, S., Barber, R., Mellor, G., & Walsh, G. (2007). Application of the MSB pollution-flushing model to Great Salt Pond on Block Island. *Transactions on Ecology and the Environment*, *104*, 189-197.

PRESENTATIONS AND INVITED LECTURES

Juried Conference Presentations

Wegemer, C. M. (2021, August). *Critical civic motivation of marginalized youth: An expectancy-value approach.* Poster accepted at the annual conference of the American Psychological Association.

Wegemer, C. M. (2021, July). *Interrogating the academy: Re-imagining scholar-activism in universities.* Presented at the Rising Education Scholars Helping Advance Partnerships and Equity (RESHAPE) conference.

Wegemer, C. M. (2021, June). *Boundary spanning roles and power in educational partnerships.* Poster presented at the annual meeting of the International Society of the Learning Sciences.

Davidson, K., Bell, A., Riedy, R., Sandoval, C., **Wegemer, C. M.**, Clark, T., Farrell, C., Fishman, B., Russell, J., Penuel, W., & Marin, A. (2020, June). *Preparing*

researchers to participate in collaborative research. Paper presented at the International Conference of the Learning Sciences, Nashville, TN.

Wegemer, C. M., Tivarange, T., & Hildreth, R. W. (2020, April). *Complicating notions of community engagement and impact: Participatory approaches, power, and moving beyond dyadic partnerships*. Paper accepted at the URBAN conference: Co-creating Knowledge for Justice, Santa Cruz, CA. (Conference cancelled due to COVID-19).

Wegemer, C. M., & Sarsour, N. (2020, April). *High school friendship networks and college success of Latinx youth.* Paper accepted at the American Educational Research Association, San Francisco, CA. (Conference cancelled due to COVID-19).

Wegemer, C. M. (2020, April). *Boundary spanning roles and practices of graduate students in educational partnerships*. Poster accepted at the American Educational Research Association, poster session organized by C. M. Wegemer, San Francisco, CA. (Conference cancelled due to COVID-19).

Wegemer, C. M. (2018, November). *The structure of the self: A pattern-centered approach*. Poster presented at the International Symposium for Contemplative Sciences, Phoenix, AZ.

Wegemer, C. M. (2018, July). *Gender-related values and STEM trajectories*. Paper presented at the biennial Gender and STEM conference, Eugene, Oregon.

Wegemer, C. M. (2015, February). *Art activism, immigration, and citizenship*. Presented at the Art in Society Symposium, Idyllwild, CA.

Wegemer, C. M. (2013, June). *Universities as global actors in apparel supply chains: The Designated Suppliers Program*. Paper presented at the Global Studies Association North America Conference*,* Los Angeles, CA.

Wegemer, C. M., & Hinze, K. (2012, February). *Compromised stability and security in the 'Race to the Bottom.'* Paper presented at the Santa Barbara International Global Studies Conference, Santa Barbara, CA.

Wegemer, C. M. (2011, May). *Application of the MSB coupled embayment pollution-flushing model to Queenstown Creek*. Paper presented at the WIT International Conference on Sustainable Water Resources Management, Riverside, CA.

Invited Talks and Workshops

Wegemer, C. M. & Renick, J. (2021, July). *Spanning boundaries: Who, how to, and the power dynamics therein*. Invited as a speaker at the annual forum of the National Network of Education Research-Practice Partnerships.

Wegemer, C. M. (2021, February). *Youth civic engagement: The roles of motivation and friendship networks in activism and service*. Presented findings to the Center for Teacher Development and Professional Practice at UCI.

Van Steenis, E., Renick, J., **Wegemer, C. M.**, & Lee, J. (2020, October). *Understanding histories of harm caused by research.* Workshop conducted as part of the OCEAN Community-Based Research Seminar, Irvine, CA.

Wegemer, C. M. (2019, October). *Beyond High School*. Invited to present study results to the board of Samueli Academy, Irvine, CA.

Wegemer, C. M., Hildreth, R. W., & Tivarange, T. (2019, February). *Public impact*. Invited to lead a professional development session for CU Boulder's community engagement staff, Boulder, CO.

Wegemer, C. M. (2018, October). *Unpacking excellence*. Invited to present study results to the board of Samueli Academy, Irvine, CA.

Wegemer, C. M., Gaytan, J., & Ventura, J. (2017, February). *Building community*. Organized workshop in the Social Justice and Community Engagement Workshop Series, Irvine, CA.

GRANTS AND AWARDS

Samueli Academy Distinguished Firewolf award	Fall 2021
William T. Grant Foundation grant, co-author ($600,000)	Summer 2021
Certificate in Course Design	Summer 2021
Certificate in Community Engaged Research	Spring 2021
Spencer Foundation RPP grant, co-author ($400,000)	Summer 2020
Martinez Prize for Outstanding Research and Service ($2,000)	Spring 2020
Cystic Fibrosis Thriving Scholar Grant ($3,000)	Spring 2020
Diverse Educational Community and Doctoral Experience Grant ($500)	Spring 2020
Kosciuszko Foundation Scholarship ($1,000 annually)	Spring 2019
Community Research Fellowship ($20,000 annually)	Fall 2017
Cystic Fibrosis Thriving Scholar Grant ($3,000)	Fall 2017
University of California Provost Fellowship ($5,000 annually)	Spring 2016
Akaloa Foundation Grant ($40,000)	Fall 2015
Akaloa Foundation Grant ($15,000)	Fall 2014
Nominated for UCSB Outstanding M.A. Thesis Award	Spring 2013
Cystic Fibrosis Thriving Scholar Grant ($2,000)	Fall 2011
Boomer Esiason Foundation Scholarship ($1,000)	Fall 2011
Graduated Magna Cum Laude from Columbia University	Spring 2008
Commendation for graduating with highest GPA at Providence College	Spring 2008
Columbia University's Joseph and Evelyn Bishop Scholarship ($15,000)	Winter 2008
NSF Undergraduate Research Fellowship ($10,000)	Summer 2007
Providence College Dean's Scholarship ($15,000 annually)	Spring 2003
Knights of Columbus Scholarship ($1,000 annually)	Spring 2003
Lower Delaware Gridiron Scholarship ($1,000)	Spring 2003

VISITING APPOINTMENTS

Visiting scholar at the University of Colorado, Boulder 8/18 to 1/19

- Worked with Dr. Ben Kirshner and Dr. Roudy Hildreth to evaluate the collective impact of the university's community engagement center while simultaneously participating in Dr. Bill Penuel's research group.

RELEVANT EMPLOYMENT

UCI, Community Research Fellow under Dr. Richard Arum 1/18 to 9/21

- Managed a Research-Practice Partnership with a leading charter school in the state as part of UCI's new Networked Improvement Community with Dr. June Ahn, which included several longitudinal studies, formative evaluations, and public presentations.

UCI, Research Assistant for Dr. Deborah Vandell 9/16 to 1/18

- Assisted with the design and administration of a survey to over 800 participants, then processed the data as part of a 26-year longitudinal study funded by the NICHD.

Idyllwild Arts Academy, Coordinator of the Art-in-Society Program 9/14 to 6/16

- Established a new program to engage students in world issues and student activism, developed relevant curriculum, and facilitated a network of partner organizations.

W. W. Norton, Assistant Editor 7/14 to 1/15

- Updated and edited the 9th edition of one of the most popular college-level Sociology textbooks, *Introduction to Sociology* by Giddens, Duneier, Appelbaum, and Carr.

American University Prep Academy, Educational Consultant 4/14 to 8/14

- Created a community-based Global Studies curriculum for a new international boarding school in Los Angeles and assisted hired staff for the school's opening.

UCSB, Coordinator of Critical CSR Research 9/13 to 7/14

- Coordinated Dr. Richard Appelbaum's critical CSR research group, including planning a conference, managing over a dozen undergraduate student projects, and facilitating collaborations with leading scholars across the country.

UCSB, Research Assistant 9/12 to 1/14

- Assisted with the research projects of three professors: Dr. Richard Appelbaum, Dr. Jan Nederveen-Pieterse, and Dr. Aashish Mehta.

Workers Rights Consortium, Intern Research Assistant 9/12 to 12/12

- Assisted staff with living wage research, field investigations, and conducted an independent study on the Designated Suppliers Program.

UCSB, Teaching Assistant 9/11 to 12/13

- Lectured, managed assignments, and assisted in arranging syllabi for six different undergraduate courses in both the Global Studies and Physics departments.

Idyllwild Arts Academy, STEM Teacher and Dorm Head 8/08 to 8/11

- Taught advanced math and physics classes while directing a dorm of 60 boys (and associated dorm staff) at an international arts boarding school.

LABORATORY EXPERIENCE

Columbia University Winter 2008 to Spring 2008
Modular solar-tracking heliostat design under Dr. Vijay Modi

UC Santa Cruz Summer 2007
Characterization of microelectronics using thermoreflectance under Dr. Ali Shakouri (funded by an NSF undergraduate fellowship)

Columbia University Winter 2006 to Spring 2008
Thin film optoelectronic device design and fabrication under Dr. Ioannis Kymissis

Providence College Winter 2004 to Spring 2006
Pollution flushing in tidal embayments under Dr. Stephen J. Mecca

RECENT SERVICE

RESHAPE, National graduate student organizer Summer 2019 to Summer 2021
DECADE, Graduate participant Fall 2018 to Winter 2021
Journal of Higher Education Outreach and Engagement, Reviewer Summer 2020
DECADE, Undergraduate organizer Fall 2016 to Fall 2018
Science Education, Reviewer Spring 2019
JRSMTE, Reviewer Winter 2019
Student California Teachers Association, Member Fall 2017 to Spring 2018
Democrats of Greater Irvine, Member Fall 2017 to Spring 2018
UAW 2865, Department union representative Fall 2017 to Spring 2018
Samueli Academy, Volunteer teacher Summer 2017
Society for Research in Child Development, Reviewer Fall 2016
Youth Empowered Action Camp, Youth mentor Spring 2015 to Fall 2015

TEACHING HONORS AND AWARDS

Selected as Baccalaureate speaker by Idyllwild Arts Academy student body Spring 2016
(Equivalent to "Teacher of the Year")
Nominated for UCSB Teaching Assistant of the Year by students Fall 2011
Selected as Baccalaureate speaker by Idyllwild Arts Academy student body Spring 2011
(Equivalent to "Teacher of the Year")

TEACHING HISTORY

University courses, Teaching Assistant with lecture responsibilities:

2017 Social Development and Education (Spring)

2013 Global Economy and Development (Winter)
Global Ethics and Culture (Summer)
Introduction to Global Socioeconomic and Political Processes (Fall)

2012 Introduction to Physics (Winter)
Global Economy and Development (Spring)

2011 Global Economy and Development (Fall)

High school courses, lead instructor:

2015 Environmental Studies

2014 Algebra 2/Trigonometry
Precalculus
Calculus

2010 Algebra 1
Precalculus
Conceptual Physics
Advanced Physics

2009 Precalculus
Conceptual Physics
Advanced Physics

2008 Precalculus
Conceptual Physics
Advanced Physics

ABSTRACT OF THE DISSERTATION

Civic Engagement and Latinx Youth:
Friendship Networks, Motivation, and Perception of Inequities
by

Christopher M. Wegemer

Doctor of Philosophy in Education

University of California, Irvine, 2021

Distinguished Professor Jacquelynne S. Eccles, Chair

Civic engagement is a crucial component of adolescent development. Activities and relationships in the high school context both contribute to the roles of youth as unique political actors and shape their lifelong participation. Despite the dependence of civic engagement on sociocultural factors and its empowering benefits for youth of color, Latinx adolescents remain underrepresented in research literature. Increased understanding of the motivational beliefs and social processes that influence youth may inform policies and practices that both recognize and support the engagement of marginalized youth in our precarious political era. In the three studies of this dissertation, I applied expectancy-value motivation, critical consciousness, and social network analyses to examine psychological antecedents and social mechanisms that underlie youth participation in service and activism. The studies leveraged longitudinal survey data collected in spring 2019 and spring 2020 at a local high school that serves primarily low-income Latinx youth. In Chapter 1, I utilized OLS regressions and cluster analyses to demonstrate the conceptual utility of an expectancy-value model of youth civic motivation. I found that expectancies and values (1) differentially and interactively predicted service and activism, and (2) manifested heterogeneously among the students in the sample. In Chapter 2, I used

Exponential Random Graph Models (ERGMs) and regressions to examine the relationships between characteristics of the high school friendship network and adolescents' civic behaviors and beliefs. Service, activism, perceptions of inequities, civic values, and civic expectancies were differentially linked to adolescents' tendency to be similar to their friends, as well as their popularity and the structure of their friend groups. In Chapter 3, I employed longitudinal social network analyses to investigate the functions of socialization and critical beliefs in civic behavior. Peer influence and friendship selection processes were present for service activities, but not activism, whereas perceptions of inequities positively predicted later activism, but not service. In Chapter 4, I summarized and synthesized findings across the three studies, then I discussed my personal reflections on the field of youth civic engagement. Together, my research advanced an expectancy-value model of civic motivation, demonstrated the utility of social network analyses for understanding youth civic engagement, clarified the link between perceptions of inequities and action, and broadened the representation of Latinx youth experiences in academic literature.

INTRODUCTION

Amid political turmoil, an unprecedented pandemic, and a resurgence in racism, youth leaders have risen to meet the challenges of the current historical moment. Teenage activists continue to organize protests for racial justice (Terriquez & Milkman, 2021), lobby local governments for community services (Gomez, 2021), and advocate for equitable school policies (Pho, 2021). What sets these youth apart from others? How did these adolescents become empowered changemakers? What social and psychological factors motivated their decisions to participate in particular civic activities? How did educational institutions facilitate their sociopolitical development? Social scientists have made substantial progress answering crucial questions about youth civic engagement such as these, yet more research is needed.

The ever-changing sociocultural landscape of stratification and injustice demands continuous intellectual work capable of bolstering critical social movements. The discourse on youth civic engagement can inform new strategies that support youth-led campaigns, encourage adolescent sociopolitical development, and help adults better understand the ways in which students engage civically. Additionally, the expanding corpus of research literature can be leveraged to give legitimacy to the field of youth civic engagement and advocate for the unique importance and positionality of youth as political actors (both as young activists and lifelong civic participants). This dissertation is motivated by an aspiration to help high schools fulfill their mandate to promote participatory democracy through evidence-based policies and practices that better cultivate sociopolitical development.

In the following chapters, I aim to address three pressing and overlapping intellectual needs in the field of youth civic engagement. First, I advance a framework of civic motivation capable of bridging multiple literatures and integrating critical perspectives. Second, I use

cutting-edge social network analysis techniques to clarify social processes that underlie the development of civic behaviors and beliefs. Third, I center the experiences of underrepresented youth through equity-oriented and community-based research approaches at a local high school that serves primarily low-income Latinx youth.

Expectancy-value theory of motivation

Youth make motivated decisions that determine the types of civic activities that they engage in and the frequency of their participation. Scholars have recognized the potential utility of a model of youth civic motivation (Rapa, 2016), but a comprehensive framework has yet to be robustly established. Rather than drawing from sociocognitive motivational theories, most studies of civic engagement use the term "motivation" to refer to self-reported subjective reasons that youth give for participating in an activity and the functions participation provides (Clary & Snyder, 1999; Rioux & Penner, 2001; Stukas et al., 2009). Further, existing studies that invoke motivation primarily focus on volunteering, consistent with a broader lack of research of justice-oriented forms of participation that challenge systems of oppression (Watts & Flanagan, 2007).

Over the last three decades, the Eccles et al. expectancy-value model (Eccles & Wigfield, 2002) has been the dominant framework guiding the study of child and adolescent motivation in educational contexts (Eccles, 2014; Zarrett & Malanchuk, 2005). An expectancy-value model of civic engagement may be particularly useful because of its potential to bridge existing literatures on political efficacy (Niemi et al., 1991; Kahne & Westheimer, 2006) and political interest (Voight & Torney-Purta, 2013; Zaff et al., 2010). Emerging research that explores the civic applications of the model has found that expectancies and values may differentially predict political participation (Liem & Chua, 2013; Levy & Akiva, 2019).

An expectancy-value model of youth civic engagement may complement critical consciousness theory (Freire, 1970; Watts et al., 2003). Scholars have suggested that motivation could be considered a component of critical consciousness (Watts et al., 2011; Watts & Flanagan, 2007), potentially clarifying the link between perceptions of inequities and action (Watts et al., 2011; Diemer et al., 2017). Specifically, beliefs about society are related to expectations of success and subjective task values, which in turn are associated with decisions and behaviors (Eccles & Wigfield, 2002; Eccles & Wigfield, 2020). The studies in this dissertation examine critical beliefs (expectancies, values, and perceptions of inequities) as potential antecedents of civic participation. According to Watts and colleagues (2011), critical reflection is the most under-researched component of critical consciousness, a gap which the following research addresses.

Social networks

The psychological and behavioral components of youth civic engagement are inherently social, yet scholars have only begun investigating the role of social networks (e.g., Oosterhoff et al., 2021). Individual-level self-reports of social interactions have historically been used to approximate civic social processes (e.g., peer socialization), but advancements in network analytical techniques provide strategies for directly modeling network effects (Sinclair, 2012). For example, social network analyses have been fruitfully applied to examine adolescent friendship formation processes in extracurricular activities (Schaefer et al., 2011). Methodological approaches that account for peer relationships can support rigorous testing of hypotheses about sociopolitical development. The current studies represent a novel application of social network analyses to youth civic engagement.

The fields of education, social movements, and political socialization have robust literatures employing social network analyses that provide a conceptual foundation for social network perspectives of civic beliefs and behaviors. First, Coleman's *Adolescent Society* (1961) set the foundation for the study of social networks in educational settings, and since his seminal work, network analyses have been effectively used to describe the structure of adolescent peer groups in school contexts (Frank et al., 2018; McFarland et al., 2014; Cotterell, 2013). Second, the study of social movements has a rich tradition of applying social network analysis (Tilly, 1977) to investigate topics such as the recruitment of new members into campaigns (Diani & McAdam, 2003; Passy, 2003), the role of interpersonal relationships in collective action (Diani & Mische, 2015), and the links between civic behavior and perceptions of engagement (Passy & Guigni, 2001). Third, political socialization literature has employed social network analyses to establish political discussions as a mechanism of influence (McLeod & Lee, 2012), building on research that experimentally determined that discussions have a causal effect on civic participation (Klofstad, 2009).

Integrating insights from these domains, I examine civic behaviors and beliefs in relation to several features and processes of youth friendship networks: homophily, centrality, network closure, peer influence, and friend selection. Civic engagement is inherently social and collective (Diemer et al., 2016), but the functions of civic behaviors and beliefs in friendship networks are unclear. Exploratory hypotheses derived from existing literature suggest that friendships and civic engagement may reciprocally influence each other, although interdependence likely varies across civic constructs. Adolescent friendship networks are shaped by school culture and infrastructure, which could have substantial implications for civic engagement. Further, social

dynamics may provide insight into the civic experiences of marginalized youth, who are typically underrepresented in research literature and undersupported in practice.

Civic engagement of Latinx youth

Civic engagement is dependent on a complex array of interacting social and structural factors, including adolescents' demographic, socioeconomic, and cultural background. Patterns in youth civic engagement have been identified across race, ethnicity, and class (Flanagan & Levine, 2010; Suárez-Orozco et al., 2015; Wray-Lake et al., 2020), although substantial heterogeneity exists within each group. Rather than reinforce a deficit-oriented narrative that center gaps and deficiencies, equity-conscious research is needed to give voice to the unique civic experiences and assets of Latinx youth.

Compared to dominant youth, Latinx adolescents appear to be more inclined to participate in civic activities that recognize and challenge structural inequities (Marcelo et al., 2007) and may derive greater psychological benefit (El-Amin et al., 2017; Hipolito-Delgado & Zion, 2017; Watts et al., 1999; Watts & Flanagan, 2007). Justice-oriented forms of civic engagement may resonate with marginalized adolescents' lived experiences of oppression (Kirshner & Ginwright, 2012). A recent study of Latinx youth found that social justice and collective responsibility were greater predictors of civic participation than individualistic or utilitarian considerations (Suárez-Orozco et al., 2015). Research has tended to focus on traditional forms of civic participation (Watts & Flanagan, 2007), which may overlook the critical engagement of Latinx youth. Consistent with existing multidimensional frameworks of civic participation (e.g., Westheimer & Kahne, 2004), the present studies distinguish between service and activism to capture justice-oriented engagement and identify factors that may differentiate between types of civic participation among Latinx youth.

Marginalized adolescents often have fewer opportunities for civic engagement because civic activities and organizations are not equitably distributed across schools (Flanagan & Levine, 2010; Balsano, 2005; Hart & Atkins, 2002). Educational institutions provide "opportunity structures" (e.g., extracurricular activities) that facilitate youth civic engagement (Watts & Flanagan, 2007), but resource constraints and barriers to participation may limit access. Low-income Latinx youth do not lack motivation to participate (Stepick et al., 2008), and when confronted with obstacles, may find alternative and non-traditional pathways to participation (for instance, through their social networks).

The present studies

I conducted three studies as part of a long-term research-practice partnership with a local high school. In May 2019 and May 2020, I administered a survey to the entire student body (N = 520 in 2019; N = 521 in 2020). In addition to inventories measuring civic behaviors and beliefs, the survey also asked each student to list their five closest friends at the school in order of relationship strength. The survey responses were linked to school record data, which provided robust demographic and educational covariates.

In Chapter 1, I advance a sociocognitive model of civic motivation consistent with expectancy-value theory (Eccles & Wigfield, 2002). Through a survey administered in May 2020, I measured civic expectancies (individual and collective) and values (interest and attainment) using a composite of items constructed from several established and critically-oriented civic engagement inventories (Diemer & Li, 2011; McWhirter & McWhirter, 2016; Peterson et al., 2011; Yeich & Levine, 1994; Voight & Torney-Purta, 2013). Recent research on civic motivation suggests that expectancies and values interact with each other (Levy & Akiva, 2019; Liem & Chua, 2013), but historically, studies of civic engagement have typically focused

on either political efficacy (Sohl, 2014) or interest (Russo & Stattin, 2017). In my study, I explored the capability of a holistic model of youth civic motivation to provide novel perspectives that previous approaches risked overlooking. Through regression tests, I found that expectancies and values interactively predicted activism, whereas only main effects predicted service. I also conducted cluster analyses to examine diverse manifestations of civic motivation in the primarily low-income Latinx sample. Two of the five resulting clusters (representing one-third of the participants) exhibited discrepancies between expectancies and values. High levels of activism were accompanied by high levels of both expectancies and values, but high levels of service were most prevalent among students with high expectancies. Lastly, the study contributed to emerging research on youth collective efficacy (Halpern et al., 2017; Lee, 2006; Velasquez & LaRose, 2015). Individual and collective factors emerged from the civic expectancy items rather than internal and external dimensions historically employed in studies (Yeich & Levine, 1994).

In Chapter 2, I examined the links between characteristics of the high school friendship network and civic engagement. Social relationships are essential for the sociopolitical development of youth, but empirical research on underlying mechanisms remains sparse. Emerging research demonstrates that the application of social network approaches to the field holds substantial promise for advancing knowledge regarding the social underpinnings of youth civic engagement (Oosterhoff et al., 2021). Grounded in literatures of critical consciousness, expectancy-value motivation, and social networks, I took an exploratory approach guided by several conjectures about potential associations between youth friendship networks and civic engagement. Using two waves of survey data collected in May 2019 and May 2020, I employed cross-sectional techniques to examine homophily (the likelihood that friends share similar

behaviors and characteristics; McPherson et al., 2001), centrality (the relative importance or popularity of an individual in the social network; Bonacich, 1987; 2007), and network closure (the strength, redundancy, and local density of friendship ties; Burt, 1992, 2017; Coleman, 1961; Granovetter, 1973). First, Exponential Random Graph Models (ERGMs) provided evidence that friendships were more likely to exist between students who were similar on service behavior and perceptions of inequities. Second, the results of regression models indicated that service behavior was positively predicted by the number of friendship nominations received, whereas activist behavior was negatively predicted by the number of friendship nominations sent. Perception of inequities was negatively predicted by a weighted measure of popularity. Third, service behavior and perceptions of inequities were related to students' positionality as a broker in the friendship network. Activist behavior and civic expectancies were related to greater clustering of friendship ties. The differential associations between each of the civic engagement constructs and the characteristics of the friendship network may be attributable to a combination of school culture and the inherent social functions implicated by each civic attribute.

In Chapter 3, I used longitudinal social network analysis to determine the effects of peer influence and critical beliefs on civic behavior. Recent literature highlights the crucial role of relationships in shaping youth civic engagement (Diemer & Li, 2011; Terriquez et al., 2020), but the social processes that contribute to sociopolitical development throughout adolescence are not well understood, partially due to the limitations of regression-based approaches that cannot adequately capture network dynamics (Sinclair, 2012). Using survey data collected in May 2019 and May 2020, I estimated a Stochastic Actor-Based Model (SABM). The results indicated that students adjusted their service behavior to conform to the average level of participation of their friends over time, but peer influence was not present for activism. This discrepancy in

socialization effects was aligned with the school's support for service activities, suggesting that the civic "opportunity structures" (Watts & Flanagan, 2007) provided by the school may shape the social and political culture of the student body. I also found that perceptions of inequities predicted activism, but not service, after accounting for social network effects. The results build on critical consciousness research that has linked perceptions of inequities to justice-oriented forms of civic behavior more strongly than traditional political participation (Diemer & Rapa, 2016). Overall, the study demonstrates the utility of longitudinal network analyses for rigorously testing social and developmental hypotheses regarding sociopolitical development in schools. Future work could clarify diverse pathways to civic engagement in educational contexts.

In Chapter 4, I conclude the dissertation with a synthesis of findings across the three studies and a brief personal reflection.

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CHAPTER 1

Critical Civic Motivation of Marginalized Youth: An Expectancy-Value Approach

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Abstract

The present study advances a model of critical civic motivation grounded in expectancy-value theory and highlights diverse manifestations of motivation among marginalized adolescents. The participants were 447 high school youth (85.0% Latinx; 62.9% low-income). Two complementary methodological approaches were employed to examine civic motivation, conceptualized as expectancies (individual and collective) and values (interest and attainment). First, regression analyses found that civic expectancies and values differentially predicted behavioral outcomes of service and activism. Expectancies and values interactively predicted activism, whereas only main effects of individual and collective efficacy and interest value positively predicted service. Second, person-centered analyses yielded a five-cluster solution, with one-third of the participants exhibiting discrepancies between expectancies and values. Distinct patterns in the manifestations of civic motivation components may inform practices that support civic engagement of marginalized youth. Overall, the findings illustrate the utility of a holistic, critical framework that integrates established literatures on political efficacy and interest.

Keywords: Civic engagement; Motivation; Political behavior; Extracurricular activity

Development of youth civic engagement is a pressing concern in the current historical moment characterized by unprecedented political polarization (Kennedy et al., 2020), public health crises (Oosterhoff et al., 2020), and increased visibility of racism (Bañales & Rivas-Drake, forthcoming). A variety of sociocognitive constructs similar to established components of motivation have been linked to civic outcomes, but a comprehensive theoretical framework is lacking (Barrett & Brunton-Smith, 2014). Consistent with sociopolitical development theory (Watts & Flanagan, 2007), centering youth civic motivation represents an asset-based approach that acknowledges agentic decisions regarding participation rather than framing lower rates of engagement in terms of deficiency.

Low-income adolescents of color may have fewer opportunities to participate in civic activities (Levinson, 2010; Torney-Purta et al., 2007), despite potential empowerment and developmental benefits that marginalized youth may gain from such activities (Travis & Leech, 2014). Measuring motivation can highlight attitudes towards civic participation in the absence of structural affordances. Demographic differences in engagement in critical forms of civic engagement are not well understood because most research has been conducted on privileged groups and focuses on civic activities that preserve power structures (Watts & Flanagan, 2007), and traditionally, measures of political engagement that emphasize participation gaps may not capture critical or culturally-relevant civic activities (Perez et al., 2010). Without an integrative and equity-oriented perspective, researchers risk marginalizing nondominant adolescents and overlooking diverse forms of engagement. Person-centered and multidimensional approaches have gained popularity because of their capacity to capture the complexities of political orientations and behaviors across groups (Wray-Lake & Shubert, 2019).

Westheimer and Kahne (2004) provide a multidimensional framework that characterizes types of youth civic engagement with variance in critical orientation towards sociopolitical systems and root causes of social problems. Drawing from their conceptualization, the present study distinguishes between two categories of civic behavior: service and activism. The former includes activities such as volunteering and participating in student government, whereas the latter includes joining a political demonstration or participation in a rights advocacy group. Marginalized youth may be more likely to participate in critical forms of engagement (Littenberg-Tobias & Cohen, 2016; Lopez et al., 2006), potentially motivated by direct experience with systemic oppression (Hope et al., 2016). Research suggests that the type of civic activities youth participate in may depend on their efficacy and beliefs (Diemer & Rapa, 2016).

The current study advances a model of youth civic motivation grounded in expectancy-value theory (EVT; Eccles & Wigfield, 2002; Eccles & Wigfield, 2020). Recent research suggests that expectancy-value theory may be capable of bridging disparate literatures on political efficacy and civic values into an inclusive framework (Levy & Akiva, 2019; Liem & Chua, 2013). EVT supports a holistic and interactive perspective of motivation (Guo et al., 2016), which could capture heterogenous manifestations of civic motivation and behavior. In the current investigation, variable-centered and person-centered approaches are utilized to explore a multidimensional conceptualization of civic engagement in a sample of primarily low-income Latinx adolescents. First, EVT is positioned within existing bodies of literature on political efficacy and civic values to synthesize a conceptual approach. Then, the relevance of EVT for the civic engagement of marginalized youth is discussed before presenting analyses and results.

Expectancies and values in civic engagement

The expectancy-value model of motivation, a prominent sociocognitive framework used in adolescent contexts, holds that behavioral choices are most proximally related to expectations of success and values attributed to relevant tasks (Eccles & Wigfield, 2002), and situates beliefs about expectancies and values within broader social context (Eccles & Wigfield, 2020). The separation between expectancies and subjective task values in EVT parallels distinctions that have been made in literature regarding civic engagement. The conceptual landscape is organized below, first by characterizing expectancies in relation to different types of political efficacy, then by describing interest and attainment values in light of studies in the political domain. The section concludes with a discussion of existing research employing EVT.

Historically, political efficacy has been disaggregated into internal and external forms by political scientists: respectively, beliefs about one's ability to effectively participate in political activities and the responsiveness of governmental institutions to citizens (Niemi et al., 1991). A similar distinction in the sociocognitive tradition was made by Bandura (1977). Slow and contested reconciliation between the overlapping conceptualizations has stymied theoretical progress (Sohl, 2014).

More recently, scholars have separated individual-level efficacy beliefs from beliefs about collective efficacy (Bandura, 1997; Yeich & Levine, 1994). The individual-collective and internal-external distinctions represent different aspects of efficacy, but are often combined by researchers. For instance, Velasquez & LaRose (2015) construed collective efficacy as a person's beliefs that a group of people can effectively participate and collaborate in political activity, whereas others have defined collective efficacy as a person's beliefs regarding the responsiveness of political systems to group actions (Lee, 2006; Yeich & Levine, 1994). Drawing on both sociocognitive and political science traditions, the present paper represents the

former as *internal collective expectancy* and the latter as *external collective expectancy*. Both types have been positively related to civic action (Lee, 2006; Velasquez & LaRose, 2015; Yeich & Levine, 1994), but very few studies have characterized distinctions between individual and collective efficacies and more empirical work is needed to discern differences (Halpern et al., 2017), particularly within a broader sociocognitive framework. The current study investigates individual and collective efficacy within an expectancy-value framework and conceptualizes political efficacy through two superimposed dimensions: internal-external and individual-collective.

In addition to expectancies, EVT distinguishes between four values: interest, attainment, utility, and cost (Eccles & Wigfield, 2002). This typology has not been used in youth civic engagement literature, but similar conceptual distinctions have been separately identified. Political interest is well-studied and is positively related to civic outcomes (Shehata & Amnå, 2019). The most widely used survey indicators ask participants how interested they are in politics (Russo & Stattin, 2017), consistent with expectancy-value measures of interest value (Eccles & Wigfield, 2002; Levy, 2013). Attainment value is defined as the perceived importance of a task for validating aspects of the individual's identity (Eccles et al., 1983). The personal importance of political activities has been widely assessed and found to be a predictor of civic engagement (Liem & Chua, 2013; Martin & Van Deth, 2007), although the measures are often construed as political interest. Correlates of other types of task values, utility and cost, are less prominent in civic engagement literature.

Despite strong associations between political behavior and values (interest, Russo & Stattin, 2017; Shehata & Amnå, 2019; attainment value, Liem & Chua, 2013), political science has primarily focused on political efficacy (Galais et al., 2014; Levy & Akiva, 2019). The field

of youth civic engagement may benefit from a consolidated conceptual framework of motivation, which EVT could provide. EVT has been previously invoked in civic engagement research (Levy, 2013) and other scholars have used related frameworks (Bryant et al., 2012; Klandermans, 1984). Levy and Akiva (2019) and Liem and Chua (2013) were the first to use EVT as a foundation for investigating civic engagement. The present study expands this line of work by centering marginalized youth, clarifying interactions between types of expectancies and values, and employing person-centered analyses and multidimensional measures that account for diverse motivational profiles and forms of engagement.

Civic motivation of marginalized youth

Expectancies and values may manifest differently for marginalized youth than dominant youth, aligned with sociopolitical development theory's assertion that youth's social perceptions and agency can be shaped by experiences of oppression (Watts & Flanagan, 2007). Group-level differences have been observed in adolescent political efficacy (Arens & Watermann, 2017; Diemer & Rapa, 2016) and political interest (Martin & Van Deth, 2007), as well as in developmental trajectories of motivational features (Wray-Lake et al., 2020). Expectancies and values are heterogenous among Latinx youth and appear to be dependent on contextual experiences and structural constraints and affordances (Wray-Lake et al., 2018). For example, some youth may place lower value on civic tasks in response to a sense of vulnerability due to oppression, whereas others may increase interest in political action as coping strategy. Qualitative studies document a diversity of reactions following the 2016 presidential election, with some Latinx adolescents expressing increased interest (Andrade, 2018; Wray-Lake et al., 2018), others reporting lower individual efficacy and various combinations of values and expectancies (Wray-Lake et al., 2018).

Expectancies and values held by marginalized youth, as well as sub-types of expectancies and values, may be interactively related to civic behaviors. Gamson (1968) proposed that individuals who have high internal efficacy but low external efficacy may be inclined to participate in civic activities that challenge institutional structures, which was found to be the case for some marginalized groups who experienced oppression (Kahne & Westheimer, 2006). Other combinations of motivational features may similarly be related to activist behavior, such as low individual expectancy in tandem with high collective expectancy and high attainment value. Low interest in traditional political engagement has been associated with an inclination towards protest behavior among some youth (Bynner & Ashford, 1994), implying that domain-specificity of values and expectancies may be important for predicting behavior. More broadly, studies of civic engagement suggest that the effects of expectancies and values on civic outcomes are amplified when both are present. Consistent with EVT (Guo et al., 2016), interactions have been found between political efficacy and values (Levy & Akiva, 2019; Liem & Chua, 2013; Sohl, 2014), although studies have not investigated these interactions in marginalized populations, and research on interactive effects involving collective efficacy is sparse (Lee, 2006).

Motivational constructs may be differentially linked to service and activism behaviors. For example, political efficacy has been found to predict participation of Latinx youth in the immigrant rights movement, but not Black Lives Matter campaigns (Hope et al., 2016). The present study emphasizes critical motivational attitudes and beliefs by using measures of expectancies and values grounded in critical consciousness literature, invoking concepts of inequality, justice, and collective action (Diemer et al., 2017; McWhirter & McWhirter, 2016; Peterson et al., 2011). Framing critical expectancies and values as predictors of service and activism may clarify how marginalized youth choose to participate in the political domain.

In addition to regression-based moderation tests, the current research employs person-centered analyses to examine heterogeneity of motivational characteristics and potential interactions within an EVT framework. In the field of youth civic engagement, person-centered analyses have increased in prominence, largely due to the approach's capacity to elucidate nuances of group differences in behavior and motivation (Bergman et al., 2003). Latinx youth have been found to be overrepresented in clusters with high values and low participation, whereas females have been overrepresented in clusters with high values (Voight & Torney-Purta, 2013; Wray-Lake & Shubert, 2019). Results of person-centered analyses of leadership competence and policy control provide evidence that some youth may distinguish between types of political expectancies (Christens et al., 2015). Existing person-centered studies have generally observed the highest levels of participation in groups of adolescents when cluster-level means of all sociocognitive measures were high (Amnå & Ekman, 2014; Christens et al., 2015; Voight & Torney-Purta, 2013; Wray-Lake & Shubert, 2019), consistent with studies that conceptualize civic engagement as the integration of social, psychological, and behavioral components (Zaff et al., 2010). Lastly, person-centered studies using diverse samples have found discrepancies between values and civic participation within clusters (Amnå & Ekman, 2014; Voight & Torney-Purta, 2013). For example, in the four classes identified by Wray-Lake and Shubert (2019), one consisted of youth high on values but low on traditional forms of civic participation (e.g., expected voting), whereas another consisted of youth low on values but high on participation. Aforementioned interactive effects between expectancies and values may account for these patterns and motivational constructs may be differentially related to types of civic behavior.

The present study

The present study seeks to advance a conceptual foundation for youth civic motivation through complementary variable-centered and person-centered analyses. First, expectancies and values were tested as interactive predictors of two types of civic behavior, service and activism. Consistent with limited research on EVT in the civic domain (Levy & Akiva, 2019; Liem & Chua, 2013; Sohl, 2014), interactions between expectancies and values were anticipated. Extending previous findings, predictive relationships were expected to differ across civic behaviors in relation to types of expectancies and values. For example, activism was expected to be more strongly related to collective expectancy compared to service.

Second, person-centered analyses were conducted across four dimensions of youth civic motivation: individual expectancy, collective expectancy, attainment value, and interest value. Several distinct clusters were expected to emerge and exhibit differential relationships to behavioral outcomes. Aligned with existing person-centered research on youth civic engagement (Amnå & Ekman, 2014; Christens et al., 2015; Voight & Torney-Purta, 2013; Wray-Lake & Shubert, 2019), one cluster was expected with high levels of all motivational indicators and another with low levels, with the highest and lowest levels of civic behavior (respectively) among the cluster solution. At least one cluster was anticipated with mean-level discrepancies between expectancies and values, as suggested by person-centered studies that found differences between levels of values and participation (Amnå & Ekman, 2014; Voight & Torney-Purta, 2013). An exploratory approach was used towards collective expectancy; clusters may reveal discrepancies between collective and individual expectancies, but existing research is insufficient to support strong claims (Halpern et al., 2017). Overall, the emergent clusters were expected to clarify the manifestations of civic motivation in relation to different civic behaviors.

Method

Participants

In the spring of 2020, a survey was administered to all 521 students of a high school in southern California. In total, 449 (86.5%) of the students completed the survey. The responses of two participants were identified as outliers in analyses described below, yielding a final sample size of 447 adolescents, the majority of which were Latinx (85.0%) and low-income (62.9%). Demographics and education-related statistics of the sample are presented in Table 1.1, as well as the results of *t*-tests comparing the study sample to all students at the high school. There were no statistically significant differences in gender, race/ethnicity, low-income status, parent education, grade level, grade point average (GPA), and English language learner status.

Measures

Civic expectancies, values, and behavior were assessed with three separate inventories that each contained two subscales. All items were drawn from existing measures. Exploratory and confirmatory factor analyses demonstrated consistency with previous literature and showed both divergent and convergent validity. Additional indicators assessed demographic and education-related constructs.

Civic expectancies. Four items, taken from established inventories of political efficacy and youth civic engagement, were used to assess civic expectancies (Diemer & Li, 2011; McWhirter & McWhirter, 2016; Peterson et al., 2011; Yeich & Levine, 1994). Participants were asked the extent to which they believed each statement was true on a 5-point Likert scale ranging from "Not at all true" to "Completely true." The inventory was composed of two subscales. Two items captured individual expectancy (e.g., "I can make a difference in my community"; $r = .68$) and two items captured collective expectancy (e.g., "Dramatic change can occur in society if people band together and demand change"; $r = .75$). Each two-item subscale was comprised of

separate questions addressing internal and external components (Yeich & Levine, 1994). Indicators for each subscale were created by averaging the respective pairs of items and exhibited satisfactory reliability (individual, $\alpha = .82$; collective, $\alpha = .86$).

Civic values. Four items were selected from established youth civic engagement inventories (Diemer et al., 2017; McWhirter & McWhirter, 2016; Peterson et al., 2011; Voight & Torney-Purta, 2013) and adapted to be consistent with value assessments from expectancy-value theory (Eccles & Wigfield, 2002). Participants were asked the extent to which they believed each statement was true on a 5-point Likert scale ranging from "Not at all true" to "Completely true." Two items captured attainment value (e.g., "It is important to me to fight against social and economic inequality"; $r = .60$) and two items captured interest value (e.g., "I am interested in participating in activist activities"; $r = .75$). Indicators for each subscale were created by averaging each respective pair of items. Each subscale exhibited satisfactory reliability (attainment, $\alpha = .75$; interest, $\alpha = .86$).

Civic behaviors. Eight items were adapted from the youth civic engagement inventories of Corning and Myers (2002) and Diemer et al. (2017) based on Westheimer & Kahne's (2004) typology of civic participation. Participants were asked how frequently they undertook a variety of activities on a 5-point Likert scale ranging from "Never did this" to "At least once a week". The inventory was composed of two subscales. First, service behavior was captured with four items assessing frequency of volunteering, organizing charitable events, attending religious groups, and participating in student government. Factor analyses indicated that one item (regarding attending religious groups) did not load adequately and was removed. The remaining three items were averaged together to produce a single indicator, which demonstrated acceptable reliability ($\alpha = .74$). Second, activism behavior was captured with four items assessing frequency

of participating in direct action, campaigning for issues, involvement in social justice groups, and "other activist activities" (intentionally open for inclusive definition by participants). The subscale demonstrated satisfactory reliability ($\alpha = .82$).

Demographic and education-related indicators. Several indicators were included to serve as covariates for the variable-centered analyses and add depth to the person-centered analyses. All indicators were constructed from high school record data. A dichotomous indicator was used to describe whether or not each participant was female. A categorical variable of race/ethnicity was based on five categories: Hispanic, White, Black, Native American, or Asian. A dichotomous indicator representing participants' eligibility for free-and-reduced price lunch was used to capture low-income status (specifically, below 185% of the poverty line). A dichotomous indicator of whether a participant had at least one parent who ever attended college was created by collapsing six categories of parental education level. School academic data was used to create a categorical variable of grade level (9^{th} through 12^{th} grades). A continuous variable captured cumulative GPA on a 0 to 4 scale. Lastly, a dichotomous indicator captured whether students were designated as English language learners.

Missing data

Missingness of data ranged from 0% for race, gender, and GPA to 4.3% for parent education level. Single imputation was employed to account for missing data for all study participants. (Multiple imputation is generally preferable, it was not appropriate for the present person-centered analyses.) The imputation model included all study variables, as well as auxiliary variables from the dataset that were either theoretically implicated or at least moderately correlated with study variables. Following established practices, values were imputed using chained equations (see White et al., 2011). This approach allowed separate conditional

distributions for each imputed variable, which was suitable for the present dataset because several variables were not normally distributed.

Analytic strategy

First, ordinary least squares (OLS) regressions were used to examine the differential and interactive effects of motivational constructs on civic behavior outcomes. Specifically, two-way interactions of each combination of individual expectancy, collective expectancy, attainment value, and interest value were used as predictors of service and activism. Separate regression models were conducted for each outcome. The models included demographic and education-related covariates, which were also interpreted.

After conducting variable-centered analyses, civic motivation was investigated with person-centered analyses using Ward's method with k-means relocation techniques. Agglomerative hierarchical clustering based on Euclidean distances was followed with iterative, non-hierarchical relocation to minimize the overall error sum of squares consistent with established approaches (Amnå & Ekman, 2014; Wormington et al., 2012). This method is an effective strategy to maximize within-group homogeneity and between-group heterogeneity without the same shortcomings as traditional dendrogram approaches (Bergman et al., 2003). ROPstat software (v2.0) was employed in accordance with recommended best practices (Vargha et al., 2015). Four subscales of civic motivation were used as clustering indicators (individual expectancy, collective expectancy, attainment value, and interest value). Identification of the most appropriate solution was guided by fit indices, theoretical expectations, and replicability. The replicability of the cluster solution was assessed by splitting the sample into two random halves, then repeating the cluster procedure independently and comparing the solutions using Cohen's kappa (Wormington et al., 2012). Lastly, Multivariate Analysis of Covariance

(MANCOVA), univariate Analysis of Variance (ANOVA), and post-hoc pairwise comparison tests were used to investigate cluster-level differences in civic behavior outcomes, demographics, and education-related factors.

Results

Variable-centered analyses

Descriptive analyses. Service was correlated more strongly with civic expectancies than values, whereas activism was correlated more strongly with civic values than expectancies. Service and activism were moderately correlated. The four measures of expectancies and values were at least moderately correlated with each other, with high correlation between the two types of expectancies and between the two types of values.

Moderation tests. The results of OLS regression models are presented in Table 1.2, with models 1-4 predicting service behavior and models 5-8 predicting activism behavior. Moderation effects were tested for each outcome with interaction pairs between individual expectancy, collective expectancy, attainment value, and interest value. Due to multicollinearity issues, the two types of expectancies could not be included in the same regression models (and the same for the two types of values). All models were adjusted for demographic and education-related factors.

Individual expectancy was a consistent predictor of service (see models 1 and 2). The effects of collective expectancy and interest value were positive and statistically significant when paired together (see model 4). Attainment value was not a statistically significant predictor (see model 3), although in a separate model without terms for expectancies or interactions, attainment value positively predicted service ($\beta = 0.20$, $p < .001$). None of the interactions between expectancies and values were statistically significant.

Regarding the activism outcome, none of the main effects for individual expectancy, collective expectancy, attainment value, or interest value were statistically significant (see models 5-8). In separate models without interaction terms where each of the four constructs were a single predictor (with controls included), all constructs were statistically significant predictors of activism (individual expectancy, $\beta = 0.31$, $p < .001$; collective expectancy, $\beta = 0.26$, $p < .001$; attainment value, $\beta = 0.32$, $p < .001$; interest value, $\beta = 0.44$, $p < .001$). Interaction effects between civic expectancies and values positively predicted activism (see models 5, 6, and 7), the exception being the interaction between collective expectancy and interest value, which was nonsignificant (see model 8). The results demonstrated synergy between expectancies and values, as predictive strength was amplified when both were present at high levels.

Of the demographic and education-related factors, GPA consistently predicted service. Grade level predicted service, with freshmen less inclined to be engaged. The effects of gender, race/ethnicity, low income status, parent education, and English language learner status were not significant in relation to service or activism. None of the demographic and education-related factors predicted activism.

Person-centered analyses

First, outlier tests were conducted using residue analysis (see Bergman et al., 2003, pp. 111-114); two cases were identified and removed from the dataset. Outlier tests were repeated and no additional cases were identified. (The sample with $N = 447$ was used for all analyses in the present study.) Next, hierarchical cluster analysis was employed using Ward's method to establish an initial cluster classification and obtain cluster centroids, which were then used as non-random starting points for iterative k-means relocation. Sequential profile solutions of two

to ten clusters were generated and a scree-type plot was created as an aid to compare the change in explanatory power and parsimony of each solution (Peck et al., 2008).

A five-cluster solution emerged as the most suitable profile, explaining 71.7% of the variance in the cluster factors. The Homogeneity Coefficient of each cluster (HC; the average distances of between all pairs of cases within each cluster) indicated that within-cluster homogeneity was sufficient (HC < 1; Vargha et al., 2015). Compared to other potential profiles, the explained error sum of squares ranged from 82.2% for the ten-cluster solution to 46.9% for the two-cluster solution. Following the guidelines established by Bergman et al. (2003), a sudden decrease in the explained error sum of squares between solutions with five and four clusters indicated the fusion of two distinct clusters, suggesting that the five-cluster solution represented both a parsimonious and conceptually meaningful solution. The explained error sum of squares of the five-cluster profile was above the recommended 70% threshold (Bergman et al., 2003). The next best profile was a four-cluster solution; compared to the five-cluster solution, the four-cluster solution was much less theoretically salient, in addition to exhibiting lower explained error sum of squares (67.7%) and larger homogeneity coefficients. In sum, the five-cluster solution was the most satisfactory profile and was used for further examination. Repeating the analyses on randomly split halves yielded substantial agreement ($\kappa = 0.88$), confirming the solution replicability. For each cluster in the full sample, unstandardized mean-level values of each indicator were displayed graphically (see Figure 1.1) and standardized *z*-scores were presented numerically (see Table 1.3). Follow-up univariate Analysis of Variance tests (ANOVAs) with Tukey's Honest Significant Difference (HSD) post-hoc tests were presented in Table 1.3.

Consistent with labeling conventions (Wormington & Linnenbrink-Garcia, 2017), the following names were assigned to the five clusters: (1) *High Expectancies*, (2) *High Values*, (3) *Low All*, (4) *Moderate-Low All*, (5) *High All*. Each of the clusters is briefly described below.

High Expectancies: This cluster was characterized by above-average levels of both types of expectancies, in addition to average attainment value and below-average interest value. This cluster and the *High All* cluster were the only two with above-average expectancies (and the respective magnitude of collective expectancy was statistically equivalent between the two).

High Values: This cluster was characterized by above-average levels of both types of values, in addition to average collective expectancy and below-average individual expectancy. This cluster and the *High All* cluster were the only two with above-average values. Of the clusters, this represented the smallest number of students (n = 50, 11.2%).

Low All: This cluster was characterized by below-average levels of all indicators. The mean of each indicator was statistically lower than the other clusters, and in absolute terms, the means were centered near the first two points of the Likert scale.

Moderate-Low All: This cluster was characterized by below-average levels of all indicators, although the levels were higher than the *Low All* cluster. This cluster represented the largest number of students (n = 134, 30.0%).

High All: This cluster was characterized by above-average levels of all indicators. In absolute terms, the means of each indicator were between the fourth and fifth points on the response scale and greater than one standard deviation above the average for each indicator.

MANCOVA indicated that the clusters differed from each other on the three behavioral outcomes, after controlling for gender, race/ethnicity, low income status, parent education level, English language learner status, and grade level (Wilks' $\lambda = .80$, $F(12, 1135) = 8.38$, $p < .001$, η^2

= .16). Follow-up univariate ANOVAs with Tukey's HSD post-hoc tests were conducted (see Table 1.3). The *High Expectancies*, *High Values*, and *Moderate-Low All* clusters had statistically equivalent levels of service and activism. (For the *High Expectancies* cluster, the mean level of service was above average and activism was below average, whereas for the *High Values* cluster, activism was above average and service was below average, although none the differences were statistically significant.) In comparison, *High All* and *Low All* had statistically higher and lower levels of civic behavior (respectively) than the other three clusters (except *High All* had a statistically equivalent level of service as *High Expectancies*).

Lastly, additional HSD pairwise comparison tests were conducted to assess whether differences existed between clusters on demographic and education-related variables. There were no statistically significant differences between clusters in race/ethnicity, low income status, parent education level, or English language learner status. Statistically significant differences emerged for gender, GPA, and grade level. Females were statistically overrepresented in the *High Values* and *High All* clusters (74% and 75%, respectively) and underrepresented in the *High Expectancies* and *Low All* clusters (38% and 35%, respectively; $F(4, 442) = 12.15$, $p < .001$, $\eta^2 = .10$). GPA was above average (and statistically equivalent) for the *High Expectancies*, *High Values*, and *High All* clusters, whereas GPA was below average (and statistically equivalent) for the *Low All* and *Moderate-Low All* clusters ($F(4, 442) = 11.11$, $p < .001$, $\eta^2 = .09$). The results of grade level were more complex (12^{th} grade, $F(4, 442) = 2.43$, $p = .047$, $\eta^2 = .02$; 11^{th} grade, $F(4, 442) = 2.60$, $p = .035$, $\eta^2 = .02$; 10^{th} grade, $F(4, 442) = 3.12$, $p = .015$, $\eta^2 = .03$; 9^{th} grade, $F(4, 442) = 1.63$, $p = .165$, $\eta^2 = .01$). Notably, 12^{th} graders were more prominent in the *High Expectancies* cluster than all other clusters, 9^{th} and 10^{th} graders comprised the vast

majority of the *High Values* cluster (32% and 48%, respectively), and 9th graders were overrepresented in the *Low All* cluster (39%).

Discussion

The current work advances the field by demonstrating the conceptual importance and practical utility of an expectancy-value model of youth civic motivation. Variable-centered analyses highlighted the interactive relationships between expectancies and values in relation to activism. Person-centered analyses produced five distinct clusters that varied with respect to civic behavior and youth characteristics, elucidating distinct motivational patterns that may inform practice. The inclusion of both expectancies and values in civic models can capture meaningful demographic differences in civic engagement and represents a contribution to equity-oriented research approaches. Each of the key findings are discussed in turn below.

The results extended the few existing studies that concurrently examine political efficacy and values (Levy & Akiva, 2019; Liem & Chua, 2013; Sohl, 2014). Regression analyses demonstrated that expectancies and values were differentially related to service and activism, complementing scholarship on sociopolitical development that argues critical beliefs contribute differently to participation in civic activities that challenge power structures than those that maintain the status quo (Diemer & Rapa, 2016; Watts & Flanagan, 2007). Specifically, moderation tests suggested that high levels of activism are typically accompanied by high levels of both expectancies and values, but the same is not true for service. Moderation effects depended on particular components of expectancies and values; an interaction was not observed between collective expectancy and interest value in relation to the activism outcome, but interactions between other subscales were present. Person-centered analyses yielded an additional perspective on the moderation effects; civic behavior was high (or low) if only both

expectancies and values were high (or low). (Adolescents in the *High All* cluster exhibited statistically higher activism than participants in the *High Expectancies* or *High Values* clusters.) The results provide tentative evidence that expectancies may be more strongly related to service behavior, whereas values may be more strongly related to activism behavior, although the associations appear to function differently across individuals. A wide body of literature considers political efficacy (Sohl, 2014) and interest (Russo & Stattin, 2017) as strong predictors of both service and activism, but the present findings complicate existing conceptions and demonstrate the need for simultaneous examination of expectancies and values.

The person-centered analyses highlighted nuanced ways that civic motivation varied among the adolescents, which may have important implications for practice. Levy and Akiva (2019) note that political interventions have historically focused on deficit-oriented approaches aimed at increasing political efficacy of youth, whereas relatively little attention has been given to values or asset-based perspectives. About a third of the adolescents in the present study reported differentiated values and expectancies (the *High Expectancies* and *High Values* clusters). The results also provided evidence of two discrepancies between subscales of expectancies and values: (1) adolescents in the *High Values* cluster exhibited lower individual expectancy and higher collective expectancy, and (2) adolescents in the *High Expectancies* cluster had lower interest value and higher attainment value. The two discrepancies suggest that adolescents' beliefs regarding individual civic capacity or interest in civic engagement may be undermined by lack of access to enjoyable civic activities. This complements studies which have found that marginalized youth have limited opportunities to participate in civic activities (Levinson, 2010; Torney-Purta et al., 2007).

More broadly, the diverse motivational configurations described by the current study suggest that civic expectancies and values do not function the same for all adolescents. Recent asset-based studies have demonstrated that youth perspectives of civic engagement are grounded in ideological beliefs and legitimate structural concerns (Metzger et al., 2016). Instead of interventions based on normative assumptions, recognizing youth agency within contextual constraints and oppressive histories may yield more effective strategies to support the civic engagement of marginalized adolescents. Future research could give voice to youth and inform practice by using mixed methods to explore subjective explanations underlying differences between subscales of civic expectancies and values.

The emergent clusters expand on existing research that documents demographic differences in youth civic engagement. First, previous person-centered studies found that Latinx youth were overrepresented in clusters with high values and low participation (Voight & Torney-Purta, 2013; Wray-Lake & Shubert, 2019). In the present sample of predominately low-income Latinx adolescents, the size of the *High All* group was proportional to the other clusters (containing nearly one-fifth of the sample in a five-cluster solution) and had similar demographic composition as the other clusters. Other studies found that Latinx youth may be inclined towards activist participation (Littenberg-Tobias & Cohen, 2016; Lopez et al., 2006). Our results suggest that Latinx youth were broadly engaged in both service and activism. Second, females in the present study were overrepresented in all clusters that had high values, consistent with past person-centered studies (Voight & Torney-Purta, 2013; Wray-Lake & Shubert, 2019). Males were significantly overrepresented in clusters that either had low values or higher expectancies than values. This highlights the need for both expectancies or values in models of civic

engagement, as the absence of either construct could have led to incomplete or incorrect conclusions about the relationship between gender and civic behavior.

The present study builds on nascent research regarding youth collective efficacy. Scholars previously construed collective efficacy as a third construct alongside internal and external efficacy (Halpern et al., 2017). The current research distinguished between two superimposed dimensions of expectancy: individual-collective and internal-external. One item was asked for each of the four possible combinations of the two dimensions (internal individual expectancy, external individual expectancy, internal collective expectancy, external collective expectancy). Factor analyses provided preliminary evidence that youth primarily conceptualize expectancy across the individual-collective dimension rather than the internal-external dimension. The results resonate with Kelly and Kelly's (1992) critique that the importance of collective efficacy and social dynamics are often overlooked in sociocognitive approaches to civic engagement. Future work should continue to investigate the distinctions between types of efficacy and their salience to youth using more robust measures.

The main limitations of the current study concern measurement. First, due to survey length constraints, each motivational subscale consisted of only two items. This design risked low precision, but the results of the exploratory and confirmatory factor analyses, corresponding high inter-item correlations, and conceptual coherence of each item pair made the use of the two-item factors cautiously justifiable (Worthington & Whittaker, 2006). Future work should employ more expansive questionnaires that can support robust measurement models and psychometric tests. Second, more research is needed to validate the civic motivation inventories across diverse demographic groups. Potential inter- and intra-group measurement variability has not yet been assessed, although the current study uses items from scales established with diverse samples and

other studies have found measurement invariance across demographic groups using similar sociocognitive inventories (e.g., Diemer & Rapa, 2016). Lastly, survey data was collected during the COVID-19 pandemic, which presents a unique contextual challenge. Measurement invariance over time within individuals is unknown during the pandemic and the patterns identified in the present study may be different in the absence of COVID-19. However, similar questions were asked of the same students in spring of 2019 and the distributions were comparable, providing tentative evidence of consistency. As a result of these empirical limitations, the present study cannot claim to definitively establish a novel conceptual framework of civic motivation, but the results are sufficient to advance ideas for future research.

Conclusion

For decades, political efficacy and interest have been widely studied as key predictors of civic behavior, but a unifying theoretical framework has been elusive. Establishing the utility of expectancy-value theory in the field of youth civic engagement responds to the call for conceptual advances capable of accounting for the sociocognitive and structural complexities of civic behavior (Barrett & Brunton-Smith, 2014). Motivational theory frames youth participation as agentic, supporting asset-based perspectives. The present study promotes understanding of marginalized youth and justice-oriented forms of civic engagement using multidimensional and person-centered approaches that acknowledge diverse forms of civic behavior. Consideration of both expectancies and values, as well as their relative manifestations, may support the development of effective and equitable interventions. More research on youth civic engagement is needed, especially as our youth confront an increasingly contentious sociopolitical landscape.

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Table 1.1

Descriptive statistics of the sample and high school student population

	All students	Survey participants	*t*	*p*
Female	50.3%	52.4%	-0.64	.524
Race/ethnicity				
Hispanic	85.5%	85.0%	0.22	.822
White	7.5%	8.1%	-0.30	.761
Black	0.6%	0.5%	0.28	.777
Native American	0.4%	0.2%	0.45	.652
Asian	6.0%	6.3%	-0.18	.856
Low income	64.4%	62.9%	0.43	.669
Neither parent/guardian attended college	46.2%	46.8%	0.25	.799
GPA	3.06	3.14	-1.42	.156
English language learner	10.6%	11.0%	-0.16	.874
Grade level				
9th grade	27.9%	29.5%	-0.55	.586
10th grade	28.9%	29.3%	-0.14	.890
11th grade	23.5%	23.7%	-0.08	.940
12th grade	19.7%	17.5%	0.88	.381
N	521	447		

Note. The "survey participants" column represents the sample used in the current study. The "all students" column represents the entire student body of the high school. The mean GPA is displayed, measured on a 4.0 scale.

Table 1.2

OLS regression results, interaction between expectancy and value subscales predicting civic behavior

	Service behavior outcome															
	Model 1				Model 2				Model 3				Model 4			
	b (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*
Individual expectancy	0.35 (0.12)	[0.11, 0.58]	0.39	.004	0.32 (0.09)	[0.14, 0.49]	0.35	< .001								
Collective expectancy									0.23 (0.13)	[-0.02, 0.48]	0.24	.072	0.27 (0.10)	[0.07, 0.46]	0.28	.006
Attainment value	0.08 (0.10)	[-0.12, 0.28]	0.09	.445					0.08 (0.13)	[-0.18, 0.35]	0.10	.529				
Interest value					0.14 (0.10)	[-0.05, 0.34]	0.18	.159					0.27 (0.14)	[0.00, 0.54]	0.34	.049
Expectancy x Value	-0.01 (0.03)	[-0.08, 0.05]	-0.09	.641	-0.02 (0.03)	[-0.08, 0.04]	-0.11	.544	0.01 (0.04)	[-0.08, 0.64]	-0.04	.854	-0.04 (0.03)	[-0.11, 0.03]	-0.25	.270
Constant	0.26 (0.38)	[-0.49, 1.01]		.497	0.25 (0.33)	[-.40, 0.90]		.450	0.41 (0.45)	[-0.47, 1.29]		.361	0.17 (0.39)	[-0.60, 0.94]		.669
	Activism outcome															
	Model 5				Model 6				Model 7				Model 8			
	b (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*	*b* (SE)	95% CI	β	*p*
Individual expectancy	-0.14 (0.09)	[-0.32, 0.04]	-0.21	.128	-0.11 (0.07)	[-0.23, -0.02]	-0.16	.107								
Collective expectancy									-0.13 (0.10)	[-0.32, 0.06]	-0.18	.186	-0.06 (0.07)	[-0.20, 0.08]	-0.09	.379
Attainment value	-0.08 (0.08)	[-0.23, 0.07]	-0.12	.312					-0.05 (0.10)	[-0.25, 0.14]	-0.08	.587				
Interest value					-0.02 (0.07)	[-0.17, 0.13]	-0.04	.773					0.08 (0.10)	[-0.12, 0.27]	0.13	.451
Expectancy x Value	0.08 (0.02)	[0.03, 0.13]	0.66	.001	0.08 (0.02)	[0.03, 0.12]	0.63	< .001	0.06 (0.03)	[0.01, 0.12]	0.57	.018	0.04 (0.03)	[-0.01, 0.09]	0.39	.084
Constant	1.30 (0.29)	[0.74, 1.87]		< .001	1.26 (0.24)	[0.78, 1.74]		< .001	1.30 (0.34)	[0.64, 1.96]		< .001	1.11 (0.29)	[0.55, 1.67]		< .001

Note. $N = 447$. Controls included gender, race/ethnicity, low-income status, parental education, grade level, GPA, and English language learner status. The adjusted R^2 for model 1 was .21, $F(15, 431) = 8.88$, $p < .001$. The adjusted R^2 for model 2 was .22, $F(15, 431) = 9.24$, $p < .001$. The adjusted R^2 for model 3 was .16, $F(15, 431) = 6.60$, $p < .001$. The adjusted R^2 for model 4 was .20, $F(15, 431) = 7.29$, $p < .001$. The adjusted R^2 for model 5 was .16, $F(15, 431) = 6.82$, $p < .001$. The adjusted R^2 for model 6 was .23, $F(15, 431) = 9.64$, $p < .001$. The adjusted R^2 for model 7 was .13, $F(15, 431) = 5.51$, $p = .016$. The adjusted R^2 for model 8 was .20, $F(15, 431) = 8.25$, $p = .016$.

Table 1.3

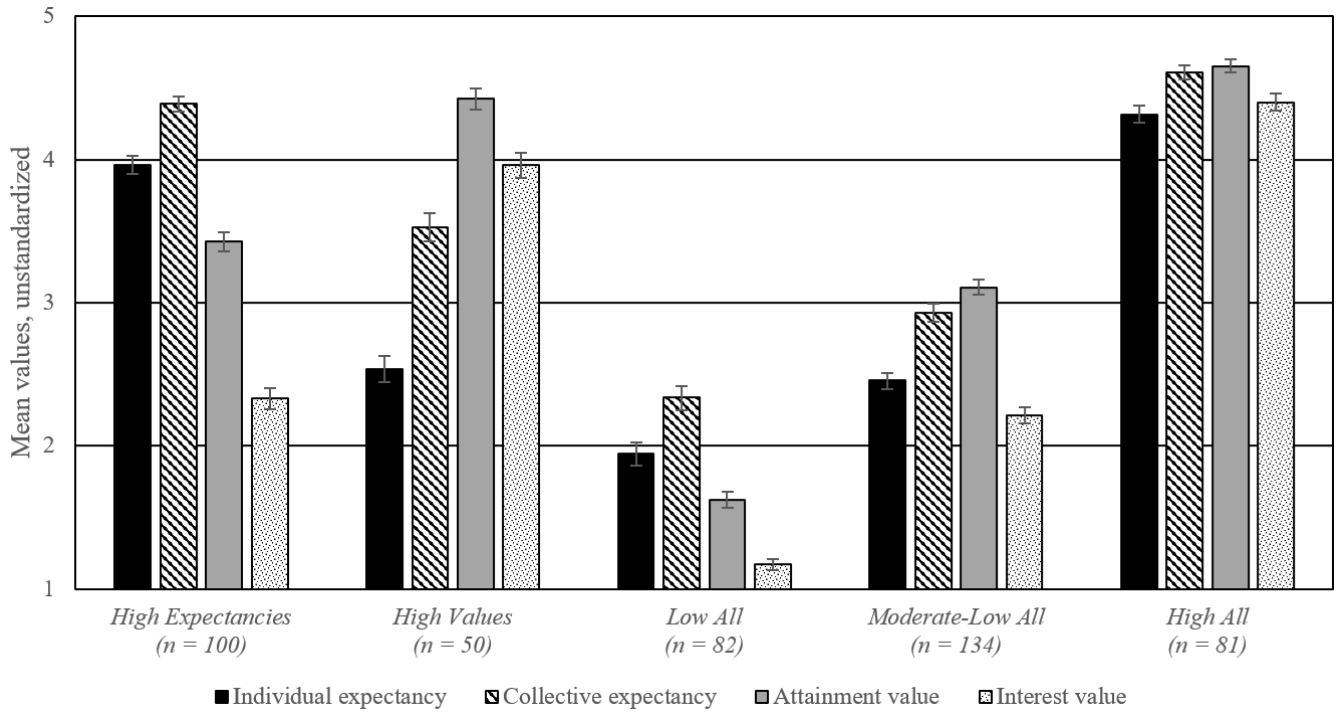
Mean-level differences in cluster characteristics

	Cluster 1: High Expectancies		Cluster 2: High Values		Cluster 3: Low All		Cluster 4: Moderate-Low All		Cluster 5: High All			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(*p*)	η^2
Clustering indicators												
Individual expectancy	0.81_{a}	0.58	-0.45_{b}	0.58	-0.97_{c}	0.67	-0.52_{b}	0.57	1.13_{d}	0.48	218.84 ($p < .001$)	.66
Collective expectancy	0.80_{a}	0.48	0.01_{b}	0.65	-1.09_{c}	0.70	-0.54_{d}	0.65	1.00_{a}	0.41	203.83 ($p < .001$)	.65
Attainment value	0.09_{a}	0.59	0.95_{b}	0.46	-1.48_{c}	0.45	-0.19_{d}	0.51	1.15_{b}	0.36	337.16 ($p < .001$)	.76
Interest value	-0.24_{a}	0.57	1.04_{b}	0.48	-1.14_{c}	0.27	0.33_{a}	0.52	1.38_{d}	0.42	334.57 ($p < .001$)	.77
Outcomes												
Service	0.14_{ac}	1.03	-0.06_{a}	1.03	-0.59_{b}	0.52	-0.01_{a}	0.96	0.49_{c}	1.06	14.24 ($p < .001$)	.11
Activism	-0.10_{a}	0.77	0.09_{a}	0.89	-0.49_{b}	0.37	-0.11_{a}	0.78	0.78_{c}	1.48	21.68 ($p < .001$)	.16
N	100		50		82		134		81			

Note. All variable means were standardized across the whole sample. Means within a row with the same subscript are not significantly different at $p < .05$, as determined by Tukey's HSD tests. Univariate ANOVAs were employed, with between-group $df = 4$ and within-group $df = 442$.

Figure 1.1

Unstandardized means of civic motivation clusters



Note. Error bars represent standard error (+/- 1 SE above and below the cluster means).

Appendix A. Exploratory and confirmatory factor analyses in chapter 1

Table A1

Results of factor analyses

		Factor loadings	
	α	EFA	CFA
Expectancies	0.89		
Individual expectancy	0.82		
I can make a difference in my community.		0.55	0.87
I have the ability to participate effectively in community organizations.		0.54	1.00
Collective expectancy	0.86		
Dramatic change can occur in society if people band together and demand change.		0.61	0.99
Groups of ordinary people can work together to organize a campaign about a problem in society.		0.63	1.00
Values	0.89		
Attainment value	0.75		
It is important to me to fight against social and economic inequality.		0.86	1.00
It is important to me to make sure that everyone has equal rights.		0.66	0.71
Interest value	0.86		
I am interested in participating in activist activities.		0.81	0.86
I would enjoy doing activities that support social justice in my community.		0.89	1.00
Civic behavior			
Service	0.74		
Participated in student government		0.56	0.52
Participate in a religious group (besides attending church)*		Eliminated	
Volunteered for [BLINDED] or any organization (above and beyond the volunteer hours required for school)		0.75	1.00
Helped organize a food drive, fundraiser, or community event (at school or for another organization)		0.67	0.91
Activism	0.82		
Signed an online or written petition about a social or political issue		0.61	0.86
Participated in a group that advocates for human rights, gay rights, women's rights, or immigration rights		0.74	1.00
Joined in a protest march, political demonstration, or political meeting		0.81	0.86
Participated in other activist activities		0.64	0.96

Note. For all models, $N = 447$. Separate EFA and CFA analyses were conducted for the following categories of items: expectancies, values, civic behavior. The factors that emerged are displayed in italics and are consistent with existing literature. All EFA factor loadings are the result of promax rotation and were validated by parallel analysis. All EFA models demonstrated acceptable fit, with chi square tests yielding statistical significance ($p < .001$). All CFA models demonstrated acceptable fit, with RMSEA < 0.05 and CFI > 0.95.

* The indicated item was removed because the factor loading was insufficient (0.32 before promax rotation).

Appendix B. Correlational analyses for chapter 1

Table B1

Descriptive statistics and correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Individual expectancy	1																					
2. Collective expectancy	.75*	1																				
3. Attainment value	.47*	.58*	1																			
4. Interest value	.46*	.51*	.78*	1																		
5. Civic behavior: Service	.40*	.33*	.24*	.29*	1																	
6. Civic behavior: Activism	.32*	.27*	.33*	.44*	.44*	1																
7. Social distancing behavior	.15*	.09	.14*	.08	.08	.04	1															
8. Civic attitude towards social distancing	.19*	.25*	.26*	.22*	.03	.15*	.24*	1														
9. Race/ethnicity: Hispanic	-.09	.01	-.04	.06	-.05	.03	.03	-.05	1													
10. Race/ethnicity: White	.04	-.03	-.01	-.06	.00	.00	-.02	.05	-.71*	1												
11. Race/ethnicity: Black	.03	-.07	-.06	-.03	-.03	-.02	-.04	-.01	-.16*	-.02	1											
12. Race/ethnicity: Native American	.06	.07	.05	.07	.04	.07	-.08	.00	-.11*	-.01	.00	1										
13. Race/ethnicity: Asian	.07	.03	.07	-.03	.08	-.05	.02	.03	-.62*	-.08	-.02	-.01	1									
14. Female	.06	.08	.30*	.35*	.10*	.13*	.08	.08	.14*	-.20*	.00	.05	.01	1								
15. Neither parent attended college	-.01	-.04	-.04	.03	.02	-.01	.01	-.08	.32*	-.24*	.01	.05	-.21*	.07	1							
16. Low-income status	-.02	-.06	-.08	.02	.00	-.02	.05	-.04	.32*	-.28*	.05	.04	-.17*	.09	.33*	1						
17. Grade level: 9th grade	-.08	-.05	-.05	-.08	-.21*	-.10*	-.07	-.13*	.01	-.05	-.04	.07	.04	.01	-.04	-.17*	1					
18. Grade level: 10th grade	-.03	.02	.10*	.08	.01	.00	.03	.05	.01	-.03	-.04	-.03	.04	.01	.02	.05	-.42*	1				
19. Grade level: 11th grade	.04	.00	-.03	.01	.14*	.08	.05	.07	.01	.03	.04	-.03	-.06	-.01	-.02	.15*	-.36*	-.36*	1			
20. Grade level: 12th grade	.10*	.05	-.03	.00	.09	.04	-.01	.02	-.04	.06	.06	-.02	-.02	-.02	.05	-.01	-.30*	-.30*	-.26*	1		
21. Cumulative GPA	.25*	.31*	.20*	.15*	.25*	.09	.17*	.18*	-.19*	.04	-.05	-.04	.26*	.10*	-.13*	-.07	-.12*	.15*	-.09*	.07	1	
22. English-language learner	-.11*	-.13*	-.06	-.02	-.04	.02	-.13*	-.07	.07	-.05	-.02	.14*	-.06	.03	.10*	.06	.09	-.01	-.01	-.09	-.20*	1
Mean	3.05	3.54	3.34	2.63	1.91	1.47	1.76	4.09	0.85	0.08	0.00	0.00	0.06	0.52	0.46	0.63	0.30	0.29	0.24	0.17	3.14	0.11
S.D.	1.12	1.07	1.16	1.27	0.99	0.75	0.46	1.05	0.36	0.27	0.07	0.05	0.24	0.50	0.50	0.48	0.46	0.46	0.43	0.38	0.88	0.31
Min	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Max	5	5	5	5	5	5	2	5	1	1	1	1	1	1	1	1	1	1	1	1	5	1
N	436	432	434	436	437	437	445	447	447	447	447	447	447	447	428	447	447	447	447	447	447	447

Note. All variables are presented unstandardized and un-imputed.

* $p < .05$

CHAPTER 2

Civic Engagement and Friendship Networks: Homophily, Centrality, and Network Closure

Abstract

Scholars generally agree that relationships are important in the civic development of youth, but empirical research on underlying social mechanisms remains sparse. Multidimensional conceptualizations of civic engagement, combined with theories of critical consciousness and expectancy-value motivation, may provide insight into the social underpinnings of youth civic participation. The present study examines features of social networks (specifically, homophily, centrality and network closure) in relation to civic behaviors (service, activism) and beliefs (perceptions of inequities, civic values, and civic expectancies) using two waves of complete network data (2019, $N = 520$; 2020, $N = 521$) from a high school that serves primarily low-income Latinx youth. Regarding homophily, the results of Exponential Random Graph Models (ERGMs) indicated similarities between friends on service behavior and perceptions of inequities. Regarding centrality, regressions found that the number of friendship nominations received was positively related to service behavior, whereas the number of friendship nominations sent was negatively associated with activism. A weighted measure of popularity (Bonacich centrality) negatively predicted perceptions of inequities. Regarding network closure, betweenness predicted service behavior and perceptions of inequities. In contrast, greater clustering of ties (measured by local transitivity) was associated with higher frequency of participation in activism and redundancy of ties (measured as network constraint) was related to civic expectancies. The findings suggest that civic behaviors and beliefs may have different social functions in youth networks, which could be dependent on school culture.

Increased attention to social dynamics using network analyses appears to be a promising direction for future research in the field of youth civic engagement.

Literature Review

Introduction

Youth face a challenging and contested sociocultural environment that requires navigating a resurgence in racism (Bañales & Rivas-Drake, forthcoming) amid unprecedented political polarization (Kennedy et al., 2021) and misinformation (Kahne & Bowyer, 2017). Adolescence is a critical period for political development (Amnå, 2012; Flanagan & Levine, 2010). Youth civic engagement provides a foundation for lifelong political participation (Campbell, 2006; Hart et al., 2007; Zaff et al., 2008) and is associated with a number of positive psychosocial and educational outcomes (Dàvila & Mora, 2007; Eccles & Barber, 1999; Kirshner & Ginwright, 2012). Frameworks of critical consciousness (Freire, 1970; Watts et al., 2011) and expectancy-value motivation (Eccles & Wigfield, 2002; Levy & Akiva, 2019; Liem & Chua, 2013; Wegemer, 2021) are useful for understanding potential antecedents of civic behavior, such as perceptions of inequities, values, and expectancies. However, much remains unknown about the social dynamics that facilitate civic participation, especially among underrepresented youth.

High schools are a unique social context for adolescent development (Campbell, 2006; Flanagan & Levine, 2010), often with infrastructure that simultaneously provides opportunities for civic participation and friendship cultivation (Watts & Flanagan, 2007). Adolescent friendships are an important medium for political influence (Diemer & Li, 2011; Dostie-Goulet, 2009; McDevitt & Kiousis, 2007; van Goethem et al., 2014; Zaff et al., 2008) and researchers have recently begun to explore the role of peers through broader network features and structures beyond socialization (Oosterhoff et al., 2021). Three aspects of social networks will be

investigated in relation to civic engagement in the present study. First, youth tend to associate with peers who share similar characteristics ("homophily"; McPherson, Smith-Lovin, & Cook, 2001; Marsden, 1988), potentially including civic beliefs and behaviors. Second, an individual's importance within a social network ("centrality"; Wasserman & Faust, 1994) may be predicted by civic beliefs and behaviors. Third, some youth may have a small network of close friends, whereas others may have a broad number of acquaintances that bridge diverse social groups (Burt, 1992; Coleman, 1988; Granovetter, 1973); these network structures may be differentially related to civic behaviors and psychosocial antecedents.

The current study expands on an emerging line of research that leverages social network concepts and methodologies to unpack the social dynamics of youth civic engagement (Oosterhoff et al., 2021; Sinclair, 2012). Clarifying the intersection between friendships and civic engagement could lead to novel strategies that support youth civic engagement and critical development, as well as acknowledge the diverse ways that youth assert and express themselves politically. Marginalized youth appear to participate in civic activities differently than dominant youth (Marcelo et al., 2007; Wray-Lake et al., 2020), which may be related to long-term differences in political participation through adulthood (File, 2015). Further, youth of color are often underrepresented in research literature (Watts & Flanagan, 2007). The current study uses complete friendship network data from a high school in southern California that serves primarily low-income Latinx youth. Cross-sectional data from surveys in spring 2019 and 2020 will be used to investigate the relationship between youth civic engagement and network constructs with complementary analyses that include exponential random graph modeling (ERGM; Robins et al., 2007) and multiple regressions. First, key civic constructs are introduced, including service and activism behaviors, as well as perceptions of inequities, civic values, and civic expectancies.

Next homophily, centrality, and network closure are discussed in relation to youth civic engagement. Then, research questions are presented before describing the methods and measures.

Civic behavior and psychosocial antecedents

The term "civic engagement" typically refers to behavior or membership in political activities or groups. A wide variety of beliefs are predictive of youth civic engagement (Pancer, 2014; Metzger et al., 2019). Psychosocial antecedents are important to understand how and why civic engagement occurs, which is especially true for marginalized youth who may not have robust opportunities to participate civically. The current study uses three frameworks to capture civic engagement: multidimensional civic behavior, critical consciousness, and expectancy-value motivation. Each are described in turn.

Service and activism

Rather than conceptualize civic engagement as a monolithic category (Adler & Goggin, 2005), multidimensional typologies acknowledge differences between forms of participation (Wray-Lake, Metzger, & Syvertsen, 2017; Ekman & Amnå, 2012; Sherrod, Torney-Purta, & Flanagan, 2010). Frameworks that construe civic engagement as a single construct risk emphasizing traditional forms of civic engagement over justice-oriented activities (Checkoway & Aldana, 2013). The current study distinguishes between service and activism behaviors, drawing from Westheimer and Kahne's (2004) framework that centers attitudes towards social change associated with each type of activity. Service highlights individual responsibility to ameliorate manifestations of social problems, whereas activism critically engages structural root causes. For example, volunteering at a shelter for homeless individuals could be considered an act of service, whereas activism would include participating in political campaigns for housing

rights. On average, students who participate in service activities tend to be more affluent and privileged (Musick & Wilson, 2007; Markham & Bonjean, 1995), whereas marginalized youth may be more likely to engage in activist activities (Littenberg-Tobias & Cohen, 2016; Lopez et al., 2006). Demographic differences between types of civic engagement are not well understood, as marginalized youth and justice-oriented activities have historically been underrepresented in the academic literature (Watts & Flanagan, 2007). Research on social networks may clarify differences between service and activism, as well as contribute to understanding civic experiences of marginalized youth.

Perceptions of inequities

According to critical consciousness theory, awareness of social inequities (through direct experience) typically precedes participation in justice-oriented civic action (Freire, 1970). More recent frameworks that build on Freire's work (e.g., sociopolitical development theory) hold that activism can be driven by critical perception of social injustices and an imperative for remediation (Watts et al., 1999; 2003; Watts & Hipolito-Delgado, 2015). A dialectical relationship exists between thought and action, and as a result, awareness of systems of oppression is further developed through civic participation (Freire, 1970; 1973; Oskamp & Schultz, 2005). Despite the importance of the construct, Watts and colleagues (2011) argued that perception of inequities remains the most under-researched component of critical consciousness. Diemer and Rapa (2016) found that perception of inequities was related more strongly with justice-oriented types of civic engagement compared to traditional forms of political participation, and further, these associations varied by ethnicity and race. Similar studies that assess attitudes towards inequities have found consistent results (Wray-Lake, Metzger, & Syvertsen, 2017; Voight & Torney-Purta 2013; Gutierrez, 1995). In addition to direct

relationships between perceptions of inequities and civic behavior, perceptions of inequities may also be associated with motivational constructs linked to civic behavior (specifically, values and expectancies). Awareness of oppression is inherently social and involves reflecting on one's own position in social hierarchies, which implicates youth social networks, yet research that investigates perceptions of inequities in social networks is lacking.

Motivation

Over the last three decades, the Eccles et al. expectancy-value model (Eccles & Wigfield, 2002; Eccles & Wigfield, 2020) has been the dominant framework in the study of child and adolescent motivation in educational contexts. Expectancy-value theory has recently emerged as a powerful framework for youth civic engagement (Levy & Akiva, 2019; Liem & Chua, 2013; Wegemer, 2021) due to its potential to combine disparate literatures on political efficacy (Bandura, 1977; Niemi et al., 1991; Yeich & Levine, 1994) and interest value (Russo & Stattin, 2017; Shehata & Amnå, 2019), which are widely recognized as powerful predictors of civic behavior (efficacy, see Niemi et al., 1991; Kahne & Westheimer, 2006; values, see Voight & Torney-Purta, 2013; Zaff et al., 2010). Scholars have recognized potential overlap and complementarity between motivation theories and critical consciousness (Rapa, 2016; Watts et al., 2011; Watts & Flanagan, 2007); for instance, beliefs about society are related to expectations of success and subjective task values (Eccles & Wigfield, 2020). However, rather than drawing from established motivational theories, most studies of civic engagement use functionalist approaches that construe motivation as self-reported subjective reasons that youth give for participating in an activity (Clary et al., 1998; Clary & Snyder, 1999; Dávila, Zlobina, & Álvarez-Hernández, 2021; Rioux & Penner, 2001; Stukas et al., 2009). Some studies employ a distinction between intrinsic/extrinsic motivation (Geiser et al., 2016; Finkelstein, 2009; Pearce

& Larson, 2006), but more research is necessary to build a foundation capable of investigating the sociocognitive components of adolescent motivation. Notably, the relationship between social network processes and motivational constructs remains unexplored, despite the potential importance of social relationships for shaping motivational beliefs.

Social networks

Friendships among adolescents play a crucial role in a broad range of developmental processes (Cotterell, 2007; Vitaro et al., 2009), including civic development. Scholars have documented the influence of peers on political beliefs and participation (Diemer & Li, 2011; Dostie-Goulet, 2009; McDevitt & Kiousis, 2007; van Goethem et al., 2014; Zaff et al., 2008), but research has historically approximated socialization processes through self-reported discussions with peers (in part due to methodological limitations). Other features of social networks may impact (and be impacted by) civic behavior and beliefs. For instance, political beliefs may shape friendship selection preferences. Also, positionality within networks may partially determine access to opportunities for civic participation. Civic engagement is inherently social, dependent on collective action and co-constructed beliefs.

High schools are a unique context for both social and civic development (Ehman, 1980; Campbell, 2006; Flanagan & Levine, 2010; Sohl & Arensmeier, 2015), in which peer interactions and friendship formation are central to students' experiences (Carolan, 2013). In addition to civics courses, schools typically support extracurricular activities that simultaneously provide opportunities for friendship cultivation (Schaefer et al., 2011) as well as civic engagement. Despite the rich potential for advancing understanding of civic development, the overlap between social networks and civic engagement within high schools remains largely unexplored. Of the few existing studies that investigate social networks in youth civic

participation, most rely on interactions through social media websites (Evans, 2013; Kornbluh, 2019; McLeod & Lee, 2012; Miller et al., 2015). While social media is certainly an important medium of civic participation, friendships and civic engagement online function differently than offline (Eder & Nenga, 2006; Gibson & McAllister, 2013).

Social network analyses can provide deeper insight into the mechanisms that drive youth civic engagement compared to other methodological approaches (Sinclair, 2012). For instance, linear regressions assume that observations are independent from each other and that covariates are sufficient to account for dependence among observations (Cranmer & Desmarais, 2011). In contrast, ERGMs simultaneously estimate the effects of covariates and the relational dependence between individuals in a network (Robins et al., 2007). Further, mapping complete friendship networks can obviate the need for self-reported measures of positionality in social networks, which may not be reliable (Portillo & Fernández-Baena, 2019; Thiele et al., 2014). The present study uses network approaches to examine homophily, centrality, and network closure, each of which are described in relation to youth civic engagement below.

Homophily

In social networks, connected individuals tend to share similarities on demographic features (Joyner & Kao, 2000) and malleable social behaviors and characteristics (Brechwald & Prinstein, 2011). Similarly, scholars have long recognized that friendship groups are more politically homogenous than one would predict by chance (Verbrugge, 1977), and in response to rising political polarization in recent years, civic homophily has attracted attention as a subject of research (Oosterhoff et al., 2021; Passe, Drake, & Mayger, 2018). However, research has focused primarily on adults (Colleoni, Rozza, & Arvidsson, 2014; Huber & Malhotra, 2017;

Krosnick, 1991; Settle, Bond, & Levitt, 2011), despite the importance of adolescence as a formative stage of political development (Hooghe & Wilkenfeld, 2008; Russo & Stattin, 2017).

Consistent with studies of adults, adolescents who identify as friends are likely to share similar civic behaviors and beliefs. Research over several decades has documented that youth consistently prefer to be friends with peers who share similar civic engagement (Cohen, 1983; Kandel, 1978). On social media platforms, youth communicate more frequently with others who have comparable civic engagement and political orientation (Raynes-Goldie & Walker, 2008). Recently, scholars have begun to apply social network approaches to examine homophilous sorting on civic constructs among adolescents. In one study, high school students tended to select peers as friends if they had similar levels of participation in protests, boycotts, or signing petitions (Dahl & Van Zalk, 2014). In another, middle school students in a rural US community were found to exhibit homophily on right-wing authoritarianism, patriotism, and attitudes toward immigration, but not on political affiliation, social dominance orientation, or attitudes towards poverty or environmentalism (Oosterhoff, Poppler, & Palmer, 2021). Much work remains to understand civic homophily in youth social networks.

I expect that homophily will emerge on civic behaviors and beliefs in the present sample, although an exploratory approach will be employed because social network research is an emerging direction for the field and current literature does not provide a foundation for robust predictions. Civic behaviors and beliefs may be less salient to adolescent friendships compared to other social or cultural characteristics, and as a result, homophily may be difficult to detect for some civic constructs. Regardless, among the civic constructs in the present study, I anticipate that homophily will be most likely to occur for friends that share similar levels (and types) of civic behaviors, followed by values and perceptions of inequities, and lastly expectancies. Shared

behaviors implicate an increased likelihood of direct interaction in shared spaces, important for friendship formation. Expectancies may be the least salient for friendships, as differences in expectancies among friends may be complementary and contribute to friendship formation.

Centrality

Centrality in social networks can be conceptualized and captured in a variety of ways (Borgatti, Carley, & Krackhardt, 2006; Iacobucci et al., 2017; Freeman, 1978), from the simple number of connections that an individual has to others ("degree centrality") to weighted measures that integrate information from the broader network to approximate popularity (e.g., "Bonacich centrality", Bonacich, 1987; 2007; Katz, 1953). Centrality has figured prominently in research on social movements (McAdam, 2003), which often utilizes centrality to describe power and influence of community leaders in organizing strategies (Alinsky, 1971; Krinsky & Crossley, 2014). In adolescent networks, centrality has been commonly used to approximate influence in the form of popularity (Coleman, 1961; Friedkin, 1991; Mihaly, 2009). At the intersection of these literatures, popularity may be related to youth civic engagement in at least two ways, described in turn.

First, the relationship between popularity in high school and civic behavior is likely dependent on school culture. Some civic activities may be associated with higher status (e.g., events organized by student government), whereas others may be associated with lower status (e.g., efforts of marginalized students to challenge dominant social norms). Self-reported social integration in high school social networks has been found to be associated with increased civic engagement and trust in political systems (Settle, Bond, & Levitt, 2011) and the number of social connections among young adults may differentially predict civic activities (Dávila et al., 2021), although studies using complete network data are lacking. In general, youth who engage in

justice-oriented civic engagement often experience some form of marginalization prior to participating (Watts et al., 2003; 1999) and marginalized youth are less popular (that is, less central), in the high school friendship network. At school site of the present study, the existing social infrastructure is oriented towards service activities, which may be associated with popularity.

Second, youth who are more popular (and command more influence in the youth social network) tend to have greater self-efficacy in many domains, including academic (Dou et al., 2018) and social (Okamoto et al., 2011). Similarly, greater centrality may be associated with civic efficacy. Regarding other civic antecedents in the current study, there are no clear theoretical reasons why popularity would be related to perceptions of inequities and civic values.

Network closure

Theories of social capital (Burt, 1992; Coleman, 1988; Putnam, 2000) suggest that the structure and strength of an individual's friendship ties may be differentially related to types of civic engagement. Individuals in "open" networks with a large number of weak ties have greater access to novel ideas, exposure to different types of behavior, and access to different social groups (Burt, 1992; Granovetter, 1973). In contrast, densely connected social groups with strong ties ("closed" networks) can provide a safe environment with robust social norms that support collaboration (Coleman, 1988). The affordances and constraints of open and closed networks, as well as associations with different types of civic engagement, are each discussed in turn.

A wide body of evidence supports the hypothesis that open networks with weak ties are related to civic engagement. Large, diverse networks can provide access to information about events and social issues (Burt, 1992), which facilitate civic action and the development of civic beliefs. An individual's effective network size and frequency of political discussions across

heterogeneous weak ties have been found to be predictive of civic engagement in a variety of contexts and mediums (Gil de Zúñiga & Valenzuela, 2011; McLeod et al., 1999; Rojas, 2008; Tong et al., 2010). All other factors being equal, individuals with a large social network have a greater probability of being recruited for civic participation compared to individuals with a smaller social network (Diani, 2013). Relatedly, individuals in open networks typically bridge different social groups, which provides strategic information, influence, and access (Burt, 2004).

Compared to weak ties in open networks, social influence and support are more effectively exerted across strong ties (McAdam & Paulsen, 1993; Kenny, 1994; Krackhardt, Nohria, & Eccles, 2003; Straits, 1991). Accordingly, strong network ties can facilitate the integration of new members into organizations (Morrison, 2002), as well as reinforce civic beliefs and encourage action (Valenzuela, Correa, & Gil de Zúñiga, 2018; Valenzuela, Arriagada, & Scherman, 2014). Trust is also fostered in closed networks (Coleman, 1988), which may cultivate civic participation (Akiva et al., 2017; Uslaner & Brown, 2005). Scholars have argued that a densely connected "critical mass" of students is necessary to drive collective action (Crossley & Ibrahim, 2012; Passy, 2003; Marwell & Oliver, 1993).

The debate regarding the affordances of open and closed networks has led to contradictory predictions (Burt, 2017). There may be a tradeoff between the safety of closed networks and the diversity of information provided by open networks (Gargiulo & Benassi, 2000). A study by Kavanaugh and colleagues (2005) found that communities with a mix of "bridging" capital (weak ties across groups) and "bonding" capital (strong ties within groups) were the most effective in organizing for collective action, an idea that has been validated by other scholars (Fowler, 2005; Siegel, 2009; McAdam & Paulsen, 1993).

In adolescent social networks, each type of civic behavior or belief may be associated with a particular balance of weak and strong ties, illustrated in the following three examples. First, open networks with weak ties might be associated with activities such as volunteer recruitment or planning community events, because these civic behaviors depend on bridging social groups and facilitating a broad flow of information. Reliance on open networks may be complemented by the presence of a small densely-connected core, as broad civic efforts are typically led by a group of tightly-knit individuals with strong ties that sustain supportive relationships resilient to the challenges of social organizing. Second, adolescents who recognize their own experiences of trauma within broader systems of oppression may be motivated to join a tightly-knit rights group. Close networks with strong ties can provide social support for processing vulnerable issues that implicate the identity features of youth. Third, individuals typically attain critical perspectives of inequities by encountering new ideas and experiences that increase social awareness (Freire, 1970; 1973), which are most likely facilitated in open networks. In a study of online social justice efforts of adolescents, Kornbluh (2019) observed that open networks were related to the development of new perspectives on social inequities, as well as increased civic engagement.

In the present study, I expect that service behavior will be associated with open networks, in part due to the nature of tasks associated with service (e.g., broadly recruiting volunteers and planning activities) within a school culture and infrastructure that broadly supports service. In contrast, activism will be related to closed networks, as students who participate in activities that are marginalized within the school culture or involve sensitive personal issues that require tightly knit groups of students capable of providing socioemotional support and motivation in the face of adversity. Also, I anticipate that perceptions of inequities will be associated with open

networks and weak ties due to dependence of increased social awareness on the acquisition of new information. An exploratory approach will be taken regarding civic values and expectancies, as existing research does not provide a strong foundation for a priori hypotheses about potential links to network closure.

Research questions

Aligned with the hypotheses described above, the present study will investigate three research questions:

1. To what extent do students who identify as friends share similarities in civic behavior, motivation, and perception of inequities?
2. To what extent are civic behavior, motivation, and perception of inequities related to the centrality of students in the high school friendship network?
3. To what extent are civic behavior, motivation, and perception of inequities associated with network closure?

Methods

Participants

Data from two overlapping samples were collected via an online survey administered to all of the students enrolled at a high school in southern California at two time points. In May 2019, 472 students completed the survey (91% of the school enrollment), and in May 2020, 435 students completed the survey (84% of the school enrollment). All analyses in the present study were conducted separately on each of the samples. The majority of the participants were Latinx (83.8% in 2019 and 85.5% in 2020) and low-income (70.0% in 2019 and 64.4% in 2020). Descriptive statistics of each sample are presented in Table 2.1.

Measures

Separate inventories that assessed civic behavior, values, expectancies, and perceptions of inequities were drawn from established measures. Exploratory and confirmatory factor analyses validated the scales. All survey items are presented in Appendix D.

Civic behavior

Seven items were adapted from existing civic engagement inventories (Corning & Myers, 2002; Diemer et al., 2017). The items asked students how frequently they participated in a variety of activities on a 5-point Likert scale ("Never did this" to "At least once a week") in both spring 2019 and spring 2020. The inventory was comprised of two subscales, consistent with Westheimer & Kahne's (2004) typology of civic participation. First, service behavior was captured with four items that assessed frequency of volunteering, organizing charitable events, attending religious groups, and participating in student government. One item was removed because it did not load adequately (attending religious groups). A single indicator was created by averaging together the remaining three items, which demonstrated acceptable reliability ($\alpha = .76$ in spring 2019; $\alpha = .74$ in spring 2020). Second, activist behavior was captured with three items that assessed frequency of participating in direct action, campaigning for issues, and involvement in social justice groups, which were averaged together to produce a single measure. The subscale demonstrated satisfactory reliability ($\alpha = .84$ in spring 2019; $\alpha = .82$ in spring 2020).

Perceptions of inequities

Four items assessed perceptions of inequities in both spring 2019 and spring 2020, adapted from Diemer et al.'s (2017) critical consciousness inventory. The items asked students whether they believed members of certain racial/ethnic groups, people in poverty, women, and individuals who identified as gay or lesbian had fewer chances to "get ahead" in our society, on a

6-point Likert scale ("Strongly Disagree" to "Strongly Agree"). The items demonstrated satisfactory reliability (α = .89 in spring 2019; α = .90 in spring 2020).

Civic values

Civic values were assessed in the spring 2020 survey, but not spring 2019. Four items were adapted from established inventories of youth civic engagement (Diemer et al., 2017; McWhirter & McWhirter, 2016; Peterson et al., 2011; Voight & Torney-Purta, 2013), consistent with expectancy-value theory (Eccles & Wigfield, 2002). Each item provided a statement about civic participation (e.g., "I am interested in participating in activist activities" and "It is important to me to fight against social and economic inequality") and asked students the extent to which they believed each statement was true on a 5-point Likert scale ("Not at all true" to "Completely true"). The four items were averaged together to produce a single indicator of civic values, which exhibited satisfactory reliability (α = .88 in spring 2020).

Civic expectancies

Four items, adapted from validated measures, were used to assess civic expectancies in spring 2020, but not spring 2019 (Diemer & Li, 2011; McWhirter & McWhirter, 2016; Peterson et al., 2011; Yeich & Levine, 1994). Each of the items provided a statement about civic participation (e.g., "I can make a difference in my community" and "Dramatic change can occur in society if people band together and demand change") and asked students the extent to which they believed each statement was true on a 5-point Likert scale ("Not at all true" to "Completely true"). The four items were averaged together to produce a single indicator of civic expectancies, which demonstrated satisfactory reliability (α = .89 in spring 2020).

Friendship networks

Each student was asked to provide the first and last names of their five closest friends at the high school. The students' responses were used to create a complete network graph for each of the two samples. This is consistent with common approaches to identify egocentric networks (Marsden, 2011).

Background variables

Six indicators were created from high school record data to serve as potential covariates in both spring 2019 and spring 2020. A dichotomous variable was used to indicate whether or not each participant identified as female. Race/ethnicity was captured by a categorical variable that indicated whether students identified as Hispanic, White, Black, Native American, or Asian. A dichotomous variable representing students' free-and-reduced price lunch status was used to as an indicator of whether students were from low-income households (specifically, below 185% of the poverty line). A categorical variable indicated each students' grade level (9^{th} through 12^{th} grades). A dichotomous indicator captured students' status as English language learners. Lastly, a continuous variable represented students' cumulative GPA on a 0 to 4 scale.

Missing data

Of the study indicators in both waves of data, the civic variables in 2020 exhibited the greatest missingness (14%). To accommodate the study's social network algorithms, single imputation was employed separately on each wave of data. The imputation models included all study variables in each wave, as well as auxiliary variables that were theoretically implicated. Chained equations were used to impute missing values, allowing separate non-normal distributions for each variable (see White et al., 2011).

Analytical approach

The three research questions of the present study required separate analytical techniques, each capable of investigating the social network features relevant to each question. Specifically, three methodological approaches were used to examine homophily, centrality, and network closure, described in turn below. All of the analyses were applied separately to both waves of data using the sna package in R (version 2.6). First, correlations among study variables and network features in the two waves of survey data were investigated to provide a foundation for the second and third research questions (involving individual-level indicators of centrality and network closure).

The extent to which friends were similar on civic behavior and beliefs was examined with two measures of homophily. First, Moran's I was calculated for each study variable in the 2019 and 2020 networks. Moran's I is a descriptive indicator of network autocorrelation that ranges from -1 to +1, with higher values indicating greater similarity between friends on a particular attribute than would otherwise be expected if ties between students were random (Moran, 1950). Second, ERGMs were used to estimate the odds of a friendship tie existing between two students who shared a particular civic characteristic compared to students who did not share the characteristic, controlling for other covariates and endogenous network processes (e.g., the tendency for individuals to reciprocate friendships if they are nominated as a friend by someone). ERGMs use dyads as the unit of analysis to model the likelihood of the presence of a friendship tie relative to independent variables (Robins et al., 2007). Several ERGM models were estimated in a stepwise fashion; separate models were run for each civic predictor, both with and without covariates, then a final model with all civic predictors was estimated.

Three indicators of centrality were computed to capture different conceptualizations of popularity in the high school social network: indegree (the number of friendship nominations

received), outdegree (the number of friendship nominations sent), and Bonacich centrality (a weighted measure of centrality that approximates prestige and influence; Bonacich, 1987; 2007). Network centrality scores for the three indicators were calculated for each student. Using OLS regression models with covariates, centrality indicators were used to predict civic behaviors and beliefs.

Students' positionality within the network structure was approximated using four indicators that capture different aspects of network closure. Unique individual-level values for the indicators were calculated and assigned to each student in each wave. First, effective network size represents the number of peers each student is connected to, after eliminating redundant ties (Burt, 1992). Second, and relatedly, network constraint captures the extent to which a student has friends who are not connected to each other. Generally, students with lower constraint scores are more likely to have opportunities to serve as brokers across social groups (Burt, 1992). Third, local transitivity is an indicator of tie density, that is, how tightly friends are clustered together (Burt, 1992; Watts & Strogatz, 1998). Specifically, local transitivity is calculated as the ratio of the triangles connected to the vertex and the triples centered on the vertex. Fourth, betweenness centrality is the number of the network's shortest paths that go through each student, which approximates the extent to which a student serves as a broker between groups (Freeman, 1978). Studies of political participation have used betweenness to represent advantageous positionality and influence in the flow of information (Song & Eveland, 2015). Individual-level values for each of the four network closure indicators were used as predictors of civic outcomes in OLS regressions. Across the three research questions, the same covariates were included in all regression and ERGM models.

Results

Homophily

Moran's I was calculated for each of the study variables, shown in Table 2.4. In both 2019 and 2020, statistically significant homophily emerged on service behavior and perceptions of inequities, but not on activist behavior, perceptions of inequities, civic values, or civic expectancies. Homophily was also present for grade level, gender, race/ethnicity, FRPL status, and GPA, but not for English language learner status.

The results of ERGMs are displayed in Tables 2.5 and 2.6. In accordance with best practices (Schaefer et al., 2011), network features were adjusted to maximize fit with observed data (see sample goodness of fit and MCMC results in Appendix E). Both homophily and node-level predictors were included for each civic variable, along with covariates (network and individual). Coefficients of node-level variables represent the likelihood of a friendship tie and can be interpreted similarly to coefficients of a logistic regression model. For continuous variables, homophily was examined using the absolute difference in levels of a particular characteristic between two friends, such that a negative coefficient signifies that an increase in difference would be related to a lower likelihood of a tie.

In 2019 and 2020, both service behavior and homophily on service behavior were associated with greater likelihood of a tie, accounting for all network factors and covariates. The log odds can be exponentiated to facilitate interpretation of the results. For example, using the results from model 11 in Table 2.6, a one unit increase in service behavior would result in 1.05 greater odds of a tie (calculated from $e^{0.05}$), holding all other network features and covariates constant. Similarly, for every additional unit of difference in service behavior between two students, the odds of a tie would be 0.89 (calculated from $e^{-0.13}$), relative to a non-homophilous tie. Activist behavior and homophily on activist behavior were associated with greater likelihood

of a tie in 2019, although the effect for homophily dissipated after the addition of controls to the model. In both 2019 and 2020, students similar on perceptions of inequities were more likely to have a tie, but no main effect was present for perceptions of inequities. In 2020, civic expectancy was associated with greater likelihood of a tie, but the homophily effect was not.

The model included several network effects. The edges term assessed the odds of a tie when the remaining parameters were zero. Mutuality captured the tendency for students to reciprocate ties. The degree distribution was fitted with indegree and outdegree terms. Transitivity in the network was captured by the GWESP terms (which indicated the tendency for triads to form) and a term that modeled the number of two paths. Lastly, the number of isolates in the network was also modeled. All network effects were statistically significant in at least one of the years.

Centrality

Zero-order correlations (see Tables 2.2 and 2.3) yielded sparse associations between centrality measures and civic outcomes. The number of friendship nominations received (indegree centrality) was correlated with service behavior in 2019 and a weighted measure of popularity in the social network (Bonacich centrality) was negatively correlated with perceptions of inequities in 2020. Of the covariates, the number of friends nominated (outdegree centrality) was positively related to being a freshman and negatively related to being a senior in 2020. Indegree and outdegree indicators were negatively correlated with FRPL status in 2019 and positively correlated with GPA in both years. Bonacich centrality was positively correlated with English language learner status in 2020.

OLS regression models found that indegree predicted service behavior in 2019 (Table 2.7), outdegree negatively predicted activist behavior in 2019 (Table 2.8), Bonacich centrality

negatively predicted perceptions of inequities in 2020 (Table 2.9), and outdegree predicted civic expectancies in 2020, although the effect was accounted for by the addition of controls (Table 2.11). No effects were statistically significant for civic values (Table 2.10). None of the statistically significant effects were consistent across both waves of the study and the magnitude of all coefficients was small.

Network closure

Correlational analyses between the four measures associated with network closure and all study variables were conducted for 2019 (Table 2.2) and 2020 (Table 2.3). In 2020, network constraint score was negatively correlated with civic expectancies, suggesting that on average, the more redundant and tightly knit a students' friendship group, the greater their civic efficacy. No other network closure indicators were correlated with civic variables.

In OLS regression models, betweenness positively predicted service behavior in 2019 and 2020 (Table 2.12), local transitivity predicted activist behavior in 2019 and 2020 (Table 2.13), and betweenness predicted perceptions of inequities in 2019 (Table 2.14). In 2020, network constraint predicted civic values (Table 2.15) and civic expectancies (Table 2.16), although the coefficient of civic values was not significant after covariates were added to the model.

Covariates

The ERGMs and regression models included robust covariates, which yielded patterns across analyses for homophily, centrality, and network closure. In both 2019 and 2020, a greater likelihood of a tie was associated with homophily on grade level, gender, race/ethnicity, FRPL status, English language learner status, and GPA (Tables 2.5 and 2.6). Patterns across the regression models were relatively consistent (see Tables 2.7 to 2.16). Relative to being a senior, being a freshman was negatively related to service behavior, activist behavior, and perceptions of

inequities (the latter was only significant in 2019). Being a sophomore was negatively related to service behavior. Compared to being a male, being female was associated with participation in service behavior (only in 2020), activist behavior, perceptions of inequities, and civic values. English language learner status was related to service behavior and activist behavior in 2019. GPA was positively associated with service behavior, activist behavior (only in 2020), perceptions of inequities (only in 2020), civic values, and civic expectancies.

Discussion

The current study found evidence that links civic beliefs and behaviors to homophily, centrality, and network closure in a high school friendship network. The application of social network techniques to youth civic engagement advances emerging literature that aims to deepen understanding of social processes that underlie youth civic engagement. The effect sizes of civic constructs in the present analyses are notable, especially considering the wide range of factors salient to adolescent friendships accounted for in the models. The findings validate the proposed hypotheses and provide a foundation for future studies that will continue to clarify civic engagement among marginalized youth.

Service, activism, perceptions of inequities, civic values, and civic expectancies were differentially related to characteristics of the high school friendship network. The variance may be attributable to school culture and the social characteristics inherent to each civic construct. For example, the number of friendship nominations received (indegree) was related to service behavior, suggesting that participating in service activities may be a socially desirable feature at the school. The results diverge from recent research that found that centrality in a college discussion network was related to civic ambivalence (Song & Eveland, 2015). The degree to which centrality predicts service in the present study reflects the extent that service is a valued

social characteristic that confers influence in the particular context (Krinsky & Crossley, 2014). In contrast, activism was not related to the number of friendship nominations received, but was negatively associated with the number of friendship nominations sent (outdegree). That is, students who participated in activist behavior report having less friends on average. Social marginalization may be associated with participating in activism. This is consistent with critical consciousness theory, which suggests that experiences of injustices may be antecedents of activism, and further, that critical action inherently opposes dominant power systems (Freire, 1970; Watts et al., 2003). Further, homophily emerged on service, but not activism, which indicates that service may be more salient to friendship formation in the high school than activism.

Consistent with studies of civic orientation of adults (Colleoni, Rozza, & Arvidsson, 2014; Huber & Malhotra, 2017), homophily was present for service and perceptions of inequities. The results are also aligned with emerging research that leverages ERGMs to examine civic homophily among adolescents; specifically, Oosterhoff and colleagues (2021) found that adolescents in a rural school were more likely to be friends with others who shared similar levels of right-wing authoritarianism, patriotism, and attitudes towards immigration. Adolescent co-participation in service activities provided by the high school may contribute to homophilous friendship formation, as scholars have found that extracurricular activities are a site of friendship formation (Schaefer et al., 2011).

Service and activism were differentially associated with network structure. Students who participated in service activities were more likely to be positioned as brokers between social groups in open networks. (Specifically, higher betweenness predicted greater service.) This aligns with social network research that suggests engagement in civic activities may be fostered

by greater access to opportunities and strategic positionality between social groups (Burt, 1992; Granovetter, 1973). Similarly, betweenness predicted perceptions of inequities, despite being negatively related to a measure of popularity (Bonacich centrality), which is consistent with critical consciousness theory's assertion that exposure to ideas and social experiences may be related to nondominant awareness of inequities (Freire, 1970; Watts et al., 2003). In contrast, greater density and clustering of ties was associated with higher frequency of participation in activism. (Specifically, higher network constraint and local transitivity predicted greater activism.) This is consistent with research that suggests strong ties and tightly-knit social groups may provide a trusting and supportive environment that empowers youth to engage with sensitive social issues that may trigger vulnerability (Akiva et al., 2017; Coleman, 1988).

Network constraint was associated with civic expectancies, but the results did not yield any other relationships between features of social networks and motivational constructs (expectancies and values). The lack of association between civic values and social network features was contrary to expectations, as other studies have documented homophily on civic values (Oosterhoff et al., 2021) and research on other academic domains uncovered social networks effects on academic motivational values (Ryan, 2001). The application of expectancy-value theory to youth civic engagement is relatively new (Levy & Akiva, 2019; Liem & Chua, 2013; Wegemer, 2021) and more research is needed to understand civic motivation in social networks, especially considering that adolescence may be a critical period for the development of civic motivation (Flanagan & Levine, 2010). The present study found that GPA and being female predicted civic values; future research should examine civic engagement in relation to broader student characteristics to put student motivation in sociocultural context.

The analyses employed by the present study were sufficient for answering the current research questions and providing insight into an emerging line of research, but cross-sectional methods have substantial limitations. Future research should leverage longitudinal approaches to investigate mechanisms underlying homophilous sorting, changes in centrality, and co-evolution of network structure and civic engagement. Longitudinal ERGMs and stochastic actor-based modeling may be capable of probing deeper questions regarding theories of civic engagement, critical consciousness, and motivation. For example, the results of the present study indicated that there may be an association between grade level and civic behaviors and beliefs, but patterns were unclear; longitudinal studies may clarify the role of social processes in civic development. Understanding adolescents' civic trajectories will be particularly important as youth grapple with continued political polarization, tensions related to the COVID-19 pandemic, and persistent racism in the US.

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Table 2.1

Descriptive statistics of the student body in each wave

	2019	2020
Female	51.9%	50.3%
Race/ethnicity		
Hispanic	83.8%	85.5%
White	8.7%	7.5%
Black	1.0%	0.6%
Native American	2.5%	0.4%
Asian	6.0%	6.0%
Low income	70.0%	64.4%
GPA	2.97	3.06
English language learner	8.8%	10.6%
Grade level		
9th grade	28.4%	27.9%
10th grade	26.3%	28.9%
11th grade	22.3%	23.5%
12th grade	22.9%	19.7%
N	520	521

Note. The mean GPA is displayed, measured on a 4.0 scale.

Table 2.2

Correlations between 2018-19 study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Civic behavior, service	1																						
2. Civic behavior, activism	0.43***	1																					
3. Perceptions of inequities	0.15***	0.20***	1																				
4. Centrality, indegree	0.10*	-0.04	-0.05	1																			
5. Centrality, outdegree	0.05	-0.08	0.04	0.20***	1																		
6. Centrality, Bonacich	0.07	0.04	-0.02	0.00	-0.04	1																	
7. Closure, effective network size	0.03	-0.06	0.05	0.03	0.94***	-0.05	1																
8. Closure, network constraint	-0.07	0.06	-0.01	-0.50***	-0.57***	0.07	-0.60***	1															
9. Closure, local transitivity	0.05	0.07	-0.01	0.05	-0.18***	0.05	-0.24***	0.16***	1														
10. Closure, betweenness	0.05	-0.03	0.07	0.45***	0.46***	-0.07	0.47***	-0.46***	-0.23***	1													
11. Grade level, Freshman	-0.10*	-0.11*	-0.16***	0.05	0.08	0.01	0.12**	-0.13**	-0.10*	0.07	1												
12. Grade level, Sophomore	-0.06	0.00	0.01	-0.04	-0.06	0.03	-0.02	-0.07	-0.07	0.00	-0.38***	1											
13. Grade level, Junior	0.03	0.06	0.06	-0.01	0.01	-0.03	-0.02	0.03	0.05	-0.01	-0.34***	-0.32***	1										
14. Grade level, Senior	0.14**	0.06	0.11*	0.00	-0.03	-0.01	-0.09*	0.18***	0.14**	-0.06	-0.34***	-0.33***	-0.29***	1									
15. Female	0.05	0.10*	0.17***	0.03	0.07	-0.01	0.02	0.05	0.12**	0.08	-0.02	-0.04	-0.04	0.10*	1								
16. Race/ethnicity, Hispanic	-0.03	0.11*	-0.04	-0.05	-0.06	-0.05	-0.05	0.06	0.07	-0.05	-0.03	0.00	-0.01	0.04	0.07	1							
17. Race/ethnicity, White	-0.06	-0.06	0.02	0.04	0.07	0.03	0.09	-0.08	-0.05	0.11*	0.02	-0.01	0.07	-0.07	-0.14**	-0.70***	1						
18. Race/ethnicity, Native American	-0.02	-0.02	0.02	-0.02	-0.02	0.00	-0.06	0.11*	0.00	-0.05	-0.05	-0.05	-0.04	0.14**	0.02	-0.17***	-0.02	1					
19. Race/ethnicity, Asian	0.13**	-0.08	0.00	0.05	0.01	0.03	-0.02	-0.01	-0.03	-0.04	0.05	0.01	-0.04	-0.03	0.05	-0.58***	-0.08	-0.02	1				
20. Race/ethnicity, Black	-0.04	-0.02	0.06	-0.02	0.02	0.03	0.04	-0.05	-0.05	-0.01	-0.02	0.03	-0.01	-0.01	-0.02	-0.22***	-0.03	-0.01	-0.03	1			
21. FRPL status	-0.01	0.10*	-0.01	-0.11*	-0.15***	-0.03	-0.14**	0.17***	0.11*	-0.13**	-0.09*	0.00	0.00	0.10*	0.08	0.36***	-0.26***	0.05	-0.23***	-0.06	1		
22. English language learner	0.08	0.13**	0.01	-0.09	-0.06	0.12**	-0.03	0.02	0.04	-0.08	0.11*	0.02	-0.04	-0.10*	0.00	0.06	-0.03	-0.02	-0.04	-0.03	0.13**	1	
23. GPA	0.10*	-0.03	-0.03	0.25***	0.28***	-0.01	0.24***	-0.29***	0.00	0.12**	0.14**	-0.05	-0.03	-0.07	0.05	-0.18***	0.10*	-0.06	0.18***	-0.01	-0.18***	-0.16***	1

Note. $N = 520$

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.3

Correlations between 2019-20 study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Civic behavior, service	1																								
2. Civic behavior, activism	0.41***	1																							
3. Perceptions of inequities	0.04	0.21***	1																						
4. Civic values	0.26***	0.40***	0.35***	1																					
5. Civic expectancies	0.36***	0.28***	0.16***	0.51***	1																				
6. Centrality, indegree	0.00	0.02	0.03	0.01	0.05	1																			
7. Centrality, outdegree	0.02	-0.03	0.03	0.04	0.05	0.22***	1																		
8. Centrality, Bonacich	0.01	0.03	-0.10*	0.01	-0.01	-0.03	-0.03	1																	
9. Closure, effective network size	0.03	-0.04	0.02	0.02	0.05	0.02	0.93***	-0.03	1																
10. Closure, network constraint	0.00	-0.02	-0.04	-0.03	-0.09*	-0.50***	-0.65***	0.05	-0.65***	1															
11. Closure, local transitivity	-0.03	0.02	0.02	-0.04	-0.01	0.01	-0.19***	0.01	-0.22***	0.11*	1														
12. Closure, betweenness	0.03	0.00	0.01	0.00	0.06	0.53***	0.50***	-0.02	0.45***	-0.48***	-0.23***	1													
13. Grade level, Freshman	-0.16***	-0.10*	-0.07	-0.05	-0.08	0.03	0.09*	-0.01	0.09	-0.08	-0.04	0.02	1												
14. Grade level, Sophomore	-0.01	0.00	0.02	0.08	-0.02	0.02	0.02	-0.03	0.01	-0.01	-0.01	-0.03	-0.40***	1											
15. Grade level, Junior	0.09*	0.08	0.02	-0.02	0.04	-0.02	-0.03	0.02	0.00	-0.04	0.01	0.06	-0.35***	-0.35***	1										
16. Grade level, Senior	0.11*	0.02	0.04	-0.02	0.08	-0.03	-0.09*	0.01	-0.11*	0.14**	0.05	-0.06	-0.31***	-0.31***	-0.27***	1									
17. Female	0.12**	0.10*	0.18***	0.31***	0.07	-0.02	0.09	0.01	0.04	0.07	0.05	0.00	0.00	0.01	-0.01	0.00	1								
18. Race/ethnicity, Hispanic	-0.08	0.03	-0.03	0.02	-0.03	-0.05	-0.06	-0.04	-0.06	0.05	0.03	-0.12**	-0.01	0.03	-0.01	-0.01	0.12**	1							
19. Race/ethnicity, White	0.02	0.01	-0.01	-0.02	0.00	0.04	0.06	0.07	0.07	-0.06	-0.02	0.10*	-0.04	-0.04	0.03	0.06	-0.19***	-0.69***	1						
20. Race/ethnicity, Native American	0.00	0.02	0.05	-0.01	0.02	-0.05	-0.02	-0.09*	-0.01	0.05	-0.04	-0.02	0.10*	-0.04	-0.03	-0.03	0.06	-0.15***	-0.02	1					
21. Race/ethnicity, Asian	0.10*	-0.05	0.06	0.01	0.04	0.06	0.05	0.00	0.04	-0.04	-0.02	0.08	0.04	0.03	-0.03	-0.05	0.03	-0.61***	-0.07	-0.02	1				
22. Race/ethnicity, Black	-0.02	-0.03	-0.07	-0.06	-0.01	-0.03	-0.07	0.02	-0.07	0.07	0.04	-0.05	-0.05	-0.05	0.08	0.03	-0.03	-0.18***	-0.02	0.00	-0.02	1			
23. FRPL status	-0.02	-0.02	-0.06	-0.03	-0.04	0.01	-0.02	-0.01	-0.02	0.00	0.00	-0.01	-0.16***	0.04	0.11*	0.01	0.09*	0.34***	-0.30***	0.05	-0.19***	0.00	1		
24. English language learner	-0.05	0.03	-0.03	-0.03	-0.14**	-0.08	-0.04	-0.01	-0.03	0.02	0.03	-0.06	0.11*	0.00	-0.03	-0.09*	0.02	0.07	-0.05	0.08	-0.06	-0.03	0.07	1	
25. GPA	0.23***	0.05	0.17***	0.14***	0.23***	0.16***	0.30***	0.01	0.27***	-0.21***	-0.07	0.21***	-0.08	0.14**	-0.10*	0.04	0.12**	-0.19***	0.04	-0.04	0.26***	-0.04	-0.09*	-0.20***	1

Note. $N = 521$

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.4

Network homophily using Moran's I

	2019		2020	
	Moran's I	*p*	Moran's I	*p*
Civic outcomes				
Civic behavior, service	0.14	< .001	0.27	< .001
Civic behavior, activism	0.05	.071	0.04	.223
Perceptions of inequities	0.15	< .001	0.12	< .001
Civic values			0.09	.003
Civic expectancy			0.07	.026
Background variables				
Grade level	0.90	< .001	0.86	< .001
Gender	0.48	< .001	0.51	< .001
Race/ethnicity	0.24	< .001	0.34	< .001
FRPL status	0.20	< .001	0.16	< .001
English language learner	0.08	.006	0.07	.022
GPA	0.32	< .001	0.03	< .001

Note. Values range from -1 to +1, with -1 representing perfect dispersion and +1 representing perfect homophily. Values below -1/(N-1) indicate dispersion and values above -1/(N-1) indicate homophily. In both waves, -1/(N-1) = -0.002.

Table 2.5

Exponential Random Graph Models of friendship ties among students in the 2018-2019 school year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Civic measures							
Service behavior (nodecov)	0.08***	0.06					0.09***
	(0.02)	(0.07)					(0.02)
Service behavior (absdiff)	-0.12***	-0.08					-0.09***
	(0.03)	(0.09)					(0.02)
Activist behavior (nodecov)			0.02***	0.01***			-0.03
			(0.03)	(0.03)			(0.03)
Activist behavior (absdiff)			-0.07*	-0.07			-0.05
			(0.03)	(0.04)			(0.04)
Perceptions of inequities (nodecov)					0.00	0.00	0.00
					(0.01)	(0.01)	(0.01)
Perceptions of inequities (absdiff)					-0.05**	-0.04*	-0.03
					(0.02)	(0.02)	(0.02)
Network effects							
Edges	-5.08***	-6.24***	-4.92***	-6.07***	-4.82***	-6.07***	-6.20***
	(0.10)	(0.24)	(0.11)	(0.14)	(0.12)	(0.15)	(0.16)
Mutuality	3.32***	2.82***	3.31***	2.84***	3.31***	2.84***	2.83***
	(0.12)	-0.20	(0.13)	(0.12)	(0.12)	(0.12)	(0.12)
Indegree (3)	0.12	0.16	0.11	0.15	0.11	0.16	0.16
	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Outdegree (0)	1.82***	1.83***	1.82***	1.84***	1.83***	1.85***	1.83***
	-0.20	(0.22)	(0.21)	(0.21)	(0.21)	(0.21)	(0.20)
Outdegree (5)	2.79***	2.82***	2.79***	2.82***	2.80***	2.81***	2.82***
	(0.15)	(0.17)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
GWESP (α = .7)	1.79***	1.38***	1.78***	1.38***	1.79***	1.39***	1.39***
	(0.05)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
GWESP decay	0.57***	0.60***	0.58***	0.59***	0.57***	0.59***	0.59***
	(0.03)	(0.08)	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)
Two paths	-0.20***	-0.21***	-0.20***	-0.22***	-0.20***	-0.22***	-0.22***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Isolates	0.63*	0.55	0.61	0.56	0.63*	0.55	0.54
	(0.32)	(0.35)	(0.32)	(0.31)	(0.32)	(0.31)	(0.31)
Background homophily terms							
Grade level (nodematch)		1.94***		1.94***		1.93***	1.93***
		(0.10)		(0.08)		(0.08)	(0.08)
Female (nodematch)		0.48***		0.50***		0.49***	0.49***
		(0.10)		(0.04)		(0.04)	(0.04)
Race/ethnicity (nodematch)		0.13		0.12**		0.11*	0.14**
		(0.12)		(0.04)		(0.05)	(0.04)
FRPL status (nodematch)		0.13		0.14**		0.15**	0.15***
		(0.08)		(0.04)		(0.04)	(0.04)
English language learner (nodematch)		0.19		0.18**		0.23***	0.19**
		(0.16)		(0.07)		(0.07)	(0.06)
GPA (absdiff)		-0.23***		-0.23***		-0.23***	-0.23***
		(0.05)		(0.03)		(0.02)	(0.03)
N	520	520	520	520	520	520	520
AIC	14,634	12,755	14,642	12,750	14,662	12,772	12,666
BIC	14,749	12,934	14,758	12,928	14,778	12,950	12,887

Note. Coefficients are the change in log odds of a tie that results from a one unit change in the particular predictor. Coefficients can be changed into odds ratios by exponentiating the coefficient (which is exp(coeff)) or can be changed into probabilities by using inverse logit (which is exp(coeff)/(1 + exp(coeff))). Standard errors are displayed in parentheses.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.6

Exponential Random Graph Models of friendship ties among students in the 2019-2020 school year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Civic measures											
Service behavior (nodecov)	0.05***	0.06***									0.05**
	(0.02)	(0.02)									(0.02)
Service behavior (absdiff)	-0.15***	-0.15***									-0.13***
	(0.02)	(0.03)									(0.02)
Activist behavior (nodecov)			0.04	0.03							-0.01
			(0.03)	(0.03)							(0.03)
Activist behavior (absdiff)			-0.07	-0.06							-0.02
			(0.05)	(0.04)							(0.04)
Perceptions of inequities (nodecov)					0.01	0.01					0.01
					(0.01)	(0.01)					(0.01)
Perceptions of inequities (absdiff)					-0.04	-0.05*					-0.04*
					(0.02)	(0.02)					(0.02)
Civic values (nodecov)							0.00	0.00			-0.03
							(0.01)	(0.01)			(0.02)
Civic values (absdiff)							-0.03	-0.02			0.01
							(0.02)	(0.03)			(0.02)
Civic expectancies (nodecov)									0.02	0.03	0.04*
									(0.01)	(0.02)	(0.02)
Civic expectancies (absdiff)									-0.02	-0.03	0.00
									(0.02)	(0.03)	(0.02)
Network effects											
Edges	-4.89***	-5.95***	-4.92***	-5.90***	-4.85***	-5.85***	-4.83***	-5.81***	-4.95***	-6.02***	-6.00***
	(0.11)	(0.13)	(0.12)	(0.14)	(0.12)	(0.16)	(0.13)	(0.16)	(0.13)	(0.18)	(0.18)
Mutuality	3.63***	3.13***	3.64***	3.15***	3.64***	3.15***	3.62***	3.15***	3.64***	3.12***	3.15***
	(0.12)	(0.14)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Indegree (3)	0.05	0.07	0.03***	0.07***	0.04***	0.07***	0.03***	0.07***	0.04***	0.08***	0.08***
	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Outdegree (0)	2.15***	2.16***	2.15***	2.16***	2.16***	2.17***	2.15***	2.16***	2.15***	2.15***	2.15***
	(0.21)	(0.22)	(0.22)	(0.22)	(0.21)	(0.22)	(0.21)	(0.21)	(0.21)	(0.22)	(0.21)
Outdegree (5)	2.81***	2.83***	2.8***	2.83***	2.81***	2.82***	2.81***	2.82***	2.81***	2.82***	2.82***
	(0.15)	(0.15)	(0.16)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
GWESP (α = .7)	1.70***	1.36***	1.68***	1.36***	1.70***	1.35***	1.68***	1.36***	1.69***	1.36***	1.35***
	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)	(0.05)
GWESP decay	0.58	0.57***	0.58***	0.57***	0.57***	0.57***	0.59***	0.56***	0.58***	0.57***	0.57***
	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.03)	(0.05)	(0.03)	(0.05)	(0.04)
Two paths	-0.20***	-0.21***	-0.2***	-0.21***	-0.20***	-0.21***	-0.20***	-0.21***	-0.20***	-0.22***	-0.22***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Isolates	0.88**	0.82***	0.88***	0.82***	0.88***	0.83***	0.89***	0.82***	0.89***	0.83***	0.81***
	(0.28)	(0.30)	(0.28)	(0.28)	(0.28)	(0.29)	(0.29)	(0.29)	(0.28)	(0.30)	(0.28)
Background homophily terms											
Grade level (nodematch)		1.69***		1.70***		1.70***		1.69***		1.70***	1.69***
		(0.07)		(0.07)		(0.07)		(0.07)		(0.07)	(0.07)
Female (nodematch)		0.51***		0.51***		0.51***		0.52***		0.51***	0.50***
		(0.04)		(0.04)		(0.04)		(0.04)		(0.05)	(0.04)
Race/ethnicity (nodematch)		0.09		0.08***		0.10***		0.09***		0.09***	0.11***
		(0.07)		(0.05)		(0.05)		(0.06)		(0.06)	(0.05)
FRPL status (nodematch)		0.17***		0.15***		0.12***		0.14***		0.15***	0.15***
		(0.05)		(0.03)		(0.04)		(0.04)		(0.05)	(0.04)
English language learner (nodematch)		0.15*		0.15***		0.16***		0.16***		0.16***	0.15***
		(0.06)		(0.06)		(0.05)		(0.06)		(0.07)	(0.05)
GPA (absdiff)		-0.24***		-0.24***		-0.23***		-0.24***		-0.23***	-0.23***
		(0.03)		(0.03)		(0.03)		(0.03)		(0.04)	(0.03)
N	521	521	521	521	521	521	521	521	521	521	521
AIC	14,458	12,742	14,519	12,761	14,482	12,780	14,499	12,797	14,507	12,793	12,691
BIC	14,574	12,921	14,634	12,939	14,598	12,959	14,614	12,976	14,623	12,972	12,953

Note. Coefficients are the change in log odds of a tie that results from a one unit change in the particular predictor. Coefficients can be changed into odds ratios by exponentiating the coefficient (which is exp(coeff)) or can be changed into probabilities by using inverse logit (which is exp(coeff)/(1 + exp(coeff))). Standard errors are displayed in parentheses.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.7

OLS regression models, centrality predictors of service behavior

	Service behavior, 2019						Service behavior, 2020					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Centrality indicators												
Indegree	0.05**	0.04*					-0.01	-0.02				
	(0.02)	(0.02)					(0.02)	(0.02)				
Outdegree			0.02	0.02					0.02	0.00		
			(0.02)	(0.02)					(0.02)	(0.02)		
Bonacich					0.07	0.06					0.01	0.01
					(0.04)	(0.04)					(0.04)	(0.04)
Grade level (senior is reference)												
Junior		-0.20		-0.20		-0.20		0.15		0.15		0.15
		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)
Sophomore		-0.38***		-0.38***		-0.39***		-0.26**		-0.26**		-0.26**
		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)
Freshman		-0.51***		-0.51***		-0.51***		-0.44***		-0.45***		-0.45***
		(0.12)		(0.12)		(0.12)		(0.12)		(0.13)		(0.12)
Female		0.03		0.02		0.03		0.16*		0.16*		0.16*
		(0.09)		(0.09)		(0.09)		(0.08)		(0.08)		(0.08)
Race/ethnicity (Hispanic is reference)												
White		-0.19		-0.19		-0.20		-0.03		-0.03		-0.03
		(0.16)		(0.16)		(0.16)		(0.17)		(0.17)		(0.17)
Native American		-0.38		-0.39		-0.39		0.58		0.61		0.62
		(0.56)		(0.56)		(0.56)		(0.67)		(0.67)		(0.67)
Asian		0.47**		0.47**		0.46**		0.09		0.08		0.08
		(0.19)		(0.19)		(0.19)		(0.18)		(0.18)		(0.18)
Black		-0.32		-0.35		-0.36		-0.68		-0.67		-0.67
		(0.43)		(0.44)		(0.44)		(0.54)		(0.54)		(0.54)
FRPL status		-0.03		-0.03		-0.04		-0.06		-0.06		-0.06
		(0.10)		(0.10)		(0.10)		(0.09)		(0.09)		(0.09)
English language learner		0.51***		0.50***		0.47***		0.06		0.07		0.07
		(0.17)		(0.17)		(0.17)		(0.14)		(0.14)		(0.14)
GPA		0.11**		0.12**		0.13***		0.23***		0.22***		0.22***
		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)
Constant	1.64***	1.61***	1.71***	1.65***	1.79***	1.69***	1.91***	1.35***	1.81***	1.32***	1.89***	1.32***
	(0.08)	(0.19)	(0.08)	(0.19)	(0.04)	(0.19)	(0.07)	(0.19)	(0.08)	(0.19)	(0.04)	(0.19)
N	520	520	520	520	520	520	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.
*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.8

OLS regression models, centrality predictors of activist behavior

	Activist behavior, 2019						Activist behavior, 2020					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Centrality indicators												
Indegree	-0.01	-0.01					0.01	0.01				
	(0.02)	(0.02)					(0.01)	(0.01)				
Outdegree			-0.03*	-0.03*					-0.02	-0.03		
			(0.02)	(0.02)					(0.02)	(0.02)		
Bonacich					0.04	0.03					0.02	0.02
					(0.04)	(0.04)					(0.03)	(0.03)
Grade level (senior is reference)												
Junior		0.00		0.01		0.01		0.03		0.04		0.03
		(0.11)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)
Sophomore		-0.11		-0.11		-0.11		-0.13		-0.12		-0.13
		(0.11)		(0.11)		(0.11)		(0.09)		(0.09)		(0.09)
Freshman		-0.27**		-0.26**		-0.27**		-0.23**		-0.20**		-0.22**
		(0.11)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)
Female		0.16**		0.17***		0.16**		0.17***		0.18***		0.17***
		(0.08)		(0.08)		(0.08)		(0.07)		(0.07)		(0.07)
Race/ethnicity (Hispanic is reference)												
White		-0.12		-0.12		-0.12		-0.07		-0.05		-0.07
		(0.14)		(0.14)		(0.14)		(0.13)		(0.13)		(0.13)
Native American		-0.38		-0.39		-0.38		0.74		0.7		0.75
		(0.49)		(0.49)		(0.49)		(0.52)		(0.52)		(0.53)
Asian		-0.27*		-0.28*		-0.27*		-0.20		-0.20		-0.20
		(0.16)		(0.16)		(0.16)		(0.14)		(0.14)		(0.14)
Black		-0.18		-0.16		-0.18		-0.35		-0.39		-0.36
		(0.38)		(0.38)		(0.38)		(0.43)		(0.43)		(0.43)
FRPL status		0.07		0.06		0.07		-0.08		-0.07		-0.08
		(0.09)		(0.09)		(0.09)		(0.07)		(0.07)		(0.07)
English language learner		0.45***		0.45***		0.44***		0.09		0.09		0.09
		(0.15)		(0.15)		(0.15)		(0.11)		(0.11)		(0.11)
GPA		0.03		0.04		0.02		0.06		0.08**		0.06
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Constant	1.52***	1.39***	1.58***	1.43***	1.48***	1.38***	1.44***	1.32***	1.53***	1.35***	1.47***	1.34***
	(0.07)	(0.17)	(0.07)	(0.17)	(0.04)	(0.16)	(0.06)	(0.15)	(0.06)	(0.15)	(0.03)	(0.15)
N	520	520	520	520	520	520	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.9

OLS regression models, centrality predictors of perceptions of inequities

	Perceptions of inequities, 2019						Perceptions of inequities, 2020					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Centrality indicators												
Indegree	-0.03	-0.03					0.03	0.02				
	(0.03)	(0.03)					(0.03)	(0.03)				
Outdegree			0.03	0.03					0.04	0.00		
			(0.03)	(0.03)					(0.03)	(0.03)		
Bonacich					-0.02	-0.03					-0.13**	-0.13**
					(0.06)	(0.06)					(0.06)	(0.06)
Grade level (senior is reference)												
Junior		-0.09		-0.09		-0.08		0.05		0.05		0.05
		(0.18)		(0.18)		(0.18)		(0.19)		(0.19)		(0.18)
Sophomore		-0.23		-0.22		-0.22		0.02		0.02		0.02
		(0.17)		(0.17)		(0.17)		(0.18)		(0.18)		(0.18)
Freshman		-0.61***		-0.61***		-0.61***		-0.10		-0.09		-0.09
		(0.17)		(0.17)		(0.17)		(0.18)		(0.18)		(0.18)
Female		0.49***		0.48***		0.48***		0.51***		0.50***		0.51***
		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)
Race/ethnicity (Hispanic is reference)												
White		0.24		0.24		0.25		-0.03		-0.02		0.01
		(0.22)		(0.22)		(0.22)		(0.25)		(0.25)		(0.25)
Native American		0.01		0.03		0.03		1.45		1.41		1.21
		(0.78)		(0.78)		(0.78)		(0.98)		(0.98)		(0.98)
Asian		0.02		0.04		0.02		0.12		0.13		0.13
		(0.26)		(0.26)		(0.26)		(0.27)		(0.27)		(0.27)
Black		0.92		0.93		0.95		-0.94		-0.96		-0.93
		(0.60)		(0.60)		(0.60)		(0.80)		(0.80)		(0.80)
FRPL status		-0.10		-0.08		-0.10		-0.23*		-0.22		-0.22
		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)
English language learner		0.20		0.22		0.23		0.04		0.03		0.03
		(0.24)		(0.23)		(0.24)		(0.20)		(0.20)		(0.20)
GPA		-0.01		-0.04		-0.03		0.19***		0.20***		0.20***
		(0.07)		(0.07)		(0.06)		(0.07)		(0.07)		(0.07)
Constant	3.57***	3.62***	3.37***	3.50***	3.46***	3.55***	3.52***	2.86***	3.50***	2.90***	3.62***	2.89***
	(0.11)	(0.27)	(0.11)	(0.27)	(0.06)	(0.26)	(0.11)	(0.29)	(0.12)	(0.28)	(0.06)	(0.28)
N	520	520	520	520	520	520	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.10

OLS regression models, centrality predictors of civic values

	Perceptions of civic values, 2020					
	(1)	(2)	(3)	(4)	(5)	(6)
Centrality indicators						
Indegree	0.00	0.00				
	(0.02)	(0.02)				
Outdegree			0.00	-0.04		
			(0.02)	(0.02)		
Bonacich					0.02	0.02
					(0.05)	(0.05)
Grade level (senior is reference)						
Junior		0.00		0.01		0.00
		(0.14)		(0.14)		(0.14)
Sophomore		0.12		0.13		0.12
		(0.14)		(0.14)		(0.14)
Freshman		-0.07		-0.04		-0.07
		(0.14)		(0.14)		(0.14)
Female		0.61***		0.62***		0.61***
		(0.10)		(0.10)		(0.10)
Race/ethnicity (Hispanic is reference)						
White		-0.06		-0.04		-0.07
		(0.19)		(0.19)		(0.19)
Native American		0.29		0.25		0.31
		(0.75)		(0.75)		(0.76)
Asian		-0.13		-0.13		-0.13
		(0.21)		(0.21)		(0.21)
Black		-0.49		-0.54		-0.49
		(0.61)		(0.61)		(0.61)
FRPL status		-0.16		-0.15		-0.16
		(0.11)		(0.11)		(0.11)
English language learner		-0.01		-0.01		-0.01
		(0.15)		(0.15)		(0.15)
GPA		0.13**		0.16***		0.13**
		(0.06)		(0.06)		(0.06)
Constant		2.40***		2.41***		2.40***
		(0.22)		(0.22)		(0.22)
N	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. Civic values were not measured in 2019.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.11

OLS regression models, centrality predictors of civic expectancies

	Civic expectancies, 2020					
	(1)	(2)	(3)	(4)	(5)	(6)
Centrality indicators						
Indegree	0.02	0.00				
	(0.02)	(0.02)				
Outdegree			0.04*	0.01		
			(0.02)	(0.02)		
Bonacich					-0.01	-0.01
					(0.04)	(0.04)
Grade level (senior is reference)						
Junior		-0.01		-0.02		-0.01
		(0.13)		(0.13)		(0.13)
Sophomore		-0.18		-0.18		-0.18
		(0.13)		(0.13)		(0.13)
Freshman		-0.17		-0.18		-0.17
		(0.13)		(0.13)		(0.13)
Female		0.07		0.07		0.07
		(0.09)		(0.09)		(0.09)
Race/ethnicity (Hispanic is reference)						
White		-0.13		-0.14		-0.13
		(0.18)		(0.18)		(0.18)
Native American		0.91		0.91		0.88
		(0.70)		(0.70)		(0.70)
Asian		-0.16		-0.16		-0.16
		(0.19)		(0.19)		(0.19)
Black		-0.75		-0.75		-0.75
		(0.57)		(0.57)		(0.57)
FRPL status		-0.08		-0.08		-0.08
		(0.10)		(0.10)		(0.10)
English language learner		-0.23		-0.23		-0.23
		(0.14)		(0.14)		(0.14)
GPA		0.26***		0.25***		0.26***
		(0.05)		(0.05)		(0.05)
Constant		2.63***		2.63***		2.63***
		(0.20)		(0.20)		(0.20)
N	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. Civic expectancies were not measured in 2019.
*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.12

OLS regression models, network closure predictors of service behavior

	Service behavior, 2019								Service behavior, 2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Closure indicators																
Effective network size	0.02	0.02							0.03	0.01						
	(0.02)	(0.03)							(0.02)	(0.02)						
Network constraint			0.15	0.08							0.17	0.10				
			(0.20)	(0.20)							(0.21)	(0.21)				
Local transitivity					0.29	0.09							-0.16	-0.15		
					(0.23)	(0.23)							(0.21)	(0.21)		
Betweenness							0.00003	0.00004*							0.00004*	0.00002
							(0.00002)	(0.00002)							(0.00002)	(0.00002)
Grade level (senior is reference)																
Junior		-0.20		-0.20		-0.20		-0.21		0.14		0.15		0.14		0.14
		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)
Sophomore		-0.39***		-0.38***		-0.38***		-0.39***		-0.26**		-0.27**		-0.27**		-0.27**
		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)
Freshman		-0.52***		-0.51***		-0.50***		-0.52***		-0.45***		-0.45***		-0.45***		-0.45***
		(0.12)		(0.12)		(0.12)		(0.12)		(0.13)		(0.12)		(0.12)		(0.12)
Female		0.03		0.03		0.03		0.02		0.16*		0.16*		0.17**		0.16*
		(0.09)		(0.09)		(0.09)		(0.09)		(0.08)		(0.09)		(0.08)		(0.08)
Race/ethnicity (Hispanic is reference)																
White		-0.19		-0.19		-0.19		-0.21		-0.04		-0.04		-0.03		-0.05
		(0.16)		(0.16)		(0.16)		(0.16)		(0.17)		(0.17)		(0.17)		(0.17)
Native American		-0.37		-0.39		-0.38		-0.35		0.61		0.63		0.59		0.61
		(0.56)		(0.56)		(0.56)		(0.56)		(0.67)		(0.67)		(0.67)		(0.67)
Asian		0.48**		0.46**		0.46**		0.49***		0.09		0.09		0.09		0.08
		(0.19)		(0.19)		(0.19)		(0.19)		(0.18)		(0.18)		(0.18)		(0.18)
Black		-0.36		-0.35		-0.34		-0.36		-0.66		-0.69		-0.65		-0.64
		(0.44)		(0.44)		(0.44)		(0.43)		(0.54)		(0.55)		(0.54)		(0.54)
FRPL status		-0.03		-0.04		-0.04		-0.02		-0.06		-0.06		-0.06		-0.06
		(0.10)		(0.10)		(0.10)		(0.10)		(0.09)		(0.09)		(0.09)		(0.09)
English language learner		0.50***		0.50***		0.49***		0.51***		0.07		0.06		0.07		0.07
		(0.17)		(0.17)		(0.17)		(0.17)		(0.14)		(0.14)		(0.14)		(0.14)
GPA		0.12**		0.13***		0.12***		0.12***		0.22***		0.22***		0.22***		0.22***
		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)		(0.05)
Constant	1.75***	1.66***	1.75***	1.66***	1.74***	1.67***	1.73***	1.62***	1.80***	1.32***	1.85***	1.31***	1.92***	1.36***	1.83***	1.31***
	(0.08)	(0.19)	(0.07)	(0.20)	(0.06)	(0.19)	(0.06)	(0.19)	(0.08)	(0.19)	(0.07)	(0.19)	(0.06)	(0.20)	(0.06)	(0.19)
N	520	520	520	520	520	520	520	520	521	521	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.13

OLS regression models, network closure predictors of activist behavior

	Activist behavior, 2019								Activist behavior, 2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Closure indicators																
Effective network size	-0.03	-0.02							-0.02	-0.03						
	(0.02)	(0.02)							(0.02)	(0.02)						
Network constraint			-0.17	-0.22							0.21	0.21				
			(0.17)	(0.18)							(0.16)	(0.17)				
Local transitivity					0.33*	0.14							0.35**	0.33**		
					(0.20)	(0.20)							(0.16)	(0.16)		
Betweenness							-0.00001	0.00000							0.00000	0.00000
							(0.00002)	(0.00002)							(0.00002)	(0.00002)
Grade level (senior is reference)																
Junior		0.01		0.01		0.01		0.01		0.04		0.03		0.04		0.03
		(0.11)		(0.11)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)		(0.10)
Sophomore		-0.10		-0.10		-0.10		-0.11		-0.12		-0.14		-0.12		-0.13
		(0.11)		(0.11)		(0.11)		(0.11)		(0.09)		(0.10)		(0.09)		(0.09)
Freshman		-0.26**		-0.28***		-0.26**		-0.27**		-0.20**		-0.24**		-0.21**		-0.22**
		(0.11)		(0.11)		(0.11)		(0.11)		(0.10)		(0.10)		(0.10)		(0.10)
Female		0.16**		0.17**		0.15**		0.16**		0.17***		0.16**		0.16**		0.17***
		(0.08)		(0.08)		(0.08)		(0.08)		(0.07)		(0.07)		(0.07)		(0.07)
Race/ethnicity (Hispanic is reference)																
White		-0.12		-0.11		-0.12		-0.12		-0.05		-0.07		-0.06		-0.06
		(0.14)		(0.14)		(0.14)		(0.14)		(0.13)		(0.13)		(0.13)		(0.13)
Native American		-0.4		-0.39		-0.37		-0.38		0.71		0.76		0.77		0.72
		(0.49)		(0.49)		(0.49)		(0.49)		(0.52)		(0.52)		(0.52)		(0.52)
Asian		-0.28*		-0.27*		-0.26		-0.27*		-0.20		-0.19		-0.20		-0.20
		(0.16)		(0.16)		(0.16)		(0.16)		(0.14)		(0.14)		(0.14)		(0.14)
Black		-0.16		-0.15		-0.16		-0.17		-0.39		-0.41		-0.39		-0.36
		(0.38)		(0.38)		(0.38)		(0.38)		(0.43)		(0.43)		(0.42)		(0.43)
FRPL status		0.06		0.07		0.07		0.07		-0.07		-0.07		-0.07		-0.08
		(0.09)		(0.09)		(0.09)		(0.09)		(0.07)		(0.07)		(0.07)		(0.07)
English language learner		0.46***		0.45***		0.45***		0.46***		0.09		0.08		0.08		0.09
		(0.15)		(0.15)		(0.15)		(0.15)		(0.11)		(0.11)		(0.11)		(0.11)
GPA		0.03		0.02		0.02		0.02		0.08**		0.05		0.07*		0.06
		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)		(0.04)
Constant	1.55***	1.41***	1.52***	1.44***	1.42***	1.35***	1.49***	1.38***	1.53***	1.35***	1.41***	1.32***	1.41***	1.26***	1.47***	1.34***
	(0.07)	(0.17)	(0.06)	(0.17)	(0.05)	(0.17)	(0.05)	(0.17)	(0.06)	(0.15)	(0.05)	(0.15)	(0.04)	(0.15)	(0.04)	(0.15)
N	520	520	520	520	520	520	520	520	521	521	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.14

OLS regression models, network closure predictors of perceptions of inequities

	Perceptions of inequities, 2019								Perceptions of inequities, 2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Closure indicators																
Effective network size	0.04	0.06							0.04	0.00						
	(0.03)	(0.03)							(0.03)	(0.04)						
Network constraint			-0.04	-0.29							0.27	-0.08				
			(0.28)	(0.28)							(0.31)	(0.31)				
Local transitivity					-0.08	-0.37							0.13	0.16		
					(0.32)	(0.32)							(0.31)	(0.30)		
Betweenness							0.0001*	0.0001*							0.00003	0.00001
							(0.00003)	(0.00003)							(0.00003)	(0.00003)
Grade level (senior is reference)																
Junior		-0.09		-0.08		-0.09		-0.09		0.05		0.05		0.05		0.05
		(0.18)		(0.18)		(0.18)		(0.18)		(0.19)		(0.19)		(0.19)		(0.19)
Sophomore		-0.23		-0.25		-0.25		-0.23		0.02		0.03		0.03		0.02
		(0.17)		(0.17)		(0.17)		(0.17)		(0.18)		(0.18)		(0.18)		(0.18)
Freshman		-0.63***		-0.62***		-0.63***		-0.62***		-0.09		-0.09		-0.09		-0.09
		(0.17)		(0.17)		(0.17)		(0.17)		(0.18)		(0.18)		(0.18)		(0.18)
Female		0.48***		0.50***		0.50***		0.48***		0.50***		0.51***		0.50***		0.51***
		(0.12)		(0.12)		(0.12)		(0.12)		(0.12)		(0.13)		(0.12)		(0.12)
Race/ethnicity (Hispanic is reference)																
White		0.23		0.26		0.24		0.22		-0.03		-0.02		-0.02		-0.04
		(0.22)		(0.22)		(0.22)		(0.22)		(0.25)		(0.25)		(0.25)		(0.25)
Native American		0.07		0.02		0.00		0.08		1.41		1.40		1.44		1.41
		(0.78)		(0.78)		(0.78)		(0.78)		(0.98)		(0.99)		(0.98)		(0.98)
Asian		0.06		0.02		0.01		0.06		0.13		0.13		0.13		0.12
		(0.26)		(0.26)		(0.26)		(0.26)		(0.27)		(0.27)		(0.27)		(0.27)
Black		0.91		0.97		0.91		0.92		-0.96		-0.94		-0.97		-0.94
		(0.60)		(0.60)		(0.60)		(0.60)		(0.80)		(0.80)		(0.80)		(0.80)
FRPL status		-0.07		-0.10		-0.08		-0.07		-0.22		-0.23		-0.22		-0.22
		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)		(0.14)
English language learner		0.22		0.21		0.23		0.23		0.03		0.03		0.02		0.03
		(0.23)		(0.23)		(0.24)		(0.23)		(0.20)		(0.20)		(0.20)		(0.20)
GPA		-0.05		-0.03		-0.02		-0.03		0.20***		0.20***		0.20***		0.20***
		(0.07)		(0.06)		(0.06)		(0.06)		(0.07)		(0.07)		(0.07)		(0.07)
Constant	3.35***	3.47***	3.47***	3.64***	3.48***	3.61***	3.36***	3.47***	3.53***	2.90***	3.55***	2.91***	3.60***	2.86***	3.57***	2.89***
	(0.11)	(0.26)	(0.10)	(0.27)	(0.08)	(0.26)	(0.08)	(0.26)	(0.11)	(0.28)	(0.10)	(0.28)	(0.08)	(0.29)	(0.08)	(0.28)
N	520	520	520	520	520	520	520	520	521	521	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. All variables were concurrent within each year.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.15

OLS regression models, network closure predictors of civic values

	Civic values, 2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Closure indicators								
Effective network size	-0.02	-0.04						
	(0.03)	(0.03)						
Network constraint			0.66***	0.36				
			(0.24)	(0.24)				
Local transitivity					-0.19	-0.22		
					(0.24)	(0.23)		
Betweenness							-0.00001	-0.00002
							(0.00002)	(0.00002)
Grade level (senior is reference)								
Junior		0.02		0.00		-0.01		0.01
		(0.14)		(0.14)		(0.14)		(0.14)
Sophomore		0.13		0.10		0.11		0.12
		(0.14)		(0.14)		(0.14)		(0.14)
Freshman		-0.04		-0.10		-0.08		-0.07
		(0.14)		(0.14)		(0.14)		(0.14)
Female		0.62***		0.60***		0.62***		0.61***
		(0.10)		(0.10)		(0.10)		(0.10)
Race/ethnicity (Hispanic is reference)								
White		-0.04		-0.08		-0.07		-0.04
		(0.19)		(0.19)		(0.19)		(0.19)
Native American		0.28		0.35		0.25		0.29
		(0.75)		(0.75)		(0.75)		(0.75)
Asian		-0.13		-0.12		-0.13		-0.12
		(0.21)		(0.21)		(0.21)		(0.21)
Black		-0.54		-0.58		-0.47		-0.51
		(0.61)		(0.61)		(0.61)		(0.61)
FRPL status		-0.16		-0.15		-0.16		-0.16
		(0.11)		(0.11)		(0.11)		(0.11)
English language learner		-0.01		-0.02		-0.01		-0.01
		(0.15)		(0.15)		(0.15)		(0.15)
GPA		0.16***		0.12**		0.13**		0.14**
		(0.06)		(0.06)		(0.06)		(0.06)
Constant	3.04***	2.41***	2.83***	2.37***	3.03***	2.45***	3.02***	2.41***
	(0.09)	(0.22)	(0.08)	(0.22)	(0.06)	(0.22)	(0.07)	(0.22)
N	521	521	521	521	521	521	521	521

Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. Civic values were not measured in 2019.

*$p < .05$, **$p < .01$, ***$p < .001$

Table 2.16

OLS regression models, network closure predictors of civic expectancies

	Civic expectancies, 2020							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Closure indicators								
Effective network size	0.04*	0.01						
	(0.02)	(0.03)						
Network constraint			0.59***	0.48**				
			(0.22)	(0.22)				
Local transitivity					-0.31	-0.24		
					(0.22)	(0.22)		
Betweenness							0.00004	0.00002
							(0.00002)	(0.00002)
Grade level (senior is reference)								
Junior		-0.02		-0.01		-0.02		-0.02
		(0.13)		(0.13)		(0.13)		(0.13)
Sophomore		-0.18		-0.20		-0.18		-0.18
		(0.13)		(0.13)		(0.13)		(0.13)
Freshman		-0.18		-0.21		-0.18		-0.18
		(0.13)		(0.13)		(0.13)		(0.13)
Female		0.07		0.04		0.08		0.07
		(0.09)		(0.09)		(0.09)		(0.09)
Race/ethnicity (Hispanic is reference)								
White		-0.14		-0.15		-0.14		-0.15
		(0.18)		(0.18)		(0.18)		(0.18)
Native American		0.90		0.98		0.86		0.90
		(0.70)		(0.70)		(0.70)		(0.70)
Asian		-0.16		-0.15		-0.16		-0.17
		(0.19)		(0.19)		(0.19)		(0.19)
Black		-0.74		-0.88		-0.74		-0.73
		(0.57)		(0.57)		(0.57)		(0.57)
FRPL status		-0.08		-0.06		-0.08		-0.08
		(0.10)		(0.10)		(0.10)		(0.10)
English language learner		-0.23		-0.24*		-0.23		-0.23
		(0.14)		(0.14)		(0.14)		(0.14)
GPA		0.25***		0.24***		0.26***		0.25***
		(0.05)		(0.05)		(0.05)		(0.05)
Constant	3.15***	2.63***	3.11***	2.60***	3.32***	2.69***	3.20***	2.62***
	(0.08)	(0.20)	(0.07)	(0.20)	(0.06)	(0.21)	(0.06)	(0.20)
N	521	521	521	521	521	521	521	521

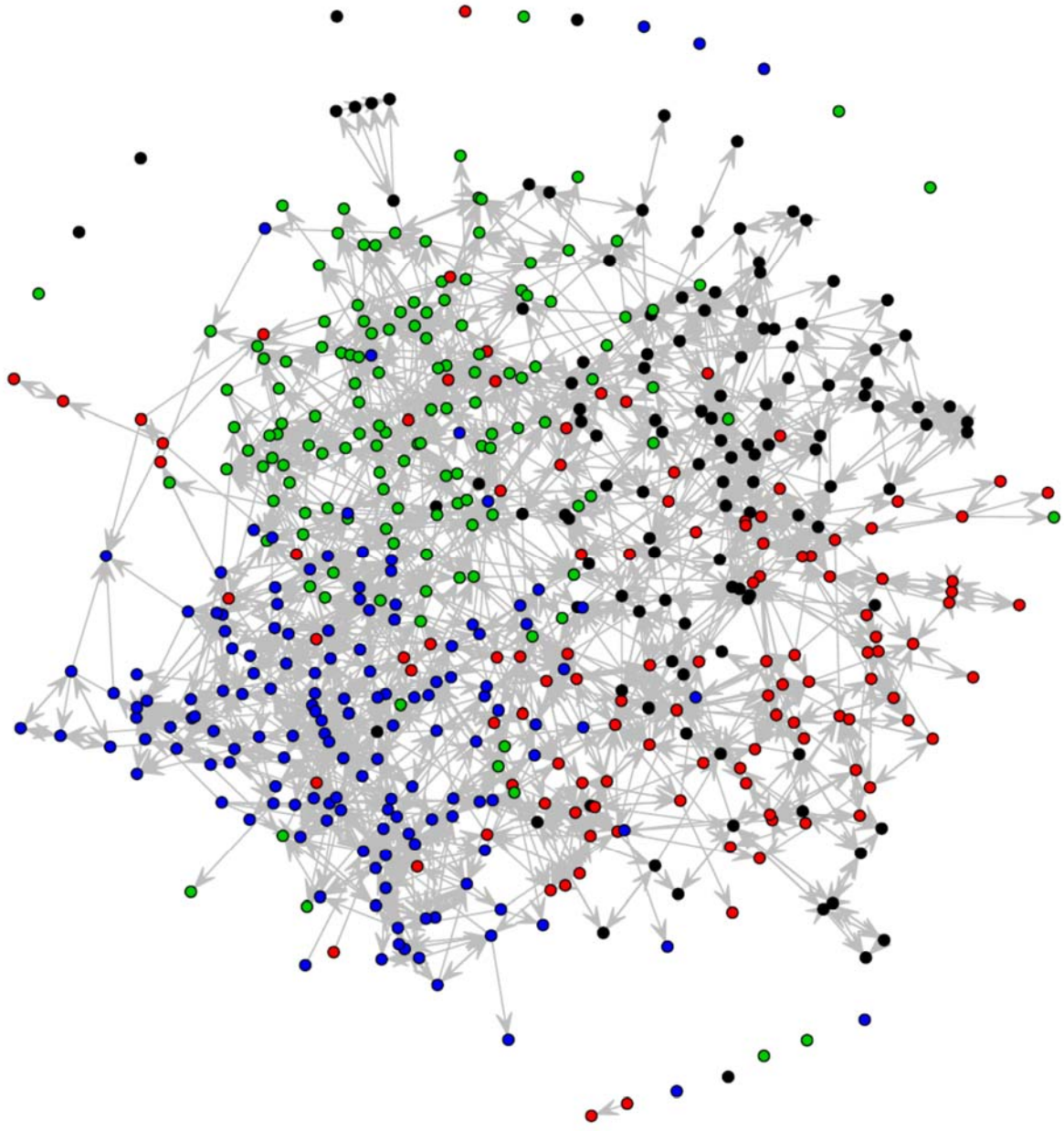
Note. Unstandardized coefficients are shown. Standard errors are displayed in parentheses. Civic values were not measured in 2019.

*$p < .05$, **$p < .01$, ***$p < .001$

Appendix C. Network graphs of friendship networks in chapter 2

Figure C1

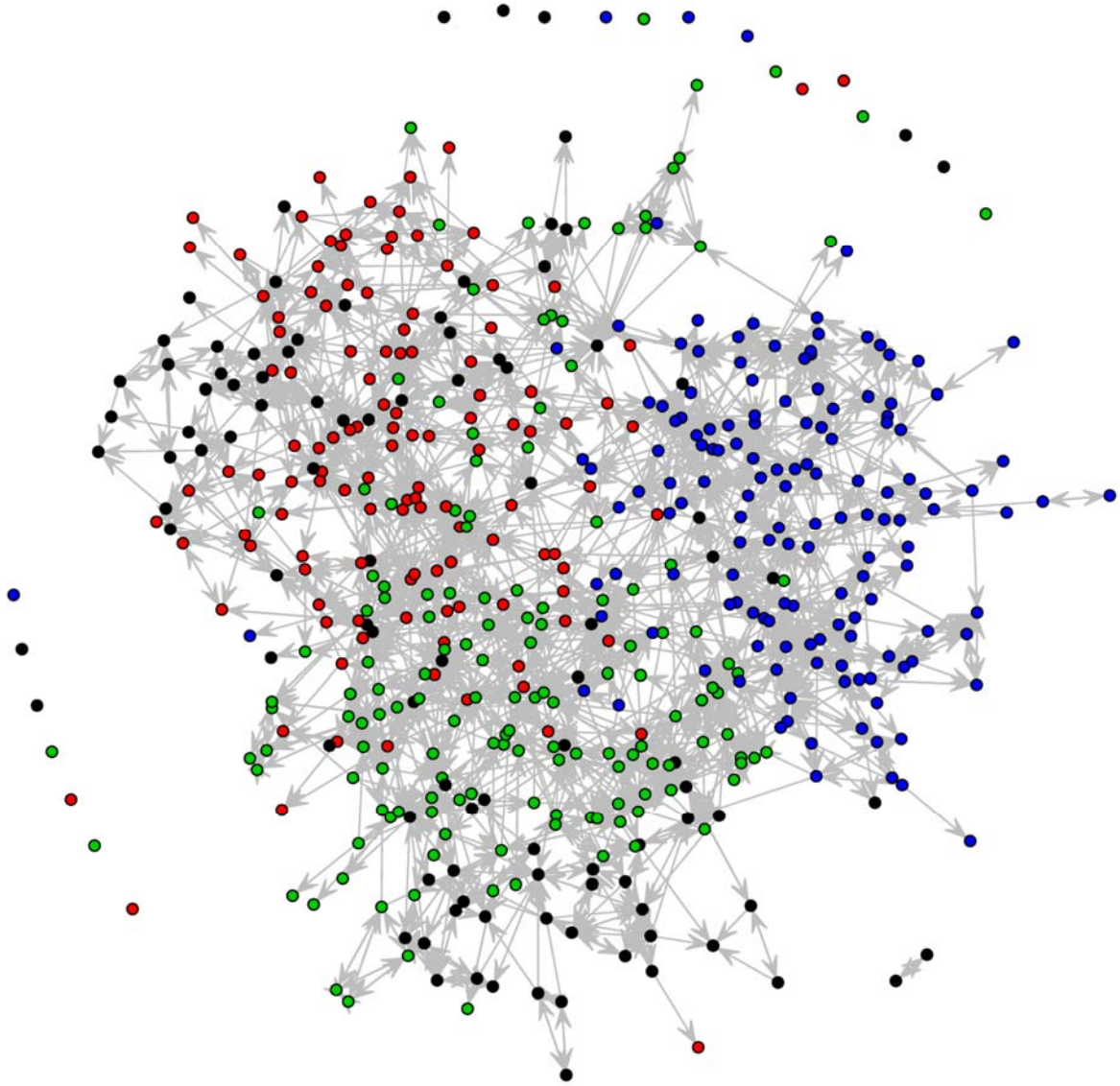
Network graph of student friendship ties, 2019



Note. Black corresponds to seniors, red corresponds to juniors, green corresponds to sophomores, blue corresponds to freshmen.

Figure C2

Network graph of student friendship ties, 2020



Note. Black corresponds to seniors, red corresponds to juniors, green corresponds to sophomores, blue corresponds to freshmen.

Appendix D. Survey inventories used in chapter 2

Civic behavior

How often do you do the following activities?
[Responses on a 1 to 5 Likert scale: "Never," "Once or twice a year," "Once every few months," "At least once a month," or "At least once a week."]

Participate in student government
Participate in a religious group (besides attending church)
Volunteer for [blinded school name] or any organization (above and beyond the volunteer hours required for school)
Help organize a food drive, fundraiser, or community event (at school or for another organization)
Sign an online or written petition about a social or political issue
Participate in a group that advocates for human rights, gay rights, women's rights, or immigration rights
Join in a protest march, political demonstration, or political meeting
Participate in other activist activities

Perceptions of inequities

In our society…
[Responses on a 1 to 6 Likert scale: "Strongly Disagree," "Mostly Disagree," "Slightly Disagree," "Slightly Agree," "Mostly Agree," or "Strongly Agree."]

Certain racial or ethnic groups have fewer chances to get ahead.
Poor people have fewer chances to get ahead.
Women have fewer chances to get ahead.
People who are gay or lesbian have fewer chances to get ahead.

Civic values (only included in May 2020 survey)

How true are each of the following statements to you?
[1 - Not at all true, 2 - A little bit true, 3 – Somewhat true, 4 - Mostly true, 5 – Completely true]

I am interested in participating in activist activities.
It is important to me to fight against social and economic inequality.
I would enjoy doing activities that support social justice in my community.
It is important to me to make sure that everyone has equal rights.

Civic expectancies (only included in May 2020 survey)

How true are each of the following statements to you?
[1 - Not at all true, 2 - A little bit true, 3 – Somewhat true, 4 - Mostly true, 5 – Completely true]

I can make a difference in my community.
Dramatic change can occur in society if people band together and demand change.
I have the ability to participate effectively in community organizations.

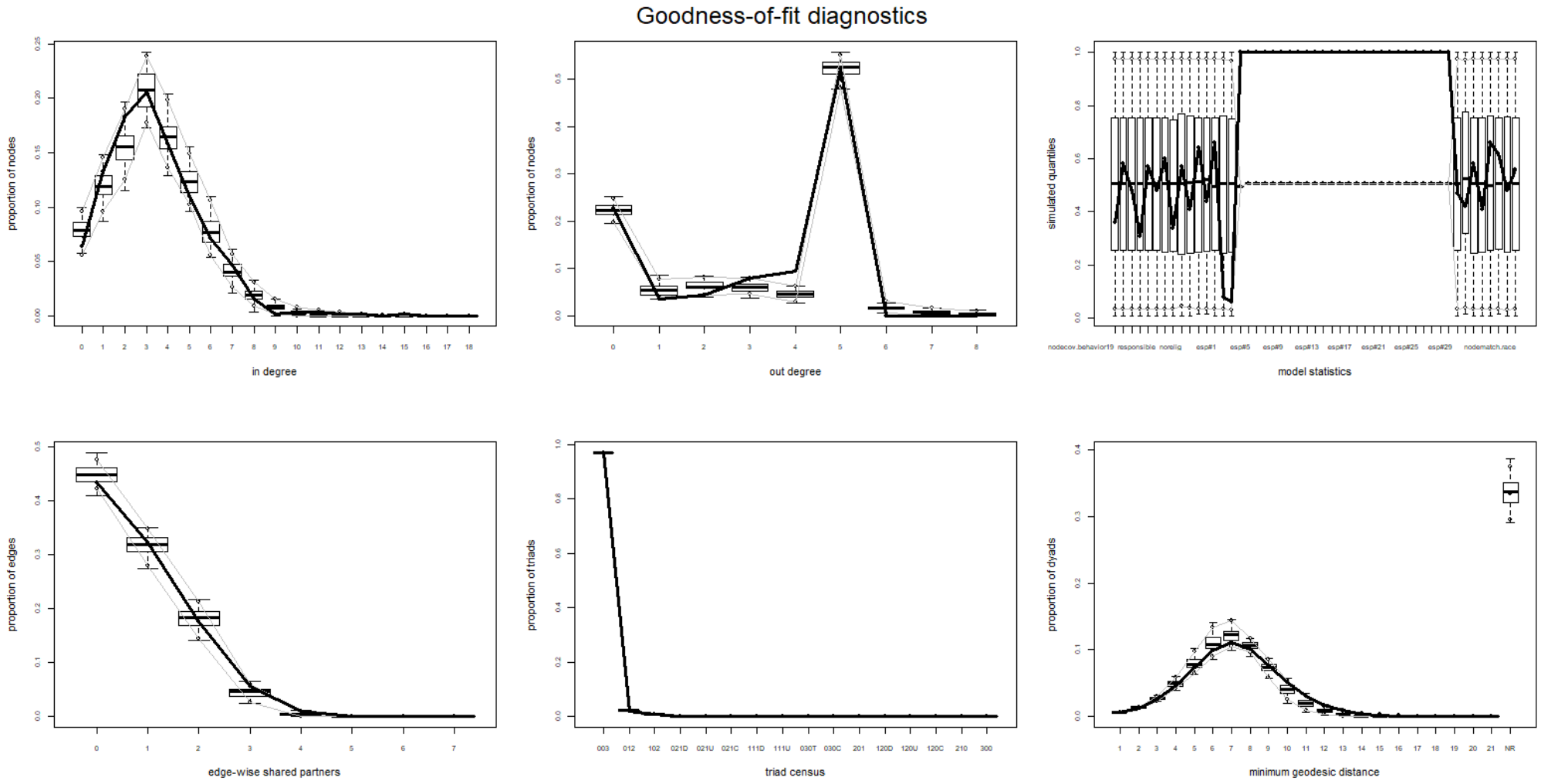
Groups of ordinary people can work together to organize a campaign about a problem in society.

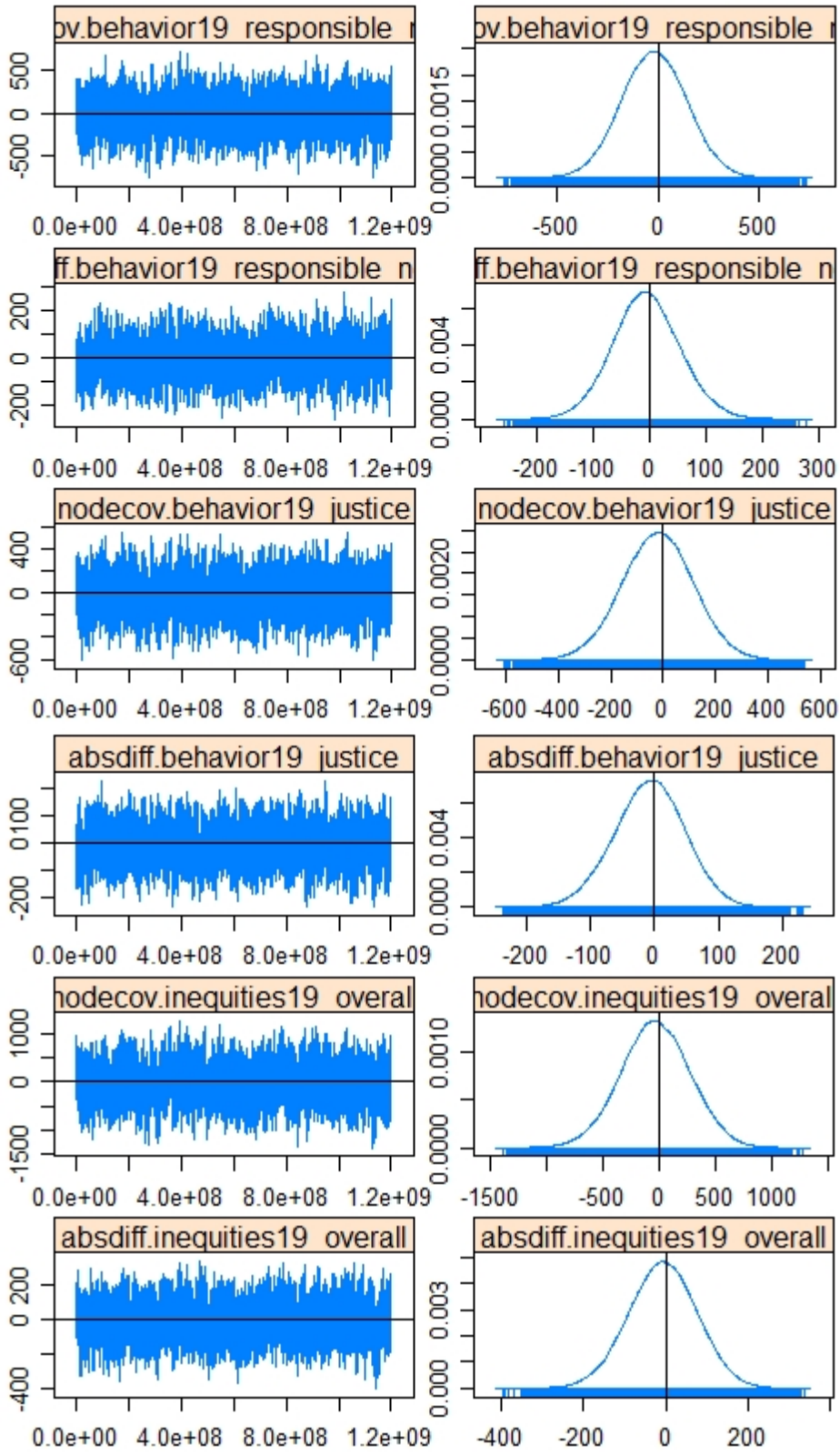
Friendship networks

Think about your closest friends from school. Write up to five names on the lines below, starting with your closest friend first. Please include their first and last name. Try to spell them as best as you can.
Remember, your responses will be kept confidential. Your survey will NOT be connected to your name and your responses will NOT be shared with anyone. Please complete this question as well as you can. [Five open-ended responses]

Appendix E. Sample goodness of fit for ERGMs in chapter 2

The following goodness of fit plots and MCMC diagnostic charts correspond to model 7 in Table 2.5. The results were similar across all ERGMs tested.

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0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.0000 0.0015
-500 0 500
ff.behavior19_responsible_n
-200 0 200
0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.000 0.004
-200 -100 0 100 200 300
nodecov.behavior19_justice
-600 0 400
0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.0000 0.0020
-600 -400 -200 0 200 400 600
absdiff.behavior19_justice
-200 0100
0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.000 0.004
-200 -100 0 100 200
nodecov.inequities19_overal
-1500 0 1000
0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.0000 0.0010
-1500 -500 0 500 1000
absdiff.inequities19_overall
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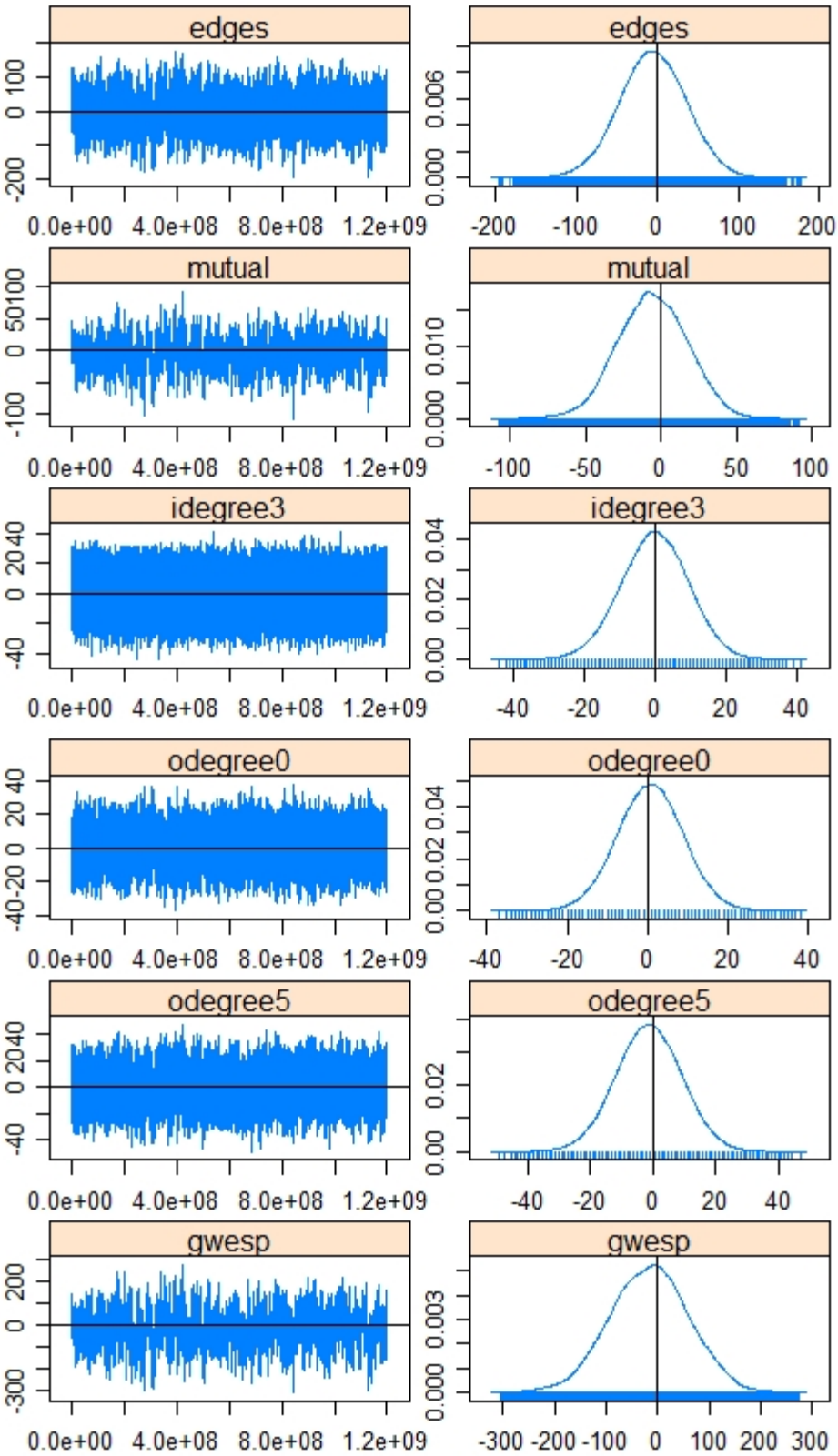
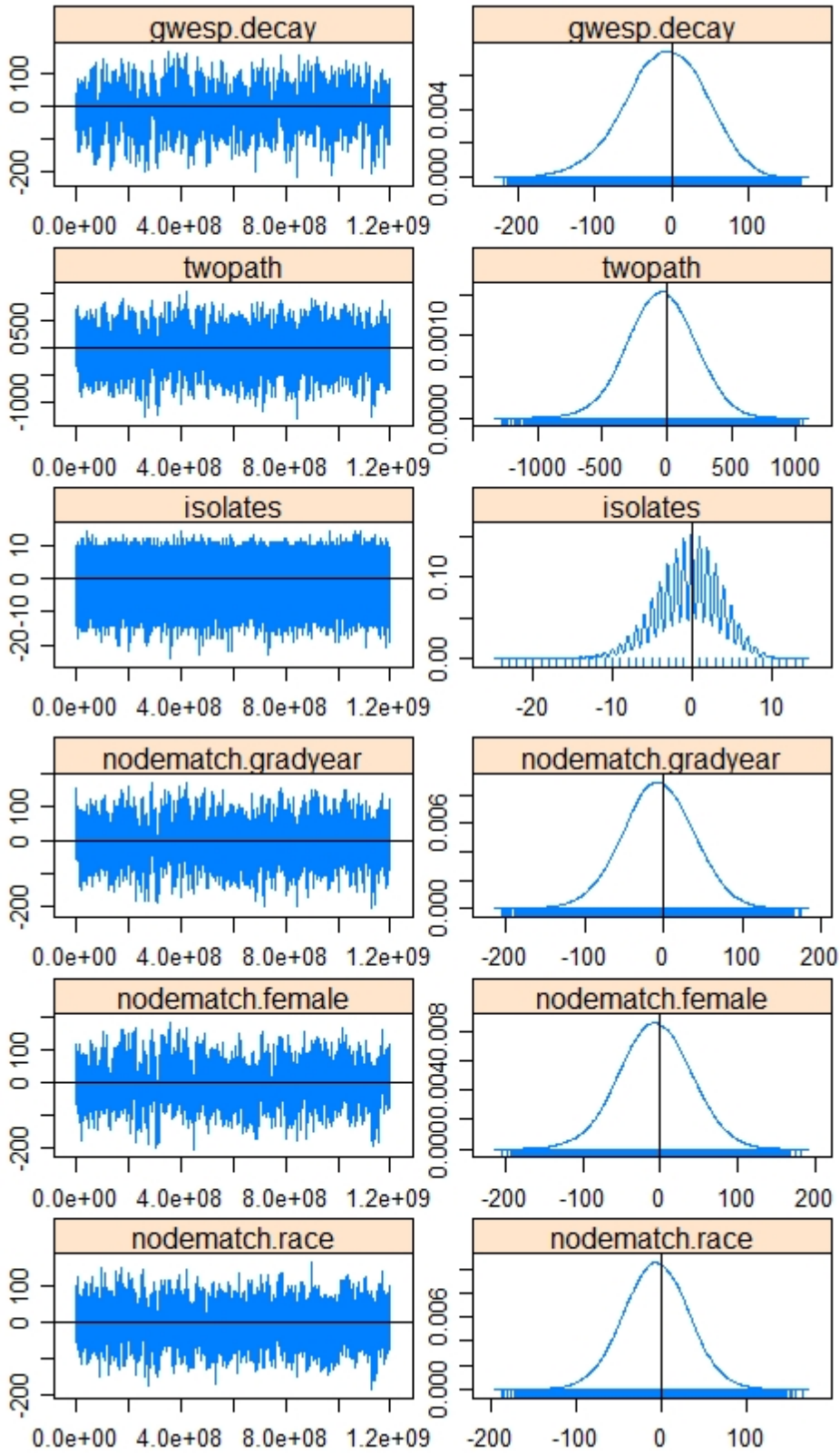
0.0e+00 4.0e+08 8.0e+08 1.2e+09
0.000 0.003
-400 -200 0 200


edges
mutual
idegree3
odegree0
odegree5
gwesp
0.0e+00
4.0e+08
8.0e+08
1.2e+09


gwesp.decay
gwesp.decay
twopath
twopath
isolates
isolates
nodematch.gradyear
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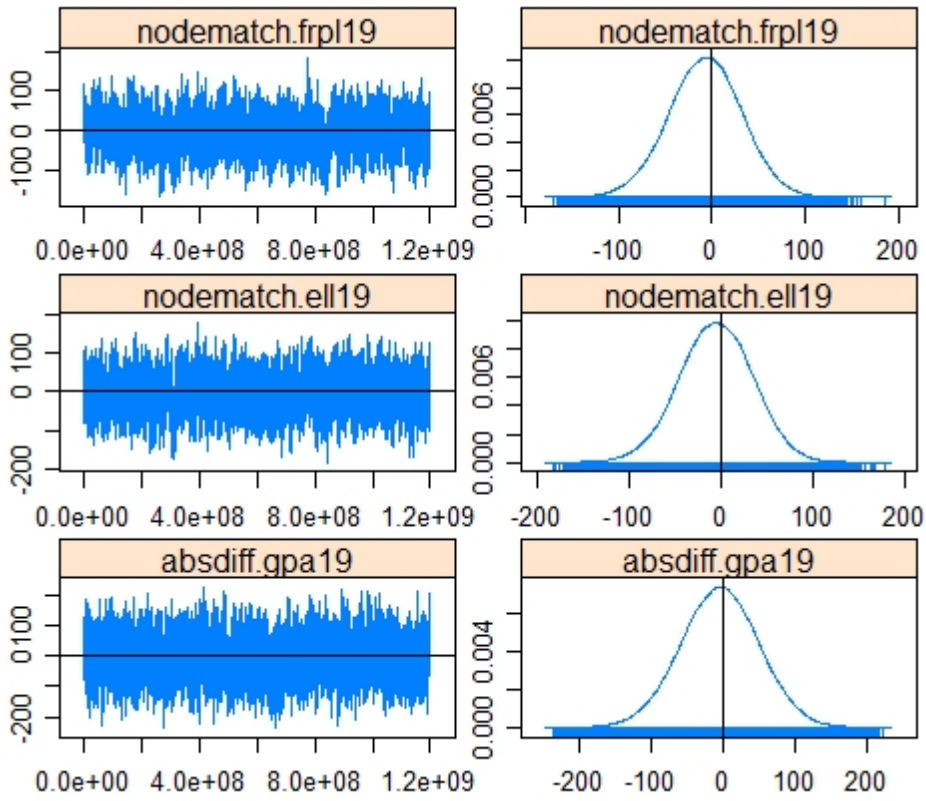
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CHAPTER 3

Service, Activism, and Friendships in High School: A Longitudinal Social Network Analysis of Peer Influence and Critical Beliefs

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Abstract

Scholars acknowledge that peers shape youth civic engagement, but the relative contributions of peer influence and critical beliefs have yet to be disaggregated. Informed by sociopolitical development and critical consciousness theories, the present study used longitudinal social network analysis to examine friendship socialization and perceptions of inequities in relation to participation in service and activist activities at a high school serving primarily low-income Latinx youth ($N = 354$). Results indicated that students exerted influence on their friends' frequency of engagement in service activities, but not activism. In contrast, perceptions of inequities predicted activism, but not service, after controlling for network effects. The findings highlight the sociopolitical implications of uneven support structures for civic activities and critical beliefs in educational contexts.

Keywords: Youth civic engagement; Sociopolitical development; Critical consciousness; Peer influence; Social network analysis; Marginalized youth

In the current political environment characterized by polarization (Kennedy et al., 2021) and contentious debates about critical curricula in schools (e.g., critical race theory, Ray & Gibbons, 2021), clarification of mechanisms that support youth civic engagement is a pressing need. Adolescence is a critical period for sociopolitical development (Flanagan & Levine, 2010; Watts et al., 2003) and civic engagement in high school predicts political participation into adulthood (McFarland & Thomas, 2006). Scholars have acknowledged the crucial role of peers in a broad range of developmental outcomes (Cotterell, 2007; Vitaro et al., 2009), including civic participation and beliefs (Diemer & Li, 2011; Terriquez et al., 2020), but social processes that drive civic engagement are not well understood. Theories of sociopolitical development (Watts et al., 2003) and critical consciousness (Freire, 1970) emphasize the dependence of civic engagement on social context, although empirical studies have typically centered individual-level predictors of civic engagement (e.g., perceptions of inequities). Relational processes that prompt engagement have only recently moved to the foreground (Dahl & Van Zalk, 2014; Oosterhoff et al., in press; Sinclair, 2012). Explaining the relative contributions of peer influence and critical beliefs to civic behavior would have important implications for policies and practices in schools.

Recent studies suggest that sociopolitical development processes may be dependent on the particular types of civic activity that youth engage in (Bañales et al., 2020; Diemer & Rapa, 2016). Further, research on youth civic engagement has tended to focus on types of participation that do not challenge the status quo (Watts & Flanagan, 2007), which may overlook critical or culturally relevant activities (Anyiwo et al., 2020; Perez et al., 2010) and result in misleading conclusions regarding the civic engagement of marginalized youth. Accordingly, the present study differentiates between service and activist activities, consistent with recent

conceptualizations of youth civic engagement (Ballard et al., 2020; Westheimer & Kahne, 2004) and aligned with sociopolitical development theory's distinction between behaviors that preserve existing power structures and critical actions that challenge root causes of social injustices (Watts et al., 2003). Separating service from activism is useful to inform policy and practice, as schools typically provide varying degrees of support for different types of civic activities (Hart & Atkins, 2002; McFarland & Starmanns, 2009; Watts & Flanagan, 2007).

High schools simultaneously serve as a context for adolescent friendships, civic engagement, and exploration of critical perspectives. Schools often provide opportunities for participation in civic activities, but limited resources and oppressive social environments can present obstacles to access, especially for marginalized youth (Terriquez et al., 2020; Watts & Flanagan, 2007). Adolescent friendship networks may provide a pathway to civic engagement, particularly for activities that are unsupported by school infrastructure or culture. Alternatively, students' own critical beliefs might be a more important driver of participation in the absence of school opportunities. The present study leverages longitudinal social network analysis to begin disentangling the extent to which peer influence and critical beliefs promote civic behavior at a local high school that primarily serves low-income Latinx youth.

Peer Civic Socialization and Critical Consciousness

Youth sociopolitical development is dependent on intertwined processes of peer socialization and friendship formation, as well as psychological antecedents of civic behavior (e.g., critical beliefs). Through friendships, adolescents can promote each other's engagement in volunteer service **(**McLellan & Youniss, 2003) and activist movements (Terriquez et al., 2020). Political discussions in adolescent friendship networks have been linked to changes in civic behavior, political interest, and perceived capacity to effect sociopolitical change (Diemer & Li,

2011; Dostie-Goulet, 2009; Wray-Lake & Shubert, 2019). Compared to the influence of family members, peer political socialization may be more likely to encourage activism than traditional types of civic engagement (McDevitt & Kiousis, 2007; Terriquez et al., 2020).

In addition to peer influence, youth civic behavior can be motivated by awareness of social injustices and an imperative for remediation (Bañales et al., 2020; Watts & Hipolito-Delgado, 2015), consistent with critical consciousness theory's assertion that critical reflection is a precursor to civic action (Freire, 1970). Recent studies suggest that perception of inequities may be an antecedent of involvement in activist activities that address the root of systemic social problems, but not service behaviors that preserve existing power structures (Bañales et al., 2020; Diemer & Rapa, 2016; Voight & Torney-Purta, 2013). However, adolescents' experiences of inequities are inherently interpersonal and require reflection on social structures, interactions, and relationships (Watts & Hipolito-Delgado, 2015). Terriquez and colleagues (2020) found that among Latinx adolescents who encountered oppressive circumstances, peer relationships bolstered critical perspectives and activist participation, consistent with earlier models of youth influence (McDevitt & Kiousis, 2007). The function of perceptions of inequities in social networks is not well understood (Diemer et al., 2016; Watts et al., 2011).

Studies of youth civic development typically employ methods that assume independence of observations (such as linear regressions) and cannot adequately disentangle peer influence from other predictors and network processes (Sinclair, 2012). For example, students' participation in civic activities may conform to the average level of their friends over time, but assessing the degree to which this occurs requires identifying the friendship ties between students (Dahl & Van Zalk, 2014). Scholars have used network approaches to quantify socialization effects for a variety of adolescent beliefs and behaviors (Brechwald & Prinstein,

2011), yet the literature remains sparse for youth civic engagement despite its potential to provide insight into mechanisms that drive changes in civic participation (Oosterhoff et al., in press). The present study uses longitudinal social network analysis to distinguish between the effects of peer socialization and perceptions of inequities on civic behaviors at a high school that provides opportunities for engagement in service, but not activism.

Opportunity Structures in School Contexts

Schools can support youth civic engagement through *opportunity structures* that facilitate access to civic activities, such as volunteer initiatives and activist afterschool clubs (Watts & Flanagan, 2007). These opportunities provide a crucial context for both political socialization (Seider et al., 2020) and friendship formation (Dijkstra et al., 2013), simultaneously shaping civic engagement and social networks. For example, Schaefer and colleagues (2021) examined school-based extracurricular activities using longitudinal social network analysis and found that friendship connections facilitated participation, and reciprocally, participation promoted the formation of new friendships. However, some youth may be excluded due to the inequitable distribution of civic opportunities. Adolescents who attend under-resourced schools may have fewer chances to participate in civic activities compared to more privileged youth (Hart & Atkins, 2002; McFarland & Starmanns, 2009; Torney-Purta et al., 2007). Alternatively, some schools may facilitate student involvement in traditional volunteer activities, but not critical activities that challenge existing institutional or political structures.

In the absence of school support, friendships may play a relatively larger role in facilitating access to civic activities. Research on social movements has robustly documented ways that friendship ties can provide opportunities to participate in civic activities (Lake & Huckfeldt, 1998; McAdam & Paulsen, 1993; Putnam, 2000; Passy, 2003). Compared to

scaffolding provided by schools, the degree to which youth social networks can effectively provide pathways to civic engagement is unclear. Relatedly, if a school does not prioritize critical perspectives in curricula, activities, or school culture, a student's own critical beliefs may be a stronger predictor of their civic participation, independent of school structures or networks.

Research on civic engagement tends to focus on dominant youth attending well-resourced schools rather than center the experiences of marginalized youth (Watts & Flanagan, 2007), and as a result, peer civic socialization among low-income youth of color is not well understood. Demographic differences in civic participation (Littenberg-Tobias & Cohen, 2016; Lopez et al., 2006), school affordances (Hart & Atkins, 2002; McFarland & Starmanns, 2009; Torney-Purta et al., 2007), and social pathways to political involvement (Gordon & Taft, 2011) may be mistakenly interpreted as disengagement of marginalized youth. Research suggests that youth of color may find critical forms of participation more socially relevant than dominant youth (Diemer et al., 2016; Suárez-Orozco et al., 2015; Watts & Flanagan, 2007). Illuminating the functions of friendship networks and critical beliefs relative to school-supported civic opportunity structures may contribute to a nuanced and asset-based conceptualization of civic participation of marginalized youth.

The Present Study

The present study examines the coevolution of civic engagement and adolescent friendships at a public charter high school in southern California that provides students with regular opportunities to participate in volunteer activities (on and off campus) and robustly supports student government, but has neither student clubs that advocate for equity nor scaffolding that encourages participation in political movements, justice-oriented organizations, or critical campaigns. The school is a useful context for investigating contrasting modes of

involvement that are differentially supported through school opportunity structures (and potentially friendship networks).

The study consisted of two components. First, the extent to which friends influenced each other to adopt (or abandon) civic behaviors was examined. Socialization effects were anticipated for both service and activism, with students generally conforming to the average level of participation of their friends. Second, the study tested whether adolescent perceptions of inequities differentially predicted service or activism behaviors, controlling for network processes and social influence. Perceptions of inequities were expected to be more strongly related to activist activities than service activities, consistent with critical consciousness theory. The novel and simultaneous evaluation of the effects of peer influence and critical beliefs was anticipated to clarify mechanisms of adolescent civic engagement in school contexts.

Method

Participants

A survey was administered to all of the students enrolled at a high school in southern California at two time points. In May 2019, 472 students completed the survey (91% of the school enrollment), and in May 2020, 435 students (84% of the school enrollment) completed the survey. The final sample consisted of all students who were enrolled in the school in both years (N = 354), of which 272 (77%) completed the survey in both years. Descriptive statistics of the demographics and education-related factors of the sample are presented in Table 3.1. The majority of the participants were Latinx (85%) and low-income (70%).

Measures

Civic behaviors and perceptions of inequities were assessed using items drawn from established inventories. All scales and subscales were validated by exploratory and confirmatory

factor analyses that showed both divergent and convergent validity. Survey items are available in Appendix F.

Civic behaviors. Seven items were adapted from the youth civic engagement inventories of Corning and Myers (2002) and Diemer et al. (2017), based on Westheimer & Kahne's (2004) typology of civic participation. Participants were asked how frequently they undertook a variety of activities on a 5-point Likert scale ranging from "Never did this" to "At least once a week." The inventory was composed of two subscales. First, service behavior was captured with four items that assessed frequency of volunteering, organizing charitable events, attending religious groups, and participating in student government. Factor analyses indicated that one item (regarding attending religious groups) did not load adequately and was removed. The remaining three items were averaged together to produce a single indicator, which demonstrated acceptable reliability ($\alpha = .77$ in spring 2019; $\alpha = .75$ in spring 2020). Second, activist behavior was captured with three items that assessed frequency of participating in direct action, campaigning for issues, and involvement in social justice groups. The subscale demonstrated satisfactory reliability ($\alpha = .81$ in spring 2019; $\alpha = .79$ in spring 2020).

Perceptions of inequities. Four items measured perceptions of inequities along dimensions of race, class, gender, and sexual orientation, based on the critical reflection subscale of Diemer et al.'s (2017) critical consciousness inventory. These items assessed whether students believed members of certain racial/ethnic groups, people in poverty, women, or individuals who identified as gay or lesbian had fewer chances to "get ahead" in our society, on a 6-point Likert scale from "Strongly Disagree" to "Strongly Agree." The items demonstrated satisfactory reliability ($\alpha = .89$ in spring 2019; $\alpha = .90$ in spring 2020).

Friendship network. Each participant was asked to provide the first and last names of their five closest friends at the high school (consistent with common approaches to identify egocentric networks; Marsden, 2011). The names of their peers were linked with their respective survey responses.

Demographic and education-related indicators. Several indicators were constructed from high school record data obtained in spring 2019 and spring 2020 to serve as potential covariates. A dichotomous indicator was used to describe whether or not each participant was female. A nominal variable of race/ethnicity was based on five categories: Hispanic, White, Black, Native American, or Asian. A dichotomous indicator representing participants' eligibility for free-and-reduced price lunch was used to capture low-income status (specifically, below 185% of the poverty line in either 2019 or 2020). School academic data was used to create a categorical variable of grade level in spring 2020. A continuous variable captured cumulative GPA on a 0 to 4 scale.

Missing data

Missingness of data ranged from 0% for demographic indicators and GPA variables to 16% for 2020 civic variables. (See Table 3.1 for the un-imputed sample sizes of each variable.) Single imputation was employed to account for missing data for all study participants. (Multiple imputation is generally preferable, but inappropriate for the present network analyses.) Separate imputation models were conducted for each of the two years. All study variables were included in the imputation models, and consistent with established practices, missing values were imputed using chained equations (see White, Royston, & Wood, 2011). This approach allowed separate conditional distributions for each imputed variable, which was suitable for the present dataset, as several variables did not conform to normal distributions.

Analytic strategy

To investigate hypotheses regarding peer influence, friend selection, and perceptions of inequities, a stochastic actor-based model was estimated (SABM; see Veenstra et al., 2013; Snijders et al., 2010). The RSiena package (version 1.2-23, released January 12, 2020) was operated in R statistical software (Ripley et al., 2021). The SABM uses longitudinal network data to simultaneously model changes that occur in network ties and individual attributes (including behaviors). Based on each student's characteristics and the characteristics of their friends, changes in civic characteristics and friendships were predicted by behavior and network functions (respectively).

First, the behavior function estimated change and stability in civic behaviors. To suit the SABM algorithm, individual-level civic variables were integerized to have values of 1, 2, or 3 (based on conceptual similarity across scale points and the distribution of each variable). All variables were mean-centered. The model yielded linear and quadratic terms describing the distribution of each civic behavior. Peer influence was captured by an effect that measured how likely students were to adopt civic characteristics closer to the average level of their friends. Perception of inequities was included as a hypothesized predictor of change in civic behaviors, along with covariates (e.g., gender, grade level). Service and activism were also modeled as potential predictors of each other.

Second, the network function described the likelihood that within a dyad, a friendship tie would persist, dissolve, or that a new friendship tie would form across time. The modeled effects tested whether students with a particular characteristic (e.g., civic behavior, gender, etc.) were more likely to send friendship nominations (ego effect), receive friendship nominations (alter effect), or whether similarities on characteristics were related to changes in friendships

(same/similarity effects). The network function also controlled for network features and endogenous processes that could influence friendship formation or dissolution and lead to biases in the effects of interest. Specifically, the model included terms for reciprocity, transitive triplets, outdegree popularity, and isolates. Respectively, this controlled for the tendencies of adolescents to reciprocate friendship nominations, form friendships with the friends of a friend, receive more nominations in the future if an individual nominates more friends, and develop friendships in the future if an individual does not nominate any friends.

The model consisted of two behavior functions (for both service and activism outcomes) as well as a network function for friendship ties. Both models used gender, race, grade level, and GPA as network covariates. Consistent with best practices (Ripley et al., 2021), the SABM algorithm estimated the models in three phases, with six sub-phases in the second and 10,000 simulations in the third. Post-hoc goodness of fit tests were conducted to validate model functionality and demonstrate the efficacy of the stochastic process in yielding a network that matched the characteristics of the second time point (see Lospinoso & Snijders, 2019 for details). Prior to testing the model, correlational analyses and descriptive network statistics were evaluated to examine relationships between study variables and network features over time. In light of the scarcity of literature describing youth civic engagement in social networks, preliminary analyses were necessary for interpreting and contextualizing results.

Results

Descriptive statistics

Descriptive statistics and correlational analyses of all study variables are presented in Table 3.1. In 2019, 61% of students reported participating in service activities at least once a over the previous year compared to 70% of students in 2020, with a moderate correlation

between the two time points ($r = .53$, $p < .001$). Similarly, in 2019, 52% of students reported participating in activist activities at least once a month compared to 46% of students in 2020, with a moderate correlation between the two time points ($r = .59$, $p < .001$). Mean levels of participation in activism were lower than service in both years (2019, $t = 4.36$, $p < .001$; 2020, $t = 6.70$, $p < .001$), although service and activism were moderately correlated in each of the waves (2019, $r = .57$, $p < .001$; 2020, $r = .42$, $p < .001$).

Descriptive statistics of the friendship network are presented in Table 3.2. The stability between the two waves of friendship networks (as measured by the Jaccard coefficient) was .29, sufficient for SABM analyses (Snijders et al., 2010) and aligned with other studies of adolescent friendship networks (Simpkins et al, 2013; Trinh et al., 2019). Roughly half of the ties were reciprocated, also consistent with other studies of adolescent friendship networks (Block, 2015). Students had an average of about 6 friendship ties (the sum of both incoming and outgoing nominations) and a small number of student "isolates" had no ties (5 in 2019, 16 in 2020). Homophily, the tendency for friendship ties to exist between individuals with similar characteristics or behaviors, was evident in the network for all of the study constructs, except students were not more likely to be friends with others who had similar frequencies of participation in service and activism in 2019, but were more likely in 2020.

Longitudinal models of civic engagement

A SABM was successfully estimated and optimized for best fit, exhibiting good overall maximum convergence t-ratio (0.10, acceptably below the 0.25 threshold). Additional diagnostic tests found satisfactory goodness of fit, presented in Appendix G. The results of the model are described in Table 3.3.

The results from the service behavior function provided evidence of civic socialization. The average similarity coefficient indicated that students tended to conform to the average level of their friends' service behavior over time ($b = 3.35$, $p = .008$). To interpret this effect, consider an example of an adolescent who does not participate in service activities (corresponding to a score of 1), but all of their friends participate at a moderate level (several times a year, corresponding to a score of 2). The odds of this adolescent increasing their service behavior to participate moderately are 5.34 times higher than remaining a non-participant (calculated as exp[3.35/2]). In contrast, being named more often as a friend (indegree) was not related to changes in frequency of service participation. The quadratic term of the behavior function was statistically significant ($b = 0.47$, $p = .015$). This indicates that students tended either not to participate in service activities at all or participate very frequently, whereas moderate participation levels were less attractive to students. Accounting for network and behavior effects, perceptions of inequities, gender, and grade level were not statistically significant predictors of participation in service activities.

The activism behavior function suggested peer influence was not present for activist activities. However, perceptions of inequities predicted increases in activism over time ($b = 0.17$, $p = .044$), after controlling for network and behavioral effects. The linear distribution terms of the behavior function was statistically significant ($b = -2.65$, $p < .001$), indicating that students tended to be drawn towards lower levels of activism. Popularity (indegree) was not related to changes in activist participation. Gender and grade level were not statistically significant predictors of activism.

The network function indicated that service activities contributed to friendship formation (through popularity and similarity effects), but activism did not. Controlling for demographic

factors and academic performance, students who had higher levels of participation in service activities were more attractive as friends to their peers (alter effect, $b = 0.30$, $p = .006$), but they were not more likely to nominate friends (ego effect, $b = 0.16$, $p = .381$). Students were more likely to form friendships with others who had similar levels of participation in service activities (similarity effect, $b = 0.73$, $p = .024$). The alter, ego, and similarity results are best interpreted in tandem by calculating odds ratios to represent the likelihood of friend selection based on the service behavior. Specifically, for a student who did not participate in service activities, the odds of selecting a friend who also did not participate were slightly lower than the odds of selecting a friend who participated at least once a month (-0.03 compared to 0.09). In contrast, for a student who participated at least once a month in service activities, the odds of selecting a friend who participated similarly were 1.09 times higher than the odds of selecting a friend who did not participate.

As anticipated, the controls of the network function were also significant. Across the school network, students demonstrated a strong tendency to reciprocate friendship nominations (reciprocity, $b = 2.59$, $p < .001$), to prefer friends of their friends (transitivity, $b = 1.79$, $p < .001$), and to select friends if they did not nominate any in the previous year (outIso, $b = 6.08$, $p < .001$). Students who nominated a high number of friends were less attractive as friends to others (outPopSqrt, $b = -0.25$, $p < .001$). Friendships tended to form and endure between peers who were similar in grade level ($b = 0.89$, $p < .001$), gender ($b = 0.35$, $p < .001$), race/ethnicity ($b = 0.21$, $p = .009$), and GPA ($b = 0.61$, $p = .002$). Females were less likely to be nominated as friends than males (alter effect, $b = -0.19$, $p = .001$) and students with higher GPAs selected more friends compared to students with lower GPAs (ego effect, $b = 0.17$, $p = .010$).

Discussion

This study leverages a cutting-edge methodological strategy for examining social mechanisms underlying civic development. At a high school serving primarily low-income Latinx adolescents, processes of socialization and friendship selection were present for service activities, but not activism, whereas perceptions of inequities positively predicted later activism, but not service. The disparities between service and activism highlight the importance of opportunity structures provided by the school and clarify the role of critical beliefs in sociopolitical development. The results contribute to emerging research that demonstrates the potential for social network analyses to advance understanding of youth civic engagement and inform tailored interventions in policy and practice.

The model provided evidence of peer influence on service behaviors, specifically, students tended to adopt or abandon service behaviors to conform to the average level of participation of their friends over time. Contrary to expectations, friendship network effects were not present for activist activities. This contrasts with Dahl and Van Zalk's (2014) study, in which the results of similar longitudinal network modeling uncovered socialization effects for activism (including participation in political protests and civil disobedience), although their sample of Swedish adolescents differs substantially from students in the current study and more research is needed to understand potential variance in civic socialization across cultural contexts. The current study's specification of peer influence on service behavior advances literature on youth civic socialization that has traditionally relied on self-report of peer discussions to approximate socialization processes (Diemer & Li, 2011; Dostie-Goulet, 2009; McDevitt & Kiousis, 2007; Wray-Lake & Shubert, 2019).

In addition to socialization, friendship formation was related to involvement in service activities, as students displayed a preference for peers who had equal or higher levels of

participation. The longitudinal analyses of the current study portray a nuanced picture of social desirability associated with participation in service activities, which extends the findings of a recent cross-sectional study that found no association between volunteering and a centrality in a school social network (Oosterhoff et al., in press). No friendship selection effects were detected for activist behaviors. The discrepancies in socialization and friendship formation processes between service and activism may be attributable to the school's frequent coordination of volunteer opportunities and active support of student government. Co-participation in school-supported civic activities involves semi-structured peer interactions in a shared and accessible space capable of providing a foundation for socialization and changes in friendships, consistent with literature on extracurricular activities (Schaefer et al., 2021).

As expected, perceptions of inequities predicted increases in activism but not service, despite a moderate correlation between activism and service. The findings extend recent critical consciousness research that found perceptions of inequities predicted protest behavior for Latinx youth, but not voting or conventional political behavior (Diemer & Rapa, 2016). The current study provides a novel affirmation of critical consciousness theory's proposed link between critical reflection and action (Freire, 1970) by estimating a model that accounted for network effects and socialization processes. No social network effects were observed for perceptions of inequities, paralleling the results for activism behavior, and the magnitude of the predictive effect of perceptions of inequities on activism was small compared to the socialization effect for service. A potential explanation is that the prominent service opportunity structures contributed to a school culture that did not promote critical perspectives as salient feature in social interactions, consistent with recent research that links school environments and infrastructure to student social interactions and critical consciousness (Seider et al., 2021).

Taken together, the results have two potential implications for school policies and practices. First, the school's scaffolding for service did not appear to promote students' involvement in other civic activities more broadly, as service and activism were not predictive of each other. Further, peer socialization and friendship formation may not compensate for the absence of activist opportunity structures at the school, as the results did not provide evidence of social pathways for adopting activist behaviors. Second, the observed socialization and friendship formation processes were aligned with the school's civic infrastructure, which suggests that school support for civic activities could shape the social and political environment of the student body. For example, students who participated in service activities were more attractive as friends than those who did not, but similar effects were not evident for perceptions of inequities or participation in activism. Civic opportunity structures may contribute to a school culture that renders certain civic behaviors and beliefs more salient to socialization and friendship formation than others. Generally, schools often employ extracurricular opportunity structures and progressive curricula to foster civic engagement, but greater attention to implications for civic behaviors and critical beliefs in student social networks could lead to more effective policies and practices. Because the present study centered on one high school and did not explicitly assess student co-participation in the same activities, it was limited in its ability to draw conclusions about school infrastructure. Future work will use measures and analytical techniques that more robustly capture the intersection of youth friendship networks and school opportunity structures (and potentially critical curricula) among diverse adolescents across multiple high schools.

In response to the continued call for greater representation of marginalized youth in civic engagement literature (Anyiwo et al., 2020; Watts & Flanagan, 2007), the current study

foregrounds predominately low-income Latinx youth served by the high school. The social networks of students appeared to facilitate engagement in service activities, which suggests civic initiatives that center agentic relational decisions of youth could represent asset-based alternatives to interventions that frame marginalized students as passive or disengaged, aligned with research that highlights the value of challenging deficit-oriented narratives (Kirshner, 2015). Relatedly, youth voice could be integrated into empirical studies to gain greater understanding of students' lived experiences and support more specific claims about how social dynamics facilitate youth civic engagement and how critical consciousness may function differently between marginalized and dominant youth (see Wray-Lake & Abrams, 2020 for an example). Future work should extend the findings of the present study by combining social network analysis with mixed-methods approaches at a school with a heterogenous student body to examine demographic differences in potential links between school culture and peer socialization in specific service activities. In such a study, simultaneous examination of critical beliefs and activist behavior may clarify existing research that has found critical activities may be more salient for youth of color than dominant youth (Diemer et al., 2016; Littenberg-Tobias & Cohen, 2016; Suárez-Orozco et al., 2015; Watts & Flanagan, 2007) and advance understanding of the different types of critical beliefs that may motivate civic behavior among diverse adolescents (Wegemer, 2021).

The second wave of the study was conducted during the COVID-19 pandemic, a unique historical moment that represents both an opportunity and a limitation. Students' self-reported participation in service activities was higher during the pandemic compared to the year before ($t = 4.34$, $p < .001$) and there was no statistically significant difference in activism. Although the reasons for changes in service behavior are unclear, it is possible that students may have

responded to the public health crisis by contributing to initiatives to alleviate the COVID-19 burden on others. This would be consistent with studies that reflect a sense of social responsibility among youth for practicing protective social distancing (Oosterhoff et al., 2020). The COVID-19 pandemic also coincided a resurgence in the anti-racist movement; the murder of George Floyd (and subsequent Black Lives Matter protests) in summer 2020 and the contentious 2020 presidential election occurred after the current study was conducted. Follow-up studies will be important to investigate potential changes in service and activism and continue to contribute to understanding of the ways in which the unprecedented circumstances may shape the sociopolitical development of the current generation of adolescents.

Conclusion

Extensive research has suggested that peers are important for the development of critical perspectives and civic participation (Diemer & Li, 2011; Dostie-Goulet, 2009; McDevitt & Kiousis, 2007; Terriquez et al., 2020; Wray-Lake & Shubert, 2019), but studies that disentangle underlying social mechanisms are sparse. Building on emerging literature that highlights youth social networks in civic engagement (Oosterhoff et al., in press; Sinclair, 2012), the current study demonstrates the utility of longitudinal stochastic actor-based modeling for supporting nuanced and rigorous testing of sociopolitical development and critical consciousness frameworks. Further research could clarify pathways to civic engagement for marginalized youth (Anyiwo et al., 2020; Bañales et al., 2020; Diemer et al., 2016; Wray-Lake & Abrams, 2020) and provide insights capable of informing tailored interventions and policies that equitably support civic engagement. The precariousness of the current political era presents an urgent imperative to continue to advance our understanding of youth sociopolitical development.

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Table 3.1

Descriptive statistics and correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Service behavior, 2019	1																			
2. Service behavior, 2020	0.53*	1																		
3. Activism behavior, 2019	0.57*	0.27*	1																	
4. Activism behavior, 2020	0.28*	0.42*	0.59*	1																
5. Perception of inequities, 2019	0.18*	0.04	0.23*	0.22*	1															
6. Perception of inequities, 2020	0.04	0.09	0.20*	0.24*	0.52*	1														
7. Female	0.01	0.09	0.09	0.12*	0.21*	0.26*	1													
8. Low-income status	-0.02	-0.09	0.07	-0.09	-0.08	-0.09	0.06	1												
9. GPA	0.12*	0.22*	-0.04	0.04	0.04	0.17*	0.11*	-0.12*	1											
10. Cohort graduating in 2022	-0.09	-0.12*	-0.09	-0.08	-0.15*	-0.01	0.03	0.02	0.17*	1										
11. Cohort graduating in 2021	0.02	0.07	0.04	0.05	0.02	-0.01	-0.02	0.04	-0.17*	-0.55*	1									
12. Cohort graduating in 2020	0.09	0.06	0.06	0.04	0.15*	0.02	-0.01	-0.06	-0.01	-0.50*	-0.45*	1								
13. Race/ethnicity: Latinx	-0.06	-0.09	0.08	0.03	-0.06	0.04	0.09	0.41*	-0.19*	0.01	0.00	-0.01	1							
14. Race/ethnicity: White	-0.05	0.01	-0.04	0.01	0.06	-0.06	-0.17*	-0.34*	0.05	-0.05	0.00	0.05	-0.72*	1						
15. Race/ethnicity: Asian	0.15*	0.13*	-0.05	-0.03	0.02	0.05	0.08	-0.23*	0.25*	0.08	-0.02	-0.06	-0.59*	-0.08	1					
16. Race/ethnicity: Black	-0.02	-0.04	-0.04	-0.04	0.00	-0.09	-0.03	-0.01	-0.06	-0.07	0.07	0.01	-0.22*	-0.03	-0.02	1				
17. Number of friendship nominations received, 2019	0.1	0.08	0.02	0.02	-0.08	0.08	0.04	-0.06	0.22*	0.07	-0.06	-0.01	-0.03	0.02	0.06	-0.12*	1			
18. Number of friendship nominations received, 2020	0.08	0.04	0.1	0.1	-0.04	0.14*	-0.02	-0.02	0.16*	0.05	-0.04	-0.01	0.05	-0.05	0.02	-0.06	0.52*	1		
19. Social isolate (no nominations), 2019	-0.01	0.04	0.06	0.07	0.01	-0.05	-0.1	0.03	-0.04	0	0	0	-0.04	0	-0.02	0.22*	-0.40*	-0.22*	1	
20. Social isolate (no nominations), 2020	0	0.03	-0.04	-0.04	-0.01	-0.07	0.06	-0.04	-0.11*	-0.04	0.04	0	-0.06	0.08	0.01	-0.03	-0.18*	-0.45*	0.12*	1
Mean	1.73	2.04	1.43	1.52	3.39	3.71	0.51	0.70	3.15	0.38	0.33	0.29	0.85	0.09	0.06	0.01	3.09	3.13	0.07	0.09
S.D.	0.93	1.08	0.79	0.81	1.41	1.41	0.50	0.46	0.93	0.49	0.47	0.45	0.36	0.28	0.24	0.09	2.11	2.16	0.25	0.28
Min	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max	5	5	5	5	6	6	1	1	4.83	1	1	1	1	1	1	1	15	13	1	1
N	328	297	327	297	322	297	354	354	354	354	354	354	354	354	354	354	325	289	325	289

Note. All variables are presented unstandardized and un-imputed. For dichotomous variables, the mean represents the proportion of participants.

* $p < .05$

Table 3.2

Descriptive network statistics

	2019	*p*	2020	*p*
Number of students who completed the survey	280		281	
Isolates	5		16	
Average outdegree	3.09		3.14	
Dyad census				
Mutual	235		273	
Asymmetric	625		565	
Null	61,621		61,643	
Edgewise reciprocity	.43		.49	
Transitive triads	851		980	
Density	.009		.009	
Homophily (Moran's I)				
Service	.05	.204	.26	< .001
Activism	.01	.834	.08	.027
Perceptions of inequities	.15	< .001	.16	< .001
Female	.50	< .001	.51	< .001
Low-income status	.22	< .001	.11	.002
GPA	.32	< .001	.28	< .001
Race/ethnicity	.25	< .001	.25	< .001
Grade level	.87	< .001	.82	< .001

Note. The Jaccard coefficient, a measure of network stability across both waves, was .29. Outdegree is the number of friends nominated by each student. Isolates are students who did not receive or send any friendship nominations. Edgewise reciprocity is measured as the ratio of reciprocated edges to all edges. Density is measured as the ratio of observed ties to all possible ties, however, this only considers the number of nodes and does not account for the survey constraint of a maximum of 5 nominations per student. The Moran's I indicator has a range of -1 to 1, with higher positive values indicating that students who are connected in the network are more similar on the particular attribute.

Table 3.3

SABM results, coevolution of friendships and civic behavior

	b	*SE*
Service behavior function		
Rate	1.51***	0.23
Linear shape	-0.38	0.47
Quadratic shape	0.47*	0.19
Service, average similarity	3.35**	1.27
Service, indegree	0.02	0.08
Effect from perception of inequities	-0.06	0.08
Effect from activism behavior	-0.28	0.47
Effect from female	0.42	0.22
Effect from 10th grade (12th is reference)	0.24	0.25
Effect from 11th grade (12th is reference)	0.10	0.26
Activism behavior function		
Rate	2.25***	0.49
Linear shape	-2.65***	0.50
Quadratic shape	0.46	0.26
Service, average similarity	-0.27	1.04
Service, indegree	0.03	0.08
Effect from perception of inequities	0.17*	0.08
Effect from service behavior	0.15	0.26
Effect from female	0.06	0.22
Effect from 10th grade (12th is reference)	0.26	0.27
Effect from 11th grade (12th is reference)	0.35	0.26
Network function		
Rate	18.48***	1.25
Outdegree (density)	-2.66***	0.24
Reciprocity	2.59***	0.10
Transitivity (gwespFF)	1.79***	0.08
Popularity (outPopSqrt)	-0.25***	0.04
Isolates (outIso)	6.08***	0.41
Graduation year (same)	0.89***	0.07
Female, alter	-0.19**	0.06
Female, ego	0.03	0.13
Female, same	0.35***	0.06
GPA, alter	-0.06	0.03
GPA, ego	0.17**	0.07
GPA, similarity	0.61**	0.19
Race/ethnicity, same	0.21**	0.08
Perceptions of inequities, alter	0.02	0.02
Perceptions of inequities, ego	0.03	0.05
Perceptions of inequities, similarity	-0.04	0.13
Service behavior, alter	0.30**	0.11
Service behavior, ego	0.16	0.18
Service behavior, similarity	0.73*	0.32
Activism behavior, alter	-0.36	0.49
Activism behavior, ego	-0.49	0.53
Activism behavior, similarity	-0.57	1.16

Note. N = 354. The maximum convergence ratio was 0.10. For the gwespFF term, $\alpha = \log(2)$.
*$p < .05$; **$p < .01$; ***$p < .001$.

Appendix F. Survey inventories used in chapter 3

Civic behavior

Over the last year, how often have you done any of the following activities?
[Responses on a 1 to 5 Likert scale: "Never did this," "Once or twice last year," "Once every few months," "At least once a month," or "At least once a week."]

Participated in student government
Participated in a religious group (besides attending church)
Volunteered for [BLINDED HIGH SCHOOL NAME] or any organization (above and beyond the volunteer hours required for school)
Helped organize a food drive, fundraiser, or community event (at school or for another organization)
Signed an online or written petition about a social or political issue
Participated in a group that advocates for human rights, gay rights, women's rights, or immigration rights
Joined in a protest march, political demonstration, or political meeting

Perceptions of inequities

In our society…

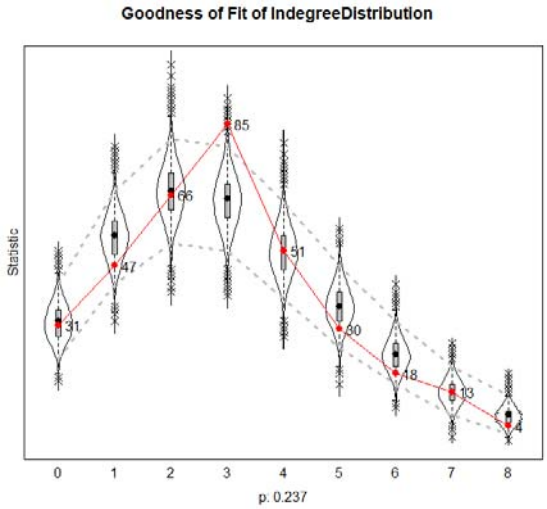
[Responses on a 1 to 6 Likert scale: "Strongly Disagree," "Mostly Disagree," "Slightly Disagree," "Slightly Agree," "Mostly Agree," or "Strongly Agree."]

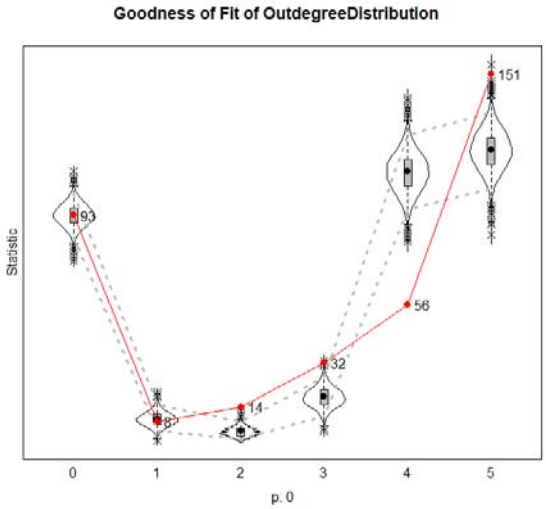
Certain racial or ethnic groups have fewer chances to get ahead.
Poor people have fewer chances to get ahead.
Women have fewer chances to get ahead.
People who are gay or lesbian have fewer chances to get ahead.

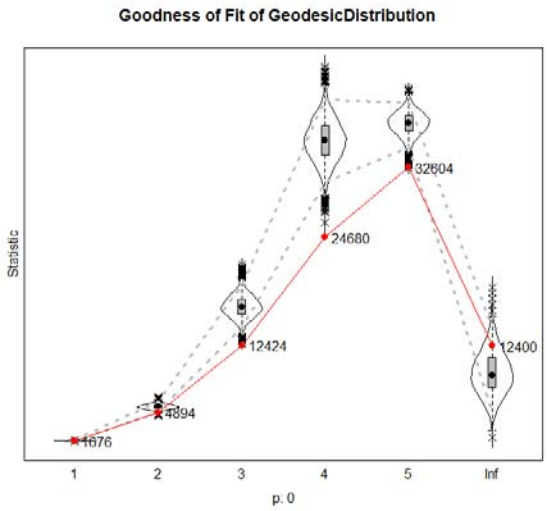
Friendship network

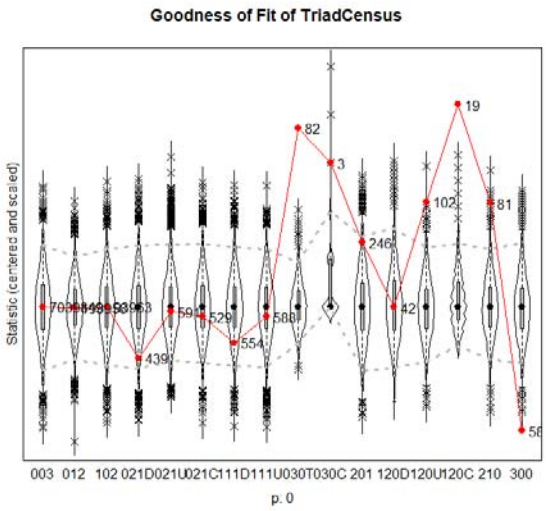
Think about your closest friends from school. Write up to five names on the lines below, starting with your closest friend first. Please include their first and last name. Try to spell them as best as you can.
Remember, your responses will be kept confidential. Your survey will NOT be connected to your name and your responses will NOT be shared with anyone. Please complete this question as well as you can. [Five open-ended responses including first name, last name, and grade level]

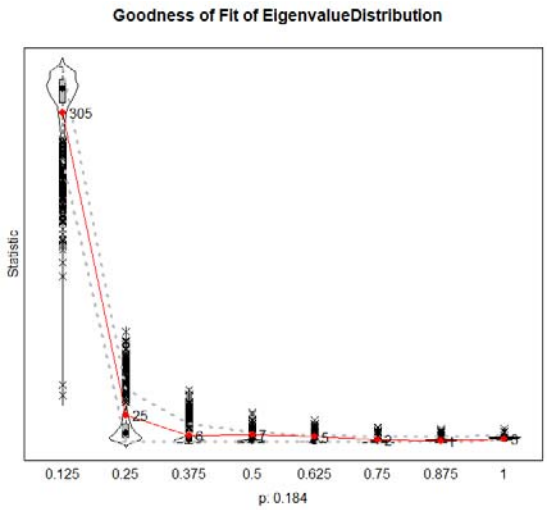
Appendix G. Goodness of fit tests for SABM analyses in chapter 3

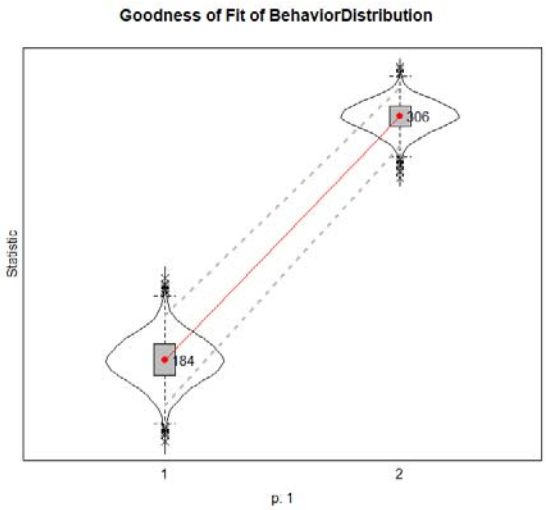


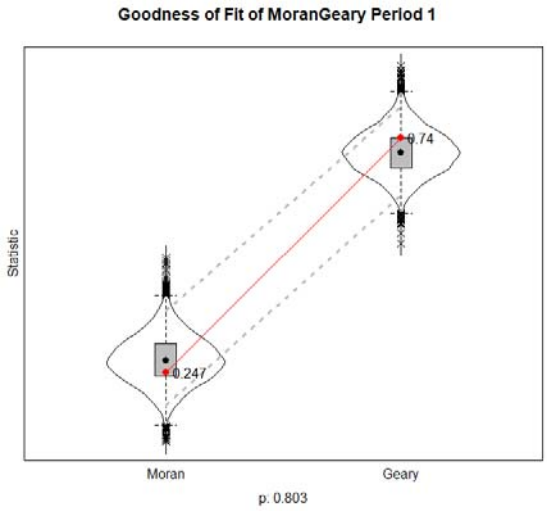


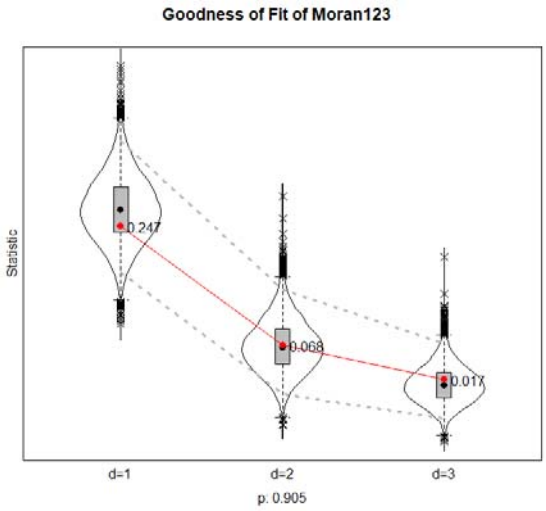


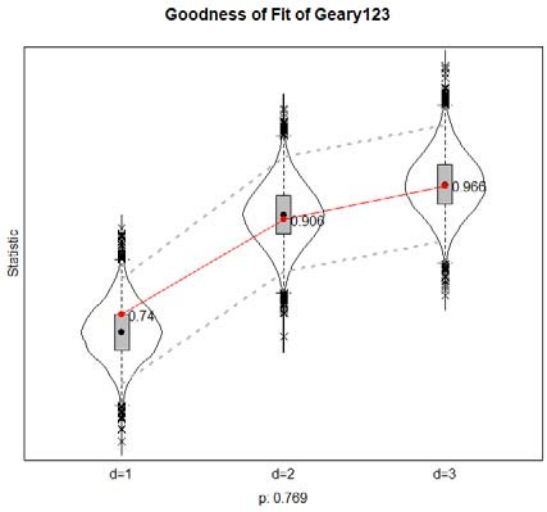


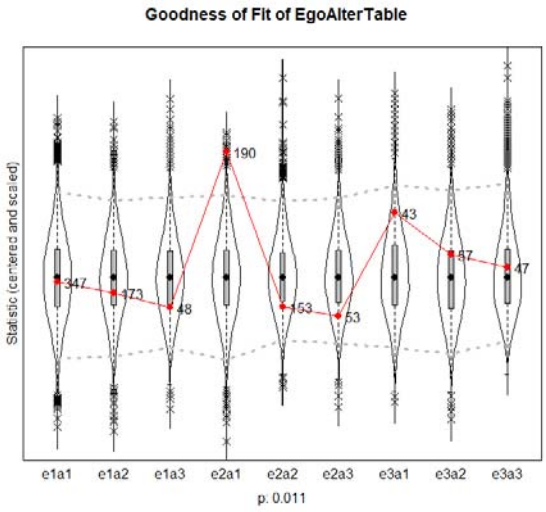





Goodness of Fit of MoranGeary Period 1
Statistic
0.74
0.247
Moran
Geary
p. 0.803


Goodness of Fit of Moran123
Statistic
0.247
0.068
0.017
d=1
d=2
d=3
p. 0.905


Goodness of Fit of Geary123
Statistic
0.74
0.906
0.966
d=1
d=2
d=3
p. 0.769


Goodness of Fit of EgoAlterTable
Statistic (centered and scaled)
190
43
47
347
173
48
153
53
e1a1
e1a2
e1a3
e2a1
e2a2
e2a3
e3a1
e3a2
e3a3
p. 0.011

CHAPTER 4

Concluding Discussion and Reflections

Youth civic engagement is a crucial component of both collective democratic systems and individual sociopolitical development. Educational institutions disproportionately bear responsibility for facilitating the empowerment of adolescents. Research that highlights the assets of marginalized youth may be useful for encouraging adults to perceive adolescents as political actors and for helping educational professionals equitably acknowledge the diverse ways which youth participate. To these ends, I examined youth motivation, perceptions of inequities, and social processes in the present dissertation. In this final chapter, I review the major findings across the studies, synthesize the results, and discuss my own attitudes towards future research.

Review of the findings

In Chapter 1, I examined an expectancy-value model of civic motivation. The significant interaction effects between civic expectancies and values on civic behavior highlight the need for simultaneous examination of both constructs, rather than traditional approaches that center either political efficacy (Sohl, 2014) or interest (Russo & Stattin, 2017). The results suggest that expectancies may be more strongly related to service behavior, whereas values may be more strongly related to activism behavior, although the associations appear to function differently across individuals. Cluster analyses demonstrated heterogeneity in civic motivation among marginalized adolescents, with one-third of the participants exhibiting discrepancies between expectancies and values. Adolescents who frequently engaged in activism typically had high levels of both expectancies and values, but the same was not true for service. The study also built on nascent research regarding youth collective efficacy. Scholars have conceptualized collective

efficacy as a construct separate from internal and external efficacy (Halpern et al., 2017; Lee, 2006; Velasquez & LaRose, 2015; Yeich & Levine, 1994), but in contrast, the current research distinguished between two superimposed dimensions: individual-collective and internal-external. Further research using more robust measures is needed to validate the dimensions, and more broadly, to evaluate the psychometric properties of the civic expectancies and values.

In Chapter 2, I leveraged social network analyses to advance understanding of the social mechanisms that underlie youth civic engagement. The findings of ERGMs and regression models linked civic behaviors and beliefs to homophily, centrality, and network closure in a high school friendship network. Specifically, homophily emerged on service and perceptions of inequities. Centrality positively predicted service and negatively predicted activism and perceptions of inequities. Openness of networks was related to service and perceptions of inequities, whereas closure of networks was associated with activism and civic expectancies. The variance in effects across the civic constructs may be attributable to both the culture of the school and the social properties of each civic behavior and belief. Participation in service was associated with both dyadic similarity and centrality in the network, but activism was not, suggesting that service may be a desirable quality that is salient to friendships at the school. The results regarding network closure are consistent with literature that suggests positionality as a broker in social networks may be conducive to activities that require broad organizing across social groups or the acquisition of new perspectives (Burt, 1992; Granovetter, 1973), whereas tightly-knit social groups may provide support for youth engaging with sensitive or contentious social issues (Akiva et al., 2017; Coleman, 1988). The study's conclusions were limited by its use of cross-sectional analyses, although the approach was appropriate for fostering an intellectual dialogue in a novel area of research.

In Chapter 3, I examined friendship socialization processes and perceptions of inequities in relation to participation in service and activist activities. The results of longitudinal social network modeling indicated that the frequency of students' participation in service activities tended to conform to the average level of their friends over time. Students also preferred to be friends with peers who had equal or higher levels of service behavior, illustrating the entwinement of peer socialization and friendship formation processes in youth civic engagement. Peer influence was not evident for activism. The infrastructure that the school provided for service activities may partially explain the unevenness in social processes between service and activism, which could be clarified by an examination of co-participation in extracurricular activities in future studies. Perceptions of inequities predicted increases in activism but not service, aligned with recent studies of critical consciousness that suggest critical beliefs differentiate between participation in justice-oriented civic activities and traditional forms of engagement (Bañales et al., 2020; Diemer & Rapa, 2016). The findings extend research that relies on self-report of peer discussion networks to approximate socialization processes and to demonstrate the importance of peers for the development of civic behaviors and beliefs (Diemer & Li, 2011; Dostie-Goulet, 2009; McDevitt & Kiousis, 2007; Song & Eveland, 2015; Wray-Lake & Shubert, 2019).

Synthesis of the results

Taken together, the studies provide complementary perspectives that advance the field of youth civic engagement and address persistent gaps in the literature. In designing my dissertation, I intentionally responded to calls from leading scholars to increase the representation of marginalized youth (Anyiwo et al., 2020), prioritize justice-oriented forms of civic participation (Watts & Flanagan, 2007), establish new sociocognitive frameworks of civic

engagement (Barrett & Brunton-Smith, 2014), and deepen understanding of perceptions of inequities in critical consciousness (Watts et al., 2011). The findings regarding civic motivation and social processes provide a foundation for research that could generate new theoretical developments that offer pragmatic utility for both research and practice, reminiscent of the words of Kurt Lewin (1943): "there is nothing as practical as a good theory."

All three studies aim to give voice to the experiences of Latinx youth. The dependence of civic engagement on structural and sociocultural factors demands equitable representation of Latinx youth in research literature. The conceptualization of motivation in Chapters 1 and 2 constitutes an asset-based approach that acknowledges volitional decisions of marginalized youth. Chapter 1 highlights the need for intellectual frameworks capable of capturing heterogeneity and diversity in civic behaviors and beliefs among adolescents. Amid a wide array of factors involved in friendship processes, civic behaviors and beliefs emerged as salient in Chapters 2 and 3. Overall, both frameworks of motivation and social processes can draw attention to the strategies that youth of color use to navigate oppressive and convoluted social environments while developmentally establishing their own civic identity.

Chapter 1 highlights the complexity of youth civic motivation. Variable-centered analyses demonstrate the interactions between subscales of civic expectancies and values, as well as their variance in relation to different civic behaviors. Person-centered analyses suggest that motivational constructs may manifest and function differently for different youth. The insights provided by Chapter 2 suggest that examining social relationships could be a fruitful strategy for making sense of the complexity of civic motivation. Friendship networks may shape aspects of civic motivation (and vice versa). For example, greater civic expectancies were related to being a member of a tightly-knit social group. Strong friendship groups may generally increase the

efficacy of youth, especially on activities important to the collective. Such social effects could explain the predictive strength of the variables and the variance among youth in Chapter 1. Future work using the same dataset will leverage longitudinal social network analyses to examine expectancies and values in dynamic social and developmental processes.

The results of Chapters 2 and 3 highlight the importance of school culture and civic opportunity structures for youth sociopolitical development. For example, Chapter 2 uncovered homophily effects for participation in service activities and Chapter 3 demonstrated peer influence and friendship formation processes for service behavior. Both studies found evidence of social desirability for service activities. Co-participation in extracurricular service activities that the school provided could be responsible for a school culture that shapes the social dynamics of civic engagement. An impactful direction for future research will be to compare student social dynamics across several schools that differentially support co-activity in traditional and critical civic activities (and potentially co-enrollment in critical courses, e.g., ethnic studies).

All three chapters extend critical consciousness literature (and related theories of sociopolitical development, Watts et al., 2003) by clarifying the role of perceptions of inequities in civic action in three ways. First, Chapter 1 proposed a model of critical motivation that could be leveraged to advance critical consciousness theory. Scholars have noted the conceptual overlap and complementarity between motivational constructs and the critical beliefs implicated in critical consciousness (Rapa, 2016; Watts et al., 2011). The concepts and measures of expectancies and values could provide an intellectual bridge to developmental literature that may broaden the practical applicability of conjectures about the link between critical reflection and critical action. Second, in Chapter 2, homophily emerged on perceptions of inequities and popularity was negatively related to perceptions of inequities. Preliminary longitudinal network

analyses did not implicate perceptions of inequities in social processes. However, it is unlikely that adolescents gain awareness of inequities in society independently from social experiences or interactions. More work is needed to identify the social processes through which youth may gain critical perspectives, and further, actualize critical perspectives into civic participation. Third, Chapter 3 found that perceptions of inequities were associated with activism, but not service, further validating a key prediction of critical consciousness theory. Generally, social network analyses may be useful for testing core assertions of critical consciousness theory that could be confounded with network effects.

The studies intentionally explore the application of two methodological strategies to youth civic engagement. First, Chapters 2 and 3 use cutting-edge social network analytical techniques. Research on youth civic engagement has traditionally relied on regression-based approaches that require assumptions about data that are not tenable. For example, regression models assume that observations are independent (or that the inclusion of covariates is sufficient to account for dependence). The social interactions and relationships between adolescents in a high school context render this assumption unrealistic. The friendship network data collected in the present dissertation supports analytical techniques that capture network effects. Second, the data for the present studies was collected as part of a long-term research-practice partnership with a local high school. I built relationships with school administrators and teachers over several years, primarily by conducting regular surveys and providing data analysis that helped guide the school's policies and practices. The partnership relationships and routines supported my longitudinal data collection for the present studies. Although the findings did not directly impact policies or practices at the school (because the school had more pressing priorities than civic engagement, e.g., dealing with the COVID-19 crisis), the potential for partnership-based

approaches to simultaneously advance civic engagement research and impact the political environment of school communities is profound.

The findings of the present studies cannot be generalized to larger populations, but generalizability was not a goal of this research. The studies were intended to develop a conceptual model of civic motivation and demonstrate the usefulness of social network methods. More broadly, generalizability may not be the most meaningful aim for these lines of inquiry. Certainly, large datasets may be useful for guiding comprehensive policy decisions, but considering the heterogeneity of motivation among diverse adolescents, the context-dependence of social interactions, and the rapid evolution of the political landscape, the most effective approach may be to establish research routines that enable expeditious collection and processing of data to inform relevant practices in specific schools and strategies for particular community campaigns. To this end, research-practice partnership approaches hold substantial potential for accomplishing impactful scholarly work in the field of youth civic engagement.

Personal reflections

The studies in this dissertation provide both a robust foundation for my future research and a potential point of deviation for my career. Much work remains to establish a framework of civic motivation and future studies should continue to demonstrate the model's utility, validate more robust measures, conceptualize the dimensions of expectancies, and identify social processes related to the development of motivation. Social network analyses hold tremendous power and potential for pushing forward the field of youth civic engagement. Future research should disaggregate social processes to answer unresolved questions about sociopolitical development. Perhaps most importantly, pragmatic insights that emerge from intellectual

advances in civic motivation and social networks should be used to guide the policies and practices of schools and youth organizations.

The present studies were conducted as part of a long-term research-practice partnership with a local school, yet bridging the disconnect between research and practice remained a persistent challenge. My own disposition towards research is consistent with advocates of intellectual pragmatism in education (e.g., Dewey, William James, Cornel West), and I find research meaningful only to the extent that it is useful for solving social problems and alleviating suffering. I have matured as a scholar over the past five years (thanks to the enduring support of my mentors), and I am thrilled that my studies have contributed to the corpus of knowledge about youth civic engagement. However, academic work is not sustainable for me unless my research serves a purpose beyond the advancement of my own expertise, reputation, or career. I hope that my research will grow into projects that directly support youth movements to facilitate broader social change.

After completing my dissertation, the most compelling questions that remain for me are not methodological or epistemological, but existential. Five years ago, my passion for scholar-activism motivated me to return to graduate school to leverage educational research for structural social change. Although I have yet to realize this vision, I remain an idealist. I believe that it could be possible for me to have a career that simultaneously advances knowledge and justice, despite the challenges and uncertainties that obscure the path. I am grateful that I have had the opportunity and privilege to refine my intellectual identity through the dissertation process and I look forward to continuing to grapple with questions about impact, meaning, and the pursuit of collective liberation.

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