

Article

# Open-mindedness predicts racial, political, and socioeconomic diversity of real-world friendship networks

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## Abstract

Even in environments offering ample opportunities to interact with people from diverse backgrounds, people differ in their tendency to form intergroup friendships. Whereas some develop intergroup friendships, others prefer befriending ingroup members, contributing to prejudice and polarization. We identify open-mindedness—an inclination to engage with and understand different perspectives—as an individual difference predicting the racial, political, and socioeconomic diversity of real-world friendship networks. In a longitudinal study of 1,423 eighth–ninth graders, more open-minded adolescents developed more racially diverse friendship networks over 2 years. Two additional studies (total  $N = 1,585$  adults) replicated and extended this finding: Open-mindedness predicted greater racial, political, and socioeconomic diversity of friends, and was more consistently associated with friendship diversity than Big Five openness to experience. The associations between open-mindedness and friendship diversity were partly explained by open-minded individuals' lower avoidance of interaction with outgroup members. Building open-mindedness may be one individual-level approach to promote friendships across divides.

## Keywords

diversity, homophily, intergroup friendship, open-mindedness, social networks

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Forming friendships across social divides benefits both individuals and society. For example, having friendships across racial divides is linked to more positive attitudes toward racial outgroups and, among advantaged groups, increased awareness of racial injustice (Carter et al., 2019; Davies et al., 2011). Friendships across political divides are associated with reduced partisan animosity and increased political engagement (Mutz, 2002; Sumaktoyo, 2021). Friendships across socioeconomic divides predict reduced socioeconomic disparities and greater class mobility (Carey et al., 2022; Chetty et al., 2022).

Unfortunately, however, friendships across these various group divides are relatively rare. This is partially a matter of opportunity; opportunities to form intergroup friendships are often constrained by structural barriers, such as racial, political, and socioeconomic segregation (Shelton et al., 2024). Yet, even when these barriers are removed—for example, in schools with a diverse student body—individuals still do not always form intergroup relationships (Carey et al., 2022; Joyner & Kao, 2000). Whereas some people develop diverse friendship networks, others show homophily, a preference to affiliate with those with similar identities to themselves (McPherson et al., 2001). In other words, even after accounting for opportunities afforded by the environment, people's tendency to seize opportunities to form intergroup friendships appears to be an individual difference.

Despite evidence of individual variability in intergroup friendship formation, little is known about individual-level psychological factors that drive people's choices to develop such friendships. Prior research shows that specific intergroup attitudes, such as prejudice and perceptions of outgroups, predict likelihood of befriending outgroup members (Fischer, 2008; Schofield et al., 2010). However, whether there is a broader psychological orientation toward difference that makes people more likely to build relationships across social divides in general remains an open question. This is an important question conceptually, to advance understanding of the factors that shape intergroup friendship, as well as

practically, given that such an orientation could be a potentially high-impact target for individual-level intervention.

The present research examines whether *open-mindedness* broadly predicts developing intergroup friendships across various dimensions of difference (such as race, politics, and socioeconomic status). Open-mindedness is a willingness or desire to expose oneself to a variety of perspectives, even those incongruent with one's current beliefs (Baron, 1993). Intrapersonally, open-mindedness is characterized by receptiveness to and interest in a variety of ideas (Christensen et al., 2019), and is associated with seeking out and considering varied information before reaching a conclusion (Haran et al., 2013; Stanovich & West, 1997). Interpersonally, open-mindedness serves as a form of epistemic empathy—a desire and ability to understand others' perspectives, particularly those different from one's own (Metz et al., 2020). Importantly, this entails not only understanding what others think (e.g., cognitive perspective-taking), but also why they see the world as they do. For example, an open-minded individual would recognize that each individual's values and perspectives are, in part, consequences of their upbringing and experiences (e.g., norms in the community they grew up in; Metz et al., 2020). This leads them not to shy away or be dismissive when they encounter someone who has a different perspective (whether a different culture, political stance, value, belief, and so on), but rather to be particularly motivated and able to understand how the other's backgrounds and experiences may have shaped their perspective. Ultimately, this epistemic empathy, along with the motivation to gain exposure to varied ideas, may lead open-minded individuals to engage more deeply across different backgrounds and beliefs. As such, we hypothesized that more open-minded individuals would be more likely to develop friendships across various dimensions of difference.

Open-mindedness has some conceptual overlap with the Big Five personality factor *openness to experience*, and indeed, some researchers have examined whether openness to experience may

be a broad characteristic that predicts greater interracial interaction. This work theorizes that people high in openness to experience seek out novel experiences, are open to learning about new ideas that challenge conventional wisdom (McCrae, 1987), and are less subject to stereotypical thinking (Flynn, 2005), all possibly leading to greater willingness to form relationships with individuals from different groups. Consistent with this thinking, openness to experience has been found to be associated with greater interracial contact (Jackson & Poulsen, 2005) and more positive perceptions of interethnic contact (Vezzali et al., 2018). However, openness to experience has not predicted interracial relationships reliably; for example, some studies have found no associations between openness to experience and interethnic contact (Vezzali et al., 2018) or interracial friendships (Turner et al., 2014).

These inconsistencies may occur because openness to experience is a complex, multifaceted trait with multiple lower order aspects that range in social relevance. Research examining the taxonomic structure of openness to experience has identified three major aspects (Christensen et al., 2019): intellect (including intellectual interests, curiosity, and self-assessed intelligence), experience (including aesthetic appreciation, emotional sensitivity, imaginativeness, and fantasizing), and—importantly—open-mindedness (including receptiveness to new ideas, cultures, and perspectives; willingness to explore a variety of environments and try new ways of doing things; and embracing a variety of attitudes, beliefs, and lifestyles). If, consistent with our hypothesis, open-mindedness is a “key ingredient” driving intergroup friendship formation, openness to experience may be too broad to reliably predict forming friendships across group lines; the other aspects of openness to experience may add noise, contributing to mixed results. Recent efforts to isolate the components of openness to experience most relevant to interracial friendships have been promising, finding that asking specifically about openness to different cultures and ethnic backgrounds more reliably predicts likelihood of having interracial friends than openness to experience (Antonoplis & John, 2022). Focusing more

precisely on open-mindedness may similarly provide a stronger signal of people’s tendency to develop intergroup friendships than openness to experience, while remaining broad enough to capture not just openness to racial outgroup members, but people’s orientation toward difference more generally.

In addition to introducing open-mindedness as a novel individual-level contributor to intergroup friendship formation, we aimed to advance theory on intergroup friendship by addressing two limitations of prior research. First, prior work has typically focused on one form of intergroup friendship at a time, usually interracial friendship. Although this approach is important to identify unique factors contributing to specific types of intergroup friendship, it makes it difficult to determine whether there is a common psychological orientation underlying forming friendships across group lines in general. In addition to advancing understanding of the underpinnings of intergroup friendship, identifying a general orientation toward difference could spark novel interventions promoting intergroup friendship (particularly helpful given that intervening on established contributors to intergroup friendship has proven difficult, e.g., prejudice reduction; Paluck et al., 2021). As such, we examined whether open-mindedness predicts racial, political, and socioeconomic diversity of friendship networks, rather than focusing on a single dimension.

Second, prior research has largely conceptualized intergroup friendship solely in terms of homophily—the proportion of friends belonging to the ingroup. In this conceptualization, friends are categorized as either ingroup or outgroup, with all outgroups grouped together (e.g., a White person with three Asian friends and a White person with one Asian, one Black, and one Latinx friend have equally homophilic networks because they both have three outgroup friends, regardless of those friends’ specific identities). Indeed, forming homophilic networks is one way people fail to form friendships across divides; a nationally representative survey found that same-race friends made up 64 to 91% of Americans’ core social networks (Cox et al., 2016).

However, another dimension of friendship composition has received less attention in the intergroup literature: the diversity, or heterogeneity, of a person's social network. This dimension captures the extent to which one's friends have a variety of backgrounds (e.g., a network with one Asian, one Black, and one Latinx friend is more diverse than a network with three Asian friends because of the greater variety of racial backgrounds represented). The aforementioned national survey reflected this dimension as well: 45 to 75% of Americans had completely racially homogenous networks, with all friends belonging to a single racial group (Cox et al., 2016).

In this investigation, we examined both aspects of friendship network composition: homophily (proportion of friends belonging to the ingroup) and diversity (variety of identities represented among friends). These dimensions are often negatively correlated, but only moderately (Kmetty & Tardos, 2022), and their conceptual distinctions are theoretically important both specifically for open-mindedness and more generally for intergroup benefits. First, in the context of open-mindedness, if open-minded individuals are especially interested in learning about various perspectives, open-mindedness may not only predict befriending people from backgrounds dissimilar to one's own (lower homophily), but also greater diversity among friends. For example, a White person with three Asian friends and a White person with one Asian, one Black, and one Latinx friend both have opportunities for exposure to perspectives different from their own. Yet, the latter person may be exposed to more varied perspectives and experiences due to the racial diversity of their friends. Similarly, greater political and socioeconomic diversity among friends may present more opportunities to learn about different perspectives. We thus hypothesized that more open-minded individuals would have both less homophilic and more diverse friendship networks.

Second, examining diversity in addition to homophily is valuable generally for intergroup research given the benefits of forming friendships across multiple outgroups. Although intergroup friendships can improve attitudes toward the

specific group to which the friend belongs, the generalization of these attitudes to other outgroups (secondary transfer effects) is limited and context-dependent. Emerging research suggests that friendship with someone from one outgroup may improve attitudes toward other outgroups only if the groups are perceived as similar and the outgroup friend has positive attitudes toward the other outgroups (Boin et al., 2021). Friendship with a member of one outgroup can even worsen attitudes toward other outgroups (Van Laar et al., 2005), particularly if there is perceived conflict between the groups (Boin et al., 2021). Perceived or actual racial, political, and class conflict may thus limit the benefits of reduced homophily alone. In contrast, a diverse group of friends can improve attitudes toward multiple outgroups without depending on secondary transfer effects. For example, individuals with more racially diverse friends (Antonio, 2001) or roommates (Van Laar et al., 2005) had more positive attitudes toward multiple racial outgroups, greater cultural awareness, and heightened commitment to racial understanding. Thus, diversity among friends may be especially beneficial for intergroup attitudes and is important to measure alongside homophily.

The present research investigates the hypothesis that open-mindedness predicts developing less homophilic and more diverse friendships across three studies of real-world social networks. In Study 1, a longitudinal study of nearly 1,500 adolescents, we examined the relationship between open-mindedness and the racial homophily and diversity of friendship networks over 2 years. Study 1 aimed to provide a rigorous initial test of our hypothesis with an emphasis on robust measurement, including using teachers' assessments of open-mindedness and peers' reported friendships to corroborate adolescents' self-reports. Additionally, Study 1 probed the directionality of the association between open-mindedness and racial composition of networks, examining the extent to which open-minded adolescents develop more racially diverse friendship networks over time, as hypothesized, or racially diverse networks make adolescents more open-minded.

In Study 2, we aimed to replicate and extend the core results of Study 1 among adults. In an online sample of over 600 Americans, Study 2 again tested whether open-mindedness predicted the homophily and diversity of friendship networks, this time examining both racial and political composition to determine whether the hypothesized relationship extends to another identity dimension. Additionally, Study 2 explicitly examined whether open-mindedness more reliably predicts intergroup friendship than the broader Big Five openness to experience.

Finally, Study 3 further expanded the identity dimensions tested by assessing whether open-mindedness predicts racial, political, and socioeconomic homophily and diversity of friends among approximately 1,000 college students. Study 3 also examined mechanisms for this association, testing three different hypotheses for why open-mindedness predicts friendship diversity: that more open-minded individuals are (1) more proactive in approaching outgroup members, given their motivation to gain exposure to various perspectives (Paolini et al., 2016); (2) less likely to avoid interactions with outgroup members when opportunities arise, due to their openness to learning about diverse perspectives (Paolini et al., 2016); and (3) more willing to discuss and engage with opposing views (Yeomans et al., 2020), which could help maintain their intergroup friendships.

Data, code, and materials for all studies, and preregistration for Studies 2 and 3, are available at the Open Science Framework (OSF; <https://osf.io/c2xm3/>).

## Study 1

We examined the relationship between open-mindedness and racial composition of friendship networks in a 2-year longitudinal study of adolescents—an important age group given that intergroup friendships in adolescence robustly predict diversity of friends later in life (Fischer, 2008). We hypothesized that greater open-mindedness (reported by both adolescents themselves and

their teachers) would predict the racial homophily and diversity of their friendship networks. Additionally, we examined whether open-mindedness more strongly predicted racial homophily and diversity over time or vice versa.

## Method

*Participants.* A total of 1,777 eighth graders and 161 teachers in eight schools in Pennsylvania, California, Idaho, and Texas completed at least one of four administered surveys over 2 years. Two schools were dropped from the analyses because all but one student belonged to the same racial group, presenting minimal opportunities to develop interracial friendships (results were consistent when including these schools; Tables S13 and S14 in the Supplemental Material [SM]). Individual students were excluded if their race was missing from school records ( $n = 32$ ) or they did not have at least one friend at school at any point over the 2 years ( $n = 70$ ). Multiracial students ( $n = 29$ ) were also dropped from the analyses given ambiguity in defining their racial ingroups and outgroups (results were consistent when including “multiracial” as a discrete racial group; Tables S15 and S16, SM). After exclusions, the final sample included 1,423 students (80.1% of all participating students; 689 girls, 734 boys; 652 Black, 355 White, 239 Latinx, 173 Asian, four American Indian; see Table S1, SM, for racial breakdown by school) and 142 teachers across six schools.

*Procedure.* Four online surveys were administered at the schools, once each semester for 2 years. These surveys tracked students from eighth through ninth grade (fall 2014 to spring 2016). Students’ English, math, science, and social studies teachers also completed surveys about each student during each of the 2 semesters they taught the cohort. The surveys included various measures as part of a larger project on individual differences over time; only relevant measures are discussed below. Schools provided official records for participating students, including their race.

### Measures

*Open-mindedness.* We operationalized open-mindedness as students' engagement in actively open-minded thinking (AOT). AOT reflects the extent to which individuals are willing and able to consider a wide range of perspectives, including those inconsistent with their own, and understand the basis of disagreement (Baron, 1993; Metz et al., 2020). Although prior work primarily examined AOT in judgment and decision-making contexts (Haran et al., 2013; Stanovich & West, 1997), recent work suggests that AOT also has interpersonal implications, such as greater tolerance and less judgment of others for their opinions (Svedholm-Häkkinen & Lindeman, 2018).

Students' AOT was reported each semester by students themselves and their teachers; these ratings were averaged to create composite AOT scores, following best practices for reducing measurement error (Neyer, 2006). Specifically, students completed eight items (e.g., "I can learn things by listening to people I disagree with," "I enjoy conversations with people with different beliefs about the way the world works"; Metz et al., 2020) using a 6-point Likert scale. The between-person reliability of the scale was acceptable ( $\omega = .89$ ), and items were averaged to create a single self-reported AOT score for each semester. Teachers read a four-item version of the AOT scale (e.g., "[Student name] listened to people who disagree with them") and provided one rating of AOT for each student (1 = *never true*, 5 = *always true*). The interrater reliability of the teachers within each semester was acceptable (ICC = .61–.73), and teachers' ratings were averaged to create a single teacher-reported AOT score for each student for each semester. Because they used different scales, we standardized self- and teacher-reported AOT before averaging the two ratings to create a composite AOT score for each semester. The correlations between self-reported and teacher-reported AOT ranged from .20 to .29 each semester, comparable to meta-analytically derived correlations between children's self-reported and informant ratings ( $r = .22$ ; Achenbach et al., 1987).

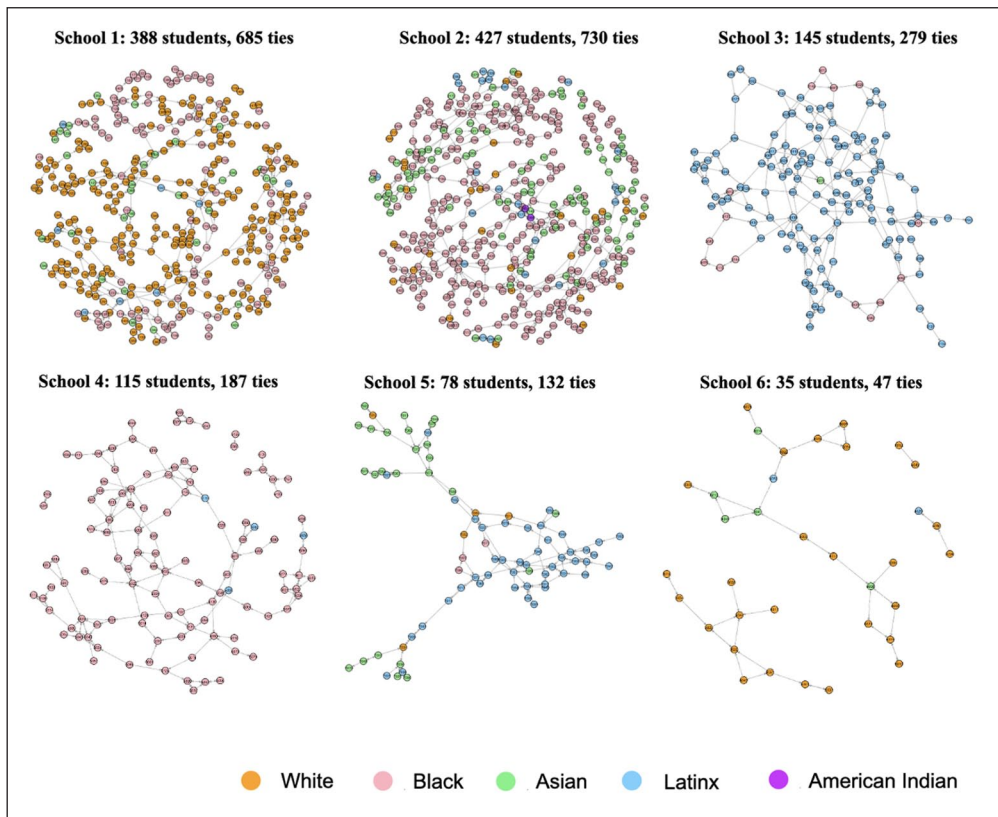
*Racial composition of friendship network.* We used a social network approach to assess students' friendships. Each semester, participants selected up to two students whom they "spent time with in school, out of school, or online in the last month" from a roster of students in their grade. Self-nominations and duplicate nominations within a single time point were dropped. Figure 1 shows the complete networks for each school at Time 1.

We defined each participant's friends as students whom the participant nominated ("outgoing ties") and/or who nominated the participant ("incoming ties"). (We also examined incoming and outgoing ties separately, as subsequently described.) We then linked the nominations with school race records and calculated racial homophily and diversity for each semester for students who had at least one friend.

*Racial homophily.* We calculated racial homophily as the proportion of same-race friends in participants' networks, adjusted for the underlying racial composition of students' schools (see SM for all formulas; Coleman, 1958). This adjusted index captures the extent to which an individual engages in same-group (vs. cross-group) friendships over and above the opportunities afforded by the environment. The index ranges from  $-1$  to  $1$ , with positive values indicating racial homophily (more same-race friends than expected by chance based on the school's racial composition), zero indicating no racial preference (proportions of same-race and cross-race friends match the proportions expected by chance), and negative values indicating racial heterophily (more cross-race friends than expected by chance).

*Racial diversity.* We calculated the racial diversity of students' networks using Simpson's D (Simpson, 1949), which reflects the probability that two randomly selected friends from a student's network belong to different groups. Simpson's D thus captures not only the number of racial groups represented in each participant's friendship network, but also the distribution of friends across groups (see SM for results for just

**Figure 1.** Friendship networks of each school at Time 1 (eight grade, fall semester).



number of racial groups, which are similar). A Simpson's D of zero reflects the least diverse network, with every friend belonging to a single racial group, whereas the maximally diverse network includes friends evenly distributed across all racial groups (e.g., one Asian, one Black, one Hispanic, one White, and one American Indian friend). We adjusted this raw measure to account for underlying differences in schools' racial compositions (McDonald & Dimmick, 2003).

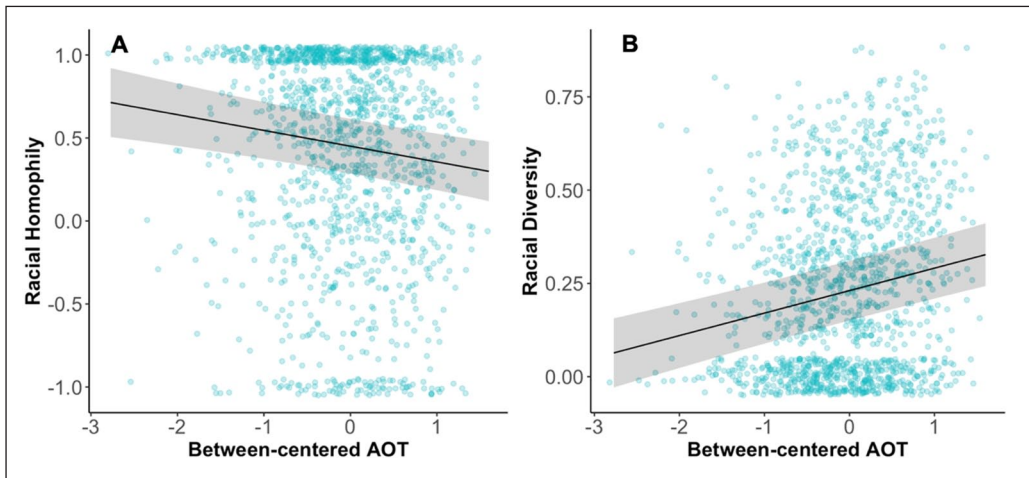
## Results

### *Does open-mindedness predict network homophily and diversity?*

*Analytic strategy.* We used multilevel models to account for the nested structure of the data (repeated observations within students within

schools). Models included between-person and within-person centered AOT as fixed effects (Bolger & Laurenceau, 2013). We included random intercepts for schools and participants, as well as time (centered on the study midpoint) as a fixed and random effect to allow the slopes of homophily and diversity over time to vary by participant and school. We additionally controlled for students' total number of friends at each time point as a fixed effect, given that greater diversity is possible in larger networks (e.g., more racial groups may be represented among eight friends than two). Results were consistent when using alternative model specifications and when computing *p* values through nonparametric node permutation tests accounting for the interdependence of network data (see SM). For interpretability, predictor (between- and within-person AOT)

**Figure 2.** AOT predicting racial homophily (A) and diversity (B) of friendship network.



*Note.* Each point represents each participant's between-person centered actively open-minded thinking (AOT) and average homophily or diversity. Homophily and diversity scores were base-rate adjusted to account for the different racial compositions of schools. The regression line and the confidence intervals were obtained from the predicted values from the multilevel models reported in the main manuscript.

and outcome variables (homophily and diversity) were standardized by grand-mean centering each variable and dividing by its standard deviation.

We hypothesized significant between-person effects of AOT on racial homophily and diversity, such that students higher in AOT on average would have less homophilic networks (a higher proportion of cross-race friends) and more diverse networks (friends from a greater variety of racial groups). Given that we conceptualized AOT as an individual difference, we did not have predictions about the within-person effects of AOT. As such, we report only between-person effects in the main text (see SM for full results).

*Racial homophily.* AOT significantly predicted lower racial homophily of friendship networks (fixed effect:  $\beta = -.09$ ,  $SE = 0.02$ ,  $p < .001$ , 95% CI  $[-0.14, -0.05]$ ; Figure 2A), such that students higher in AOT on average had a higher proportion of cross-race friends. As an intuitive indication of effect size (calculated using unadjusted homophily for interpretability), students high in AOT (i.e., students with an AOT score 1 SD above the mean, subsequently designated “high-AOT participants”) had 8.2

percentage points more cross-race friends than those low in AOT (i.e., students with an AOT score 1 SD below the mean; “low-AOT participants”).

*Racial diversity.* AOT significantly predicted greater racial diversity of friendship networks ( $\beta = .14$ ,  $SE = 0.02$ ,  $p < .001$ , 95% CI  $[0.10, 0.17]$ ; Figure 2B), indicating that students higher in AOT on average had friends from a greater variety of racial groups. Based on unadjusted diversity scores, two randomly selected friends of high-AOT participants were 6.6 percentage points more likely to belong to different racial groups than those of low-AOT participants.

*Outgoing versus incoming ties.* One explanation for the association between AOT and racial composition of friends is that those who see themselves as open-minded merely perceive that they have racially diverse friends (e.g., claiming cross-race acquaintances as friends). Including teachers' ratings in our open-mindedness measure mitigates this possibility by reducing the role of self-perception. However, we further examined this possibility through models limiting participants'

friendship networks to only outgoing ties (students the participant nominated as friends) or incoming ties (students who nominated the participant). AOT significantly predicted lower racial homophily and greater diversity of both outgoing and incoming ties: More open-minded students nominated more cross-race and racially diverse friends, and were also nominated as friends by more cross-race and racially diverse peers (Tables S9 and S11, SM). These findings suggest that open-minded students actually had—not just perceived that they had—less homophilic and more diverse networks.

*Does open-mindedness predict friendship network racial composition, or vice-versa?* That AOT predicted both racial homophily and diversity of students' friendship networks is consistent with the hypothesis that more open-mindedness increases the likelihood of developing a more diverse group of friends. However, having diverse friends could also promote open-mindedness; perhaps adolescents with diverse friends learned about new perspectives and subsequently developed greater open-mindedness. Although causal inference is not possible in this correlational study, we leveraged the longitudinal study design to better understand how open-mindedness and friendship network racial composition unfold over time using autoregressive cross-lagged (ARCL) models.

*Analytic strategy.* We estimated ARCL models for each network measure (homophily, diversity), modeling autoregressive and cross-lagged paths between AOT and friendship network composition across time. Constructs within the same time point (e.g., AOT and homophily at Time 1) were allowed to covary, and school was included as a covariate. All continuous variables were standardized before estimation. Because we conceptualized AOT as an individual difference and there were no significant within-person effects of AOT, we used standard cross-lagged panel models (Orth et al., 2021). We used full information maximum likelihood estimation to account for missing data and constrained cross-lagged (but not autoregressive) effects to be time-invariant.

See SM for further details about model specification and additional context regarding ongoing debates about ARCL models.

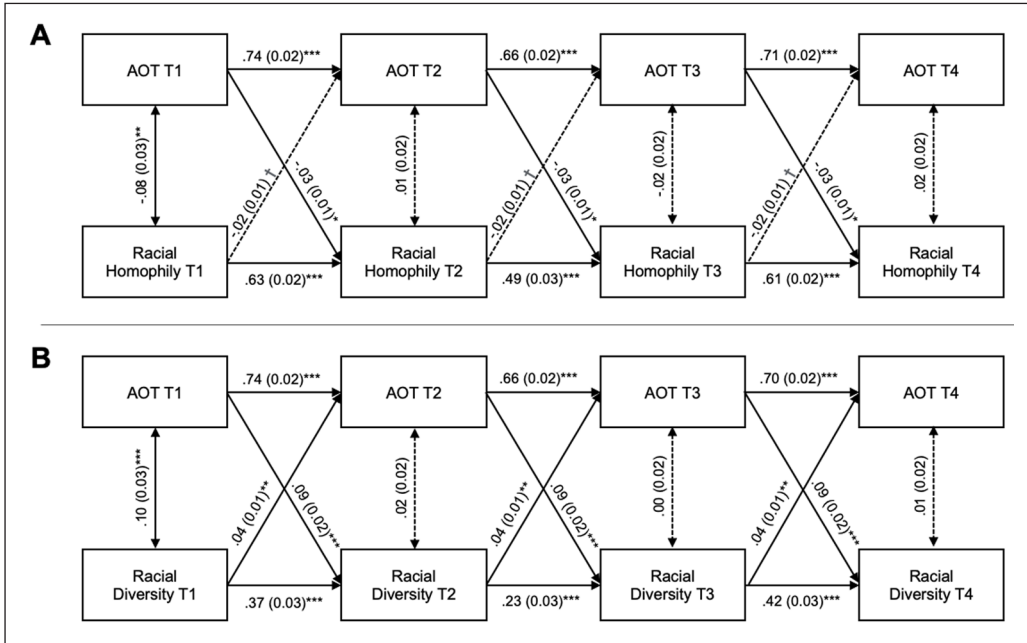
*Cross-lagged paths between AOT and racial homophily.* AOT significantly and negatively predicted next-semester racial homophily ( $\beta = -.03$ ,  $SE = 0.01$ ,  $p = .018$ , 95% CI [-0.06, -0.01]), whereas racial homophily did not significantly predict next-semester AOT ( $\beta = -.02$ ,  $SE = 0.01$ ,  $p = .065$ , 95% CI [-0.05, 0.001]; Figure 3A). This may suggest that AOT predicted the development of cross-race friendships more strongly over time than vice versa. However, this finding should be interpreted with caution, as a Wald test suggested that the difference between two estimates was not significant ( $p_{\text{Wald}} = .617$ ).

*Cross-lagged paths between AOT and racial diversity.* AOT predicted next-semester racial diversity of friendship networks more strongly than racial diversity predicted next-semester AOT. Specifically, both paths were significant (AOT predicting next-semester diversity:  $\beta = .09$ ,  $SE = 0.02$ ,  $p < .001$ , 95% CI [0.06, 0.12]; diversity predicting next-semester AOT:  $\beta = .04$ ,  $SE = 0.01$ ,  $p = .002$ , 95% CI [0.01, 0.07]; Figure 3B), but AOT explained more than twice the variance in next-semester racial diversity than racial diversity did for next-semester AOT. The difference in path estimates was significant ( $p_{\text{Wald}} = .014$ ). In other words, students' open-mindedness predicted befriending diverse peers more strongly over time than the other way around.

## Discussion

Study 1 revealed that open-mindedness predicted lower racial homophily and greater diversity of friendship networks, consistent with hypotheses. More open-minded adolescents had both a higher proportion of cross-race friends and a more racially diverse group of friends. These findings were corroborated by peers' friendship nominations; more open-minded adolescents were nominated as friends by more cross-race and racially diverse peers. Lastly, ARCL models suggested

**Figure 3.** Autoregressive cross-lagged panel models on the relationship between AOT and racial homophily (A), and between AOT and racial diversity (B).



Note. Eighth-grade school affiliation is controlled in all paths but not shown. Values in parentheses refer to standard errors. Dotted lines indicate nonsignificant relationships ( $p > .050$ ).  $\dagger p < .100$ .  $*p < .050$ .  $**p < .010$ .  $***p < .001$ .

that the associations between open-mindedness and friendship racial composition were bidirectional, but open-mindedness predicted racial diversity of friendship networks more strongly over time than vice versa.

### Study 2

Study 2 had three goals. First, we aimed to conduct a preregistered replication of Study 1 in a new population, American adults, to examine the robustness of the association between open-mindedness and racial composition of friendships. Second, we sought to determine whether this association was specific to the racial composition of friendship networks or generalizable to other identity dimensions. We thus examined whether open-mindedness predicted developing more politically diverse friendship networks in addition to more racially diverse networks. Third, given our theorizing that open-mindedness may

be a more precise signal of the tendency to form intergroup friendships than the Big Five openness to experience, we tested whether open-mindedness was more reliably associated with friendship homophily and diversity than openness to experience was.

### Method

**Participants.** We recruited 700 adults born and residing in the US (aged 18–79,  $M = 33.49$  years; 365 women, 319 men, 15 nonbinary; 350 White, 350 Black) from Prolific. This sample size was determined through an a priori power calculation indicating that 700 participants would provide 85% power to detect the same-sized effect of self-reported AOT on friends’ racial diversity observed in Study 1. We purposefully recruited White and Black participants to examine whether the relationship between open-mindedness and friendship diversity differed by race. We did not

find differences in patterns between White and Black participants in this study, and across studies, the pattern of subgroup effects was not consistent (see SM for all subgroup analyses and discussion).

One person's data were not logged due to a glitch, and eight people were excluded because they did not nominate any friends. Additionally, for the racial analyses, participants were dropped if the race they reported in our survey did not match the race they reported in Prolific's pre-screening questionnaire or if they nominated only friends with "other," unknown, or multiple races, leaving a final sample of 649 participants (321 White, 328 Black). For the political analyses, participants were dropped if they identified their political orientation as "other" or friends' political orientations as only "other" or unknown, leaving a final sample of 624 participants (126 extremely liberal, 173 liberal, 78 slightly liberal, 108 neutral, 59 slightly conservative, 59 conservative, 21 extremely conservative). Post hoc power calculations indicated that, after exclusions, both samples provided at least 84% power to detect the effect size observed in Study 1.

*Procedure.* Participants completed an online survey with two parts. First, participants nominated up to eight friends with whom they interacted most frequently over the last 6 months. After submitting their nominations, participants provided additional information about each friend, including race and political orientation. This approach ensured that race and politics were not introduced as a focus of the research until after participants had named their friends, reducing opportunities for social desirability bias (vs. other common approaches to assessing intergroup friendships, such as asking participants to report their proportion of outgroup friends, which participants tend to inflate to appear egalitarian; Smith, 2002). Next, participants completed items assessing their open-mindedness and openness to experience. Lastly, participants reported their own demographics, including race and political orientation.

### Measures

*Open-mindedness.* As in Study 1, we operationalized open-mindedness as engagement in AOT. Participants reported the extent to which they engaged in open-minded thinking (1 = *strongly disagree*, 7 = *strongly agree*) using six items from the AOT scale used in Study 1 ( $\alpha = .77$ ; Metz et al., 2020).<sup>1</sup>

*Openness to experience.* We additionally measured openness to experience from the Big Five Inventory to determine whether open-mindedness was more reliably associated with friendship diversity than openness to experience. Participants completed the 10 openness to experience items (e.g., "I see myself as someone who is original and comes up with new things";  $\alpha = .82$ ; John & Srivastava, 1999). Openness to experience was weakly to moderately correlated with open-mindedness ( $r = .36$ ).

*Racial composition of friendship network.* We calculated the same measures of racial homophily and diversity as in Study 1. Unlike in Study 1, where we adjusted both measures to account for the underlying racial composition of the school, we used unadjusted measures in this study because participants could name any friends (not just friends at school), and thus friends were not contained to a particular population with a clear underlying racial composition. This decision was preregistered.

*Political composition of friendship network.* Participants selected their and their friends' political orientations from nine options: "extremely liberal," "liberal," "slightly liberal," "neutral," "slightly conservative," "conservative," "extremely conservative," "other," "I don't know." We treated political orientation as a continuous variable (1 = *extremely liberal*, 7 = *extremely conservative*) to calculate the political homophily and diversity of participants' networks (see SM for analyses treating political orientation as a categorical variable; results were largely consistent). Again, as preregistered, these measures were unadjusted given that the underlying population political distributions were unknown.

*Political homophily.* Political homophily was operationalized as the similarity of participants' friends' political orientations to their own. This measure accounts for political distance from the participant; for example, an extremely conservative participant with an extremely liberal friend would have lower homophily than if they had a politically neutral friend. We calculated average political distance between the participant and their friends by taking the mean Euclidean distance (Harrison & Klein, 2007) and reversing it such that higher values indicate more political similarity between participants and their friends, that is, greater political homophily.

*Political diversity.* Next, we calculated political diversity, or the extent to which participants' friends varied across the political spectrum. Specifically, we calculated average political distance between friends using the mean Euclidean distance across all possible dyads within the participant's friend network (Harrison & Klein, 2007). Again, this measure is sensitive to distance along the political continuum and recognizes a network with two liberal and two conservative friends as more diverse than a network with two liberal and two politically neutral friends.

*Analytic approach.* We ran separate linear regression models with each predictor (open-mindedness, openness to experience) predicting each friendship network composition variable (see Table S20, SM, for correlations between variables). As preregistered, we included total number of friends as a covariate in the racial analyses, but not in the political analyses, as the Euclidean distance measures already account for network size.

## Results

See Table 1 for all statistics (beta coefficients, 95% confidence intervals, and *p* values).

*Racial composition of friendship network.* In this sample, AOT did not significantly predict racial homophily of participants' friendship networks, although the relationship was directionally

consistent with our hypothesis (greater AOT associated with lower racial homophily). AOT significantly predicted greater racial diversity of friendship networks; individuals higher in AOT had a more racially diverse group of friends, as in Study 1. Using the same intuitive effect size measure as in Study 1, we found that high-AOT ( $>1$  *SD*) participants were 4.0 percentage points more likely to have two randomly selected friends belonging to different racial groups than low-AOT ( $<1$  *SD*) participants.

Openness to experience, in contrast, predicted neither racial homophily nor diversity, consistent with the idea that it is a less reliable predictor of intergroup friendships than open-mindedness.

*Political composition of friendship network.* The relationship between open-mindedness and intergroup friendships extended to the political composition of friendship networks. AOT significantly predicted lower political homophily, suggesting that individuals higher in AOT had friends whose political views were less similar to their own, on average. Compared to low-AOT participants, high-AOT participants were on average 0.24 points farther away from their friends on the 7-point liberal–conservative scale. AOT also significantly predicted greater political diversity, such that more open-minded individuals had friends whose political views were more varied across the political spectrum. The average distance between friends of high-AOT individuals was 0.23 points greater than that of low-AOT individuals. In contrast, openness to experience predicted neither political homophily nor diversity.

## Discussion

Study 2 replicated the findings from Study 1, showing that open-mindedness predicted greater racial diversity of friendship networks among adults living throughout the US (although not entirely, given that open-mindedness did not significantly predict racial homophily in this sample). It also extended Study 1 in two ways. First, we found that the hypothesized relationship between open-mindedness and intergroup friendships

**Table 1.** Standardized regression coefficients of open-mindedness and openness to experience predicting racial and political composition of friendship network: Study 2.

	AOT predicts. . .	Openness to experience predicts. . .
Racial homophily	$\beta = -.04$ 95% CI [-0.12, 0.04] $p = .355$	$\beta = -.04$ 95% CI [-0.12, 0.04] $p = .308$
Racial diversity	$\beta = .08^*$ 95% CI [0.005, 0.15] $p = .037$	$\beta = .06$ 95% CI [-0.02, 0.13] $p = .142$
Political homophily	$\beta = -.12^{**}$ 95% CI [-0.21, -0.4] $p = .006$	$\beta = -.01$ 95% CI [-0.09, 0.07] $p = .808$
Political diversity	$\beta = .12^{**}$ 95% CI [0.04, 0.21] $p = .006$	$\beta = .02$ 95% CI [-0.7, 0.10] $p = .686$

Note. Main predictor (actively open-minded thinking [AOT], openness to experience) and outcome variables were standardized.

\* $p < .050$ . \*\* $p < .010$ .

generalized to friendships across a different type of social divide (political orientation). Furthermore, across race and politics, open-mindedness more reliably predicted friendship network composition than openness to experience—consistent with the idea that open-mindedness provides a stronger signal of people’s likelihood of developing intergroup friendships than openness to experience does.

### Study 3

Study 3 built on the prior studies in two ways. First, we sought additional evidence for the patterns observed in Studies 1–2. Specifically, we further tested our hypothesis that open-mindedness is associated with forming friendships across various social divides by examining whether open-mindedness predicted racial, political, and socioeconomic composition of friendship networks. We again compared open-mindedness to openness to experience to confirm that open-mindedness was a more reliable predictor of intergroup friendship, and also tested an alternate operationalization of open-mindedness. We tested these questions in a new population, college students, to ensure that the baseline level of opportunity to form intergroup friendships on

campus was held constant across participants (unlike in Study 2). Second, we aimed to identify mechanisms of the association between open-mindedness and diversity. Specifically, we examined whether open-minded individuals were more likely to seek out cross-group interactions, less likely to avoid cross-group interactions, or more willing to discuss racial and political disagreements.

### Method

**Participants.** We collected data from 1,255 college undergraduates (936 women, 296 men, 23 nonbinary) from psychology research pools across three academic terms (Wave 1: spring 2021, Princeton University; Wave 2: summer–fall 2021, Princeton University and University of California, Davis).

We used the same exclusion criteria as in Study 2 (see Figure S4, SM). Additionally, following pre-registered criteria, we excluded participants who had never been on campus at the time of the survey due to the COVID-19 pandemic, given their limited opportunities to make friends at their university. After exclusions, we retained 936 participants in the racial analyses (471 Asian, 260 White, 158 Latinx, 41 Black, five Native American, one

Pacific Islander), 808 in the political analyses (110 extremely liberal, 357 liberal, 114 slightly liberal, 128 neutral, 59 slightly conservative, 33 conservative, seven extremely conservative), and 876 in the socioeconomic analyses (143 working or lower class, 136 lower middle class, 270 middle class, 255 upper middle class, 72 upper class). After exclusions, all samples provided at least 90% power to detect the effect size observed in Study 1.

*Procedures.* All procedures were identical to Study 2, except that participants could nominate up to 10 friends at their university (separately, participants also nominated high school friends; see SM for these analyses) and provided information on social class in addition to race and political orientation.

#### Measures

*Open-mindedness.* As before, we operationalized open-mindedness as engagement in AOT, using the same six-item scale used in Study 2 ( $\alpha = .75$ ; Metz et al., 2020). We also administered the Close-Mindedness Subscale from the Need for Closure Scale (NFC; Roets & van Hiel, 2011) to examine whether an alternate operationalization of open-mindedness was also associated with friendship homophily and diversity. This subscale captures an individual's unwillingness to have their knowledge challenged by alternative opinions or inconsistent evidence (Roets & van Hiel, 2011). Participants completed eight items (e.g., "Even after I've made up my mind about something, I am always eager to consider a different opinion";  $\alpha = .67$ ). For consistency with the AOT scale, we recoded the items such that higher scores indicate more open-mindedness, and subsequently refer to this recoded subscale as NFC open-mindedness. AOT and NFC open-mindedness were moderately correlated ( $r = .56$ ), suggesting that although they overlap, they may capture different aspects of open-mindedness (i.e., NFC open-mindedness focusing more narrowly on differences in opinions, and AOT more generally on differences in backgrounds, beliefs, and perspectives).

*Openness to experience.* We also collected participants' openness to experience, using the same 10-item scale from Study 2 ( $\alpha = .82$ ; John & Srivastava, 1999). Openness to experience was weakly to moderately correlated with open-mindedness, whether operationalized as AOT ( $r = .28$ ) or NFC open-mindedness ( $r = .38$ ; see Table S28, SM, for correlations between all variables).

*Racial composition of friendship network.* We calculated racial homophily and diversity of networks following the same procedures as in Studies 1–2. Both measures were adjusted to account for the underlying racial compositions of the universities (as preregistered).

*Political composition of friendship network.* We calculated political homophily and diversity of networks following the same procedures as in Study 2. Both measures were unadjusted (as preregistered), as the underlying political distributions of the universities were unknown.

*Socioeconomic composition of friendship network.* Participants additionally selected their friends' and their own socioeconomic backgrounds from seven options: "working or lower class," "lower middle class," "middle class," "upper middle class," "upper class," "other," "I don't know." We treated class as a continuous variable (1 = *working or lower class*, 5 = *upper class*) and used the same procedures for calculating political homophily and diversity to calculate socioeconomic homophily and diversity. The socioeconomic analyses were exploratory, although we followed the same procedures preregistered for the political analyses given that both measures were continuous.

*Mediators (Wave 2 only).* To better understand the mechanisms through which open-mindedness is associated with friendship homophily and diversity, we measured three potential mediators. These measures focused on the dimensions of our confirmatory analyses, that is, race and politics (not class).

*Cross-group interaction interest.* Participants completed one item assessing their interest in interacting with racial outgroup members, and one item assessing interest in interacting with political outgroup members (adapted from Paolini et al., 2016; “If you were free to choose, would you like to interact more with people [from racial groups other than your own/with political views different than yours]?”), on a 7-point scale (1 = *not at all*, 7 = *very much*).

*Cross-group interaction avoidance.* Participants completed one item assessing how much they avoid interacting with racial outgroup members, and one item assessing how much they avoid interacting with political outgroup members (adapted from Paolini et al., 2016; “To what extent do you feel you try to avoid interacting with people [from racial groups other than your own/with political views different than yours]?”), on a 7-point scale (1 = *not at all*, 7 = *very much*).<sup>2</sup>

*Willingness to discuss race or politics with a disagreeing friend* Participants completed one item assessing how often they try to discuss race, and one item assessing how often they try to discuss politics with a friend who generally disagrees with them on these issues, on a 7-point scale (1 = *never*, 7 = *very often*). These items were created for this study.

*Analytic approach.* For the main analyses addressing whether open-mindedness (AOT, NFC open-mindedness) or openness to experience predicts friendship homophily and diversity, we followed the same approach used in Study 2. For the mediation analyses, given that cross-group interaction desire, cross-group interaction avoidance, and willingness to discuss disagreements were only moderately correlated (see Table S28, SM), we tested these mediators simultaneously to compare their explanatory value (see Tables S32 and S33, SM, for separate mediation analyses).

## Results

See Table 2 for all statistics (beta coefficients, 95% confidence intervals, and *p* values).

*Racial composition of friendship network.* AOT significantly predicted lower racial homophily and greater racial diversity of participants’ friendship networks, consistent with prior findings. The effect sizes corresponded to high-AOT participants having 4.8 percentage points more cross-race friends, and 4.1 percentage points greater likelihood of having two randomly selected friends belong to different racial groups, compared to low-AOT participants.

The patterns for NFC open-mindedness, the alternative measure of open-mindedness, were directionally consistent, such that it was associated with lower homophily and greater diversity, albeit not significantly. Openness to experience significantly predicted lower racial homophily and higher racial diversity (unlike in Study 2, where it predicted neither racial homophily nor diversity—consistent with mixed findings in the prior literature).

*Political composition of friendship network.* AOT also significantly predicted lower political homophily and greater political diversity of friendship networks, replicating prior findings. On average, high-AOT (vs. low-AOT) individuals were 0.13 points farther away from their friends on the 7-point liberal–conservative scale, and the average distance between their friends was 0.14 points greater.

NFC open-mindedness showed a similar pattern of results as AOT, predicting significantly lower political homophily and marginally higher political diversity. In contrast, openness to experience did not significantly predict political homophily nor diversity (as in Study 2).

*Socioeconomic composition of friendship network.* We found patterns consistent with the racial and political analyses, with AOT predicting marginally lower socioeconomic homophily and significantly greater socioeconomic diversity. On average, high-AOT (vs. low-AOT) individuals were 0.10 points farther away from their friends on the 5-point class scale, and the average distance between their friends was 0.10 points greater.

The results for NFC open-mindedness were similar: NFC open-mindedness predicted significantly lower socioeconomic homophily and

**Table 2.** Standardized regression coefficients of open-mindedness (AOT, NFC open-mindedness) and openness to experience predicting racial, political, and socioeconomic composition of friendship network: Study 3.

	AOT predicts. . .	NFC open-mindedness predicts. . .	Openness to experience predicts. . .
Racial homophily	$\beta = -.07^*$ 95% CI [-0.14, -0.01] $p = .034$	$\beta = -.06$ 95% CI [-0.12, 0.01] $p = .124$	$\beta = -.10^{**}$ 95% CI [-0.17, -0.03] $p = .005$
Racial diversity	$\beta = .08^*$ 95% CI [0.02, 0.14] $p = .012$	$\beta = .03$ 95% CI [-0.03, 0.01] $p = .319$	$\beta = .10^{**}$ 95% CI [0.04, 0.16] $p = .002$
Political homophily	$\beta = -.08^*$ 95% CI [-0.15, -0.0004] $p = .049$	$\beta = -.09^*$ 95% CI [-0.16, -0.02] $p = .011$	$\beta = .01$ 95% CI [-0.06, 0.08] $p = .750$
Political diversity	$\beta = .09^*$ 95% CI [0.01, 0.16] $p = .033$	$\beta = .08^\dagger$ 95% CI [-0.002, 0.16] $p = .057$	$\beta = .01$ 95% CI [-0.07, 0.08] $p = .868$
Socioeconomic homophily	$\beta = -.07^\dagger$ 95% CI [-0.14, 0.002] $p = .057$	$\beta = -.07^*$ 95% CI [-0.14, -0.005] $p = .034$	$\beta = -.05$ 95% CI [-0.12, 0.02] $p = .136$
Socioeconomic diversity	$\beta = .08^*$ 95% CI [0.005, 0.15] $p = .035$	$\beta = .07^\dagger$ 95% CI [-0.001, 0.14] $p = .053$	$\beta = .05$ 95% CI [-0.02, 0.12] $p = .160$

Note. Main predictor (actively open-minded thinking [AOT], need for closure [NFC] open-mindedness, openness to experience) and outcome variables were standardized.

$^\dagger p < .100$ .  $*p < .050$ .  $**p < .010$ .

marginally greater socioeconomic diversity. Openness to experience did not significantly predict socioeconomic homophily nor diversity.

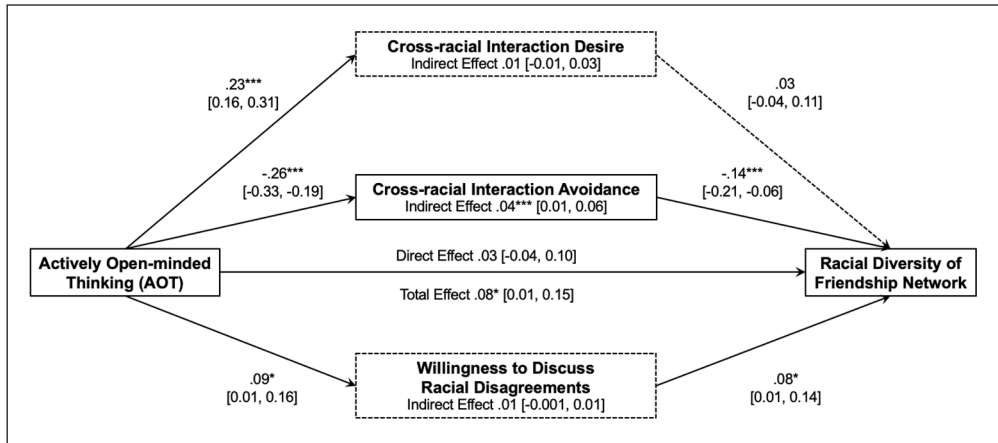
*Mediation analyses.* Lastly, we examined potential mechanisms for the association between open-mindedness and the racial and political composition of friendships.

*Racial composition of friendship network.* Across all models in which there was a significant or marginal total effect in the full sample (see Tables S30 and S31, SM, for full results, including all statistics and models with nonsignificant total effects), cross-racial interaction avoidance significantly mediated the relationship between open-mindedness and racial composition of friendships, over and above cross-racial interaction desire and willingness to discuss disagreements about racial issues. For example, cross-racial interaction avoidance significantly mediated the relationship

between AOT and racial diversity of friends, explaining 44.3% of the variance (compared to 9.3% explained by cross-racial interaction desire, and 8.3% explained by willingness to discuss racial disagreements; Figure 4). These analyses, although cross-sectional, may suggest that open-minded individuals have more racially diverse friendship networks in part because they are less likely to avoid cross-racial interactions. The indirect effects of cross-racial interaction desire and willingness to discuss racial disagreements were not significant (although, in some cases, both a and b paths for willingness to discuss racial disagreements were significant, which may indicate mediation; MacKinnon et al., 2002).

*Political composition of friendship network.* The political composition mediation models yielded similar results. Across all models in which there was a significant or marginal total effect in the full sample, only cross-political interaction avoidance

**Figure 4.** Path diagram with standardized regression coefficients and standard errors from the mediation analysis.



Note. Dotted lines represent non-significant relationships ( $p > 0.050$ ). The total effect of AOT on racial diversity of friends was .08,  $SE = 0.04$ ,  $p = .022$ , 95% CI [0.01, 0.15]. There was an indirect effect of AOT on racial diversity through cross-racial interaction avoidance (estimated effect of .04,  $SE = 0.01$ ,  $p = .001$ , 95% CI [0.01, 0.06]), while the direct effect dropped to 0.03,  $SE = 0.04$ ,  $p = .392$ , 95% CI [-0.04, 0.10]. The indirect effect of cross-racial interaction desire and of willingness to discuss racial disagreements were not significant (although both a and b paths for willingness to discuss racial disagreements were significant, which may indicate mediation; MacKinnon et al., 2002). \* $p < .050$ . \*\* $p < .010$ . \*\*\* $p < .001$ .

significantly mediated the relationship between open-mindedness and political composition of friendships. For example, cross-political interaction avoidance significantly mediated the relationship between AOT and political diversity, explaining 73.8% of the variance (compared to 18.6 and 4.7% explained by cross-political interaction desire and willingness to discuss political disagreements, respectively). Open-minded individuals may have a more politically diverse group of friends in part because they are less likely to avoid cross-political interactions.

*Discussion*

Open-mindedness was associated with the homophily and diversity of participants’ friendship networks across multiple identity dimensions. Specifically, AOT significantly predicted greater racial, political, and socioeconomic diversity of friendship networks and, for the most part, more cross-racial, cross-political, and cross-class friends.

We found tentative evidence that other operationalizations of open-mindedness may also correlate with friendship diversity. NFC open-mindedness (from the Need for Closure Scale) was similarly related to the political and socioeconomic composition of friendship networks, although the associations with racial composition were directionally consistent but not significant. This less consistent pattern may have emerged because NFC open-mindedness specifically assesses open-mindedness to different opinions, whereas AOT assesses open-mindedness to different perspectives and backgrounds more generally.

Similar to Study 2, open-mindedness (especially when operationalized as AOT) was more reliably associated with friendship composition than openness to experience. This finding aligns with the idea that open-mindedness may be the active ingredient predicting the development of diverse friendships.

Finally, mediation analyses suggested that open-minded individuals’ lower avoidance of cross-group interactions explained the associations between

open-mindedness and friendship network composition, over and above desire for cross-group interaction and willingness to discuss racial or political disagreements. These analyses were cross-sectional, limiting causal inference, but at minimum, they suggest that avoidance of cross-group interaction was more strongly correlated with open-mindedness and friendship network composition than desire for cross-group interaction or willingness to discuss disagreement.

## General Discussion

Despite the well-documented benefits of intergroup friendship, little is known about the individual-level factors that lead people to develop these friendships. The present research introduces open-mindedness—the inclination to engage with and understand perspectives different from one's own—as an individual difference predicting the extent to which people form friendships across social divides. Across three studies, more open-minded individuals had more racially diverse friendship networks. In Studies 1 and 3, open-minded individuals also had a greater proportion of cross-race friends. Specifically, going from 1 *SD* below to 1 *SD* above the mean in open-mindedness was associated with a 4.0–6.6 percentage point increase in the likelihood of two randomly selected friends belonging to different racial groups, and a 4.8–8.2 percentage point increase in cross-race friends. These associations were not unique to the racial composition of individuals' friendship networks but rather extended to political and socioeconomic composition as well: Open-minded individuals' friends were more politically and socioeconomically varied and less similar to themselves. We also found initial evidence that these associations were partially mediated by reduced avoidance of outgroup members.

Our work has several unique strengths. First, the longitudinal design of Study 1 enabled examination of the interplay between open-mindedness and friendship diversity over time, revealing a bidirectional relationship, with open-mindedness more strongly predicting later friendship diversity. Although experiments manipulating

open-mindedness are needed to establish causality, this finding raises the possibility that increasing open-mindedness may have recursive effects, with subsequent increases in friendship diversity leading to further gains in open-mindedness, and so on. Such self-reinforcing effects could make interventions increasing open-mindedness particularly impactful over time.

Study 1 also provided evidence against an alternative explanation that people who view themselves as open-minded overestimate the extent to which they have diverse friendships, providing greater confidence that more open-minded individuals actually have more diverse friendships. Open-mindedness was reported not only by adolescents themselves, but also by their teachers, reducing the chances that results were driven solely by self-perception. Moreover, more open-minded adolescents not only nominated more racially diverse friends, but were also nominated as friends by a more racially diverse group of peers. This suggests that open-minded individuals engage in behaviors that facilitate intergroup friendships—such as lower avoidance of interactions with outgroup members, as suggested by Study 3—rather than simply having a rosier perception of their intergroup friendships.

More generally, across three studies, we examined the racial, political, and socioeconomic composition of friendship networks, building on earlier studies that typically focus on a single identity dimension (most often race). We found that open-mindedness was broadly associated with friendship diversity across various dimensions. This is an important development, suggesting that forming relationships across different types of divides may, at least in part, share a common mechanism of open-mindedness to difference.

Finally, we extended prior work by examining both homophily and diversity of friendship networks. Open-mindedness was generally related to lower homophily and greater diversity, indicating that open-minded individuals befriend a diverse group of peers, not limited to a specific outgroup. Although friendships with any outgroup members can improve intergroup attitudes as a whole, these effects are limited and context-dependent

(Boin et al., 2021). Directly measuring the extent to which individuals befriend members of multiple groups—and identifying antecedents of these diverse networks—is thus particularly important to improve intergroup relations in today’s increasingly diverse world.

Being open-minded to various perspectives and cultivating diverse friendships can mean different things for different people, particularly given the power dynamics among social groups. For example, when a Black and a White person engage in race-related conversations, being open-minded to the Black partner’s perspective may allow White individuals to better understand systematic injustice. However, in cases where the White partner holds racist beliefs, any suggestion that the Black partner should be receptive to these beliefs under the guise of “being open-minded” is harmful; not engaging with people who do not believe in the full humanity of one’s group is a sign of self-preservation, not close-mindedness. We did not observe a consistent pattern of subgroup effects across studies (where, for example, the relationship between open-mindedness and friendship diversity was consistently limited to White participants only), but this does not necessarily mean that more open-minded people of color are more likely to befriend White people in particular or “look past” racism. Open-mindedness may also predict a greater likelihood of befriending members of other minority groups, which could have important implications for intraminority coalition-building (Rastogi & Juvonen, 2019). Indeed, intraminority friendships accounted for 40–66% of non-White participants’ cross-race friendships across our studies. Future research would benefit from clarifying when and how group membership shapes the association between open-mindedness and intergroup friendships.

We aimed to increase the generalizability of our findings by including diverse samples from different populations, from adolescents to adults. However, constraints on generalizability remain. Given that lower avoidance of outgroup members (rather than actively seeking out intergroup contact) mediated the relationship between open-mindedness and diverse friendships, the effects

of open-mindedness should be structurally limited by diversity in the environment. No matter how open-minded an individual is, they are unlikely to develop intergroup friendships if their environments are homogenous. This could explain why open-mindedness was less reliably associated with having cross-race friends in Study 2 than in Studies 1 and 3. Study 2 included adults living throughout the US, where persistent residential segregation could limit opportunities to develop cross-race friendships—unlike in the more racially diverse schools examined in Studies 1 and 3. Future research should directly assess the interaction between open-mindedness and structural diversity. Future research should also address limitations on internal validity by testing for longitudinal mediation and experimentally manipulating open-mindedness to measure causal effects on friendship diversity.

The association between open-mindedness and intergroup friendships has important societal implications. Although emphasizing similarity between groups is a common strategy to fostering intergroup friendship, this approach can reduce perceptions of social inequality and desire for social change among both dominant and marginalized groups (Ufkes et al., 2016). Conversely, focusing on group differences can increase motivation for social change (Ruck et al., 2020). Stimulating interest in engaging with differences—in other words, increasing open-mindedness—may help foster friendships across social divides while also supporting efforts to create a more equal society.

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### Author Contributions

YP: conceptualization, methodology, formal analysis, investigation, data curation, writing—original draft, writing—review and editing, visualization. KMT: conceptualization, methodology, investigation, writing—original draft, writing—review and editing, supervision. ALD: resources, writing—review and editing, funding

acquisition. ET: methodology, validation, writing—review and editing.

### Data Availability

Data, code, and materials for all studies, and preregistrations for Studies 2 and 3, are available at the OSF (<https://osf.io/c2xm3/>).

### Declaration of Conflicting Interests

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### Supplemental Material

Supplemental material for this article is available online.

### Notes

1. Since Study 1 was conducted, a new version of the AOT scale was introduced to capture beliefs about how people should think, rather than assessments of one's own thinking style (Baron, 2019). We additionally included this new version—labeled AOT-belief, given its focus on beliefs about how much people should engage in open-minded thinking—in both Studies 2 and 3. Following our preregistration, we also excluded two items from the original eight-item AOT scale used in Study 1 (“People should pay attention to new possibilities,” “Changing your mind is a sign of weakness”), as they did not assess participants' own engagement in open-minded thinking and similar items were retained in the AOT-Belief Scale. Original (six-item) AOT and AOT-belief scores were moderately correlated (Study 2:  $r = .53$ ; Study 3:  $r = .50$ ), and the fit for a two-factor model was significantly better than the fit

for a one-factor model (Study 2:  $\Delta\chi^2 = 213.47$ ,  $\Delta df = 1$ ,  $p < .001$ ; Study 3:  $\Delta\chi^2 = 355.60$ ,  $\Delta df = 1$ ,  $p < .001$ ); therefore, we treated the two scales separately. Results for AOT-belief predicting network composition are reported in the SM. In short, AOT-belief significantly predicted political homophily in Study 2, and racial homophily and diversity as well as socioeconomic homophily and diversity in Study 3. Results were thus similar to the pattern observed for the original AOT scale but less consistent, perhaps because one's beliefs about how people should think do not necessarily represent how one themselves thinks.

2. We preregistered averaging the interaction interest and avoidance items as a composite measure of interaction involvement. However, the Spearman–Brown  $\rho$  for these items was low ( $\rho = .56$ ), so we kept interaction interest and avoidance separate.

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