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Socializing Openness:
Openness to Other as a Novel Facet
Linking Openness to Experience to the Social World

By

Stephen Michael Antonoplis

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Psychology

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Oliver P. John, Chair
Professor Serena Chen
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Abstract

Socializing Openness:
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Who is the person who cares about and values social and cultural diversity? From a basic trait perspective, such a person might be curious—to want to learn about groups outside one's own—and compassionate—to diversity as an opportunity for collaboration rather than competition. Despite curiosity and compassion's clear mapping to Openness and Agreeableness within the Big Five, past research indicates that these traits are insufficient to account for the breadth of thoughts, feelings, and behaviors that arise in intergroup settings. In this dissertation we propose a novel personality trait that describes people's appreciation, embrace of, and preference for social difference in their environment, which we call Openness to Other (O2), in order to better account for individual differences in valuing social diversity and navigating intergroup interactions.

In Chapter 1 we described Openness to Other's nomological network and demonstrate that it is independent of its parent traits, Agreeableness and Openness. We first develop and validate a brief self-report scale to measure Openness to Other, finding that participants can be ordered along it unidimensionally, respond reliably to it, and do not alter their responses to appear more socially desirable. We then demonstrate that O2 relates most strongly to Openness and Agreeableness, in both self- and peer-reports, but that it remains autonomous from each. In addition, we show that O2 was accurately perceived by knowledgeable peers at levels comparable to the other Big Five. We then examine the broad values that motivate people high and low on O2. We found that low-O2 individuals, like those low on Agreeableness or Openness, valued power and tradition. In contrast, those high on O2 valued equality and tolerance, whereas agreeable individuals valued helping and getting along with others and open individuals valued curiosity, creativity, and personal expression. In the domain of intergroup interactions, people high on O2 were described by peers as calm, seeking out such interactions, working to make sure these interactions go well, and seeking opportunities to learn about different cultures. All of these relationships were independent of Agreeableness and Openness. Finally, in the sociopolitical domain, high-O2 people held more positive views toward immigration in general and toward a central outgroup in the U.S. (Muslims) and, importantly, voted against an anti-immigrant presidential candidate (Donald J. Trump). All of these also held independently of Agreeableness and Openness.

In Chapter 2 we applied O2 to an important life domain: racial homophily, or having friends and acquaintances who are the same race as oneself. We found that O2 consistently predicted cross-race friendship. Compared to Agreeableness and Openness, O2 had the stronger and only unique effect,

suggesting it is the "active ingredient." High-O2 individuals had an almost equal 1:1 ratio of same-to-different-race network members, whereas low-O2 individuals had 4:1 same-race. These results held for both college students and middle- aged adults, both friends and new acquaintances in the network, and both networks established before and at a diverse university. Finally, when moving to a more diverse environment, high-O2 individuals seemed to take advantage of the new environmental affordances, adding more different-race members to their networks. Overall, these studies advance understanding of person–environment transactions, showing how personality traits matter to the structure of people's social networks.

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Dedication

I dedicate this dissertation to the many, many people who have helped me grow, think, and persevere in grad school. I couldn't have done this without all of you, and I am forever indebted for your support the last six years.

First is my cohort—Shoshana, Maria, Felicia, and Jordan—who have been there since day one, shared their own anxieties and listened to mine, and shared resources and knowledge as we began and navigated the (sometimes confusing) world of academia and Berkeley bureaucracy. From our windowless office in Tolman to the shining castle of Berkeley Way West, you all were my first support group here. I am so looking forward to seeing how we all grow and change in the coming years.

Second are the two journal clubs I participated in during my time at Berkeley. The Haas journal club—Leif, Don, Ellen, Clayton, Drew, Juliana, Noam, Derek, Mike, Fausto—was my first academic home and provided me with my first friend group. I look forward to seeing all of you at conferences in the coming years. The Personality and Reproducibility group—Smriti, Everett, Josh, Chris, Emily, Paul, Helena, Mari, Özge—showed me that I could organize and sustain a community. I so look forward to seeing how you all develop in the coming years and hope that we stay in touch.

Third are my labs. SIR Lab gave me a place to pursue my interests in the self and develop an interest in social class. EER Lab showed me that emotion regulation matters and introduced me to my partner. And the BEAR Center let me develop expertise, confidence, and community in social and psychological measurement. This dissertation is the culmination of your mentorship.

Fourth are my advisors, Serena and Oliver. I didn't think I would be admitted to Berkeley, but I'm so glad I got to go on this adventure with you. Thank you for giving me the space to grow.

Fifth are my parents, Mike and Barbara, who gave me the best education I could have asked for.

Sixth is my partner, Tabea, whose brilliance and love has gotten me farther in life than I ever anticipated. I love you so much, and I'm looking forward to our next adventures.

Figures and Tables

Introduction

Unlike most other social sciences (e.g., Fields & Fields, 2012; Lowe, 2021; Mousa, 2020; Sen & Wasow, 2016), personality psychology has done little to study intergroup relations and oppression (King, 2022; Syed, 2021). This omission is surprising because social difference and oppression have existed across many cultures throughout human history (Painter, 2010) and affect many aspects of contemporary societies. If personality is to be understood as stable adaptations of affect, behavior, and cognition to one's environment (e.g., Allport, 1937), then there should exist some aspects of personality that result from adaptations to intergroup relations and oppression. The present study presents one such adaptation, a new personality trait we have labeled Openness to Other.

What Is Openness to Other?

Openness to Other (O2) describes people's appreciation, embrace of, and preference for social difference in their environment, where social difference is defined in terms of outgroups relative to an individual's specific constellation of ingroups. O2 does not simply summarize people's attitudes toward various groups but instead captures a broader beliefs about the nature, meaning, and behavioral implications of social difference in society. More broadly, O2 can be defined in terms of the three constituent components of personality traits: affect, behavior, and cognition (i.e., ABC's; Wilt & Revelle, 2015). For O2, cognitions about social difference are at the core of the construct from which the affective and behavioral components derive. Specifically, the prototypical high-O2 individual *thinks* that pluralistic, multicultural societies are valuable and desirable (cognition); *feels* comfortable and warm in intergroup interactions (affect); and *behaves* in proactive ways to cultivate positive intergroup relations in both their personal life and society at large (behavior). Conversely, the prototypical low-O2 individual *thinks* poorly of pluralistic and multicultural societies, *feels* anxious and distant in intergroup interactions, and *acts* to avoid intergroup interactions. Briefly put, when it comes to social difference, O2 contrasts interest, warmth, and a proactive stance (on the high end) with disinterest, disregard, and avoidance (on the low end).

From this description, we can make a few predictions about how O2 should relate to other constructs, organized in terms of affect, behavior, and cognition (i.e., ABC's; Wilt & Revelle, 2015) and at different levels of contextualization, ranging from the most specific (e.g., voting in an election against an anti-immigrant candidate) to the most general (e.g., broad dispositional traits like Openness or values like Universalism). In Table 1, we provide a brief overview of the ABC's of O2, ranging from very general modes of thinking, feeling, and behaving all the way to very context-specific modes.

Table 1

Overview: A Brief Summary of the ABC's of Openness to Other

Variable No.	Affect	Behavior	Cognition
1	Curious/Interested (Big Five self-reports)	Curious/Interested (Big Five peer-reports)	Learning about different cultures and groups
2	Compassionate (Big Five self-reports)	Compassionate (Big Five peer-reports)	Favorable attitudes toward immigration
3	Value equality, freedom, tolerance	Higher frequency of intergroup interaction	Favorable attitudes toward Muslims
4	Less intergroup anxiety	Working to ensure intergroup interactions go well	–
5	–	Voting against anti-immigrant politicians	–

Note. Cell content is written to express the predicted state of individuals higher on Openness to Other.

Major Questions to Be Addressed in Chapter 1

In the next sections, we review the major issues that will be addressed in the empirical studies below. Specifically, after we address basic measurement issues in an initial Study 1, we ask a.) where O2 is to be located within the Big Five personality trait taxonomy (Study 2), b.) what values are held by people high and low on O2 (Study 3), c.) how people high and low on O2 feel, behave, and think in intergroup interactions (Study 4), and d.) what people high and low on O2 think about a central outgroup in the U.S. (Muslims) and immigration (broadly) and how they voted in the 2016 U.S. Presidential election.

Where Does Openness to Other Belong in the Dispositional Trait Space?

Where should O2 be located in the dispositional trait space? In the present research, we focused on the Big Five taxonomy of personality traits (Goldberg, 1993; John, 2021; John & Srivastava, 1999; McCrae & Costa, 1997) as an organizing framework for O2. The Big Five dimensions provide a comprehensive description of personality traits (Goldberg, 1993) and are known to relate to a number of important life outcomes (Ozer & Benet-Martínez, 2006; Soto, 2019). Moreover, they are organized hierarchically into broad traits, narrower facets, and even individual items (Soto & John, 2017; Mõttus et al., 2017), allowing for a comprehensive description of O2.

The trait that seems most obviously relevant is Openness to Experience (or Open-Mindedness), which describes an individual's tendency to think in novel ways, engage deeply with aspects of their environment, and generate creative solutions to problems (DeYoung et al., 2005; John, 2021); (McCrae, 1996). Interacting with people from different backgrounds brings a host of uncertainties and potential stressors (Stephan & Stephan, 1985; Trawalter et al., 2009). To successfully navigate, and to even want to engage, an uncertain situation may require a certain level of openness. In particular, intergroup interactions may require more curiosity than other social situations. Hence, of Openness' facets, we may expect that Intellectual Curiosity would be relevant to O2, compared to Aesthetic Sensitivity and Creative Imagination, which focus more on appreciating art and music and creating new things.

Another trait that seems relevant to O2 is Agreeableness, which describes individuals' compassion, respectfulness, and trust, as well as their tendency to coordinate their own goals with other people's (DeYoung, 2015; John, 2021; John & Srivastava, 1999). Intergroup interactions are often accompanied by power differences (e.g., men vs. women, White vs. Black or Asian Americans) and the potential to see these interactions as competitions for resources and power (Duckitt & Sibley, 2010). To get past the ruthlessness of a competitive worldview and see such interactions as opportunities for cooperation and care might require a prioritization of compassion, trust, and respect. In particular, navigating intergroup interactions in a cooperative, harmonious way may require more compassion than other social situations. Hence, of Agreeableness' facets, we may expect that Compassion would be relevant to O2, compared to Trust or Respectfulness, which focus more on being suspicious of others and following norms.

In terms of the remaining Big Five, we do not suspect any to be particularly relevant to O2. To be more or less open to other does not seem to require different levels of organization, productivity, or responsibility (Conscientiousness). Similarly, being sociable, assertive, or energetic (Extraversion) does not seem relevant to O2. Finally, we see no reason to expect people who are more or less open to other to systematically vary in their emotional instability, depression, or anxiety (Neuroticism).

What are the Values of Individuals High and Low on Openness to Other?

In Schwartz's (1992) formulation, values describe beliefs about desirable end states across situations that guide the selection and evaluation of behavior and that are ordered in their priority. What central values motivate people high and low on O2 across a range of contexts? What sorts of states do people high and low on O2 prioritize and try to create? Social difference is often used to create

oppression (on race and racism, see, e.g., Baum, 2006; Fields & Fields, 2012), so any interest and warmth toward social difference should manifest in valuing an equal, free, and tolerant world (vs. the maintenance of power). In terms of Schwartz's values circumplex (1992, 1994), valuing an equal, free, and tolerant world falls most strongly within valuing Universalism (i.e., understanding and protection of the welfare of all people) and valuing Self-Direction (i.e., independent thought and action). In terms of negative values, people low on O2 should be likely to prioritize the maintenance of Power, Tradition, Security, and Conformity, which serve their interests of not engaging with cultural differences.

These values partially overlap with the values of O2's parent traits, Agreeableness and Openness. Agreeable people devalue Power, and open people value Universalism and Self-Direction and devalue Power, Tradition, Security, and Conformity (Roccas et al., 2002). Although O2 may not differ from Openness or Agreeableness in terms of negative values (e.g., Power, Tradition), agreeable people do value conformity and tradition (Roccas et al., 2002), and Openness, as currently defined, focuses more on curiosity, personal growth, and self-expression than on social issues (Soto & John, 2017a). Thus, it will be important to check how people high and low on O2 differ in their values from more or less agreeable and open people.

How Do Individuals High and Low on Openness to Other Navigate Intergroup Interactions? A Peer Rating Study

Although understanding general values and patterns of affect, behavior, and cognition are important, often it helps to know what someone will be like in particular contexts in which we may meet them. Will they be happy to see us? Will they be friendly? Will they respect us? Past work suggests that intergroup interactions (e.g., cross-race interactions between Black and White individuals) can go poorly because of discrepant goals generally held by members of each group (Bergsieker et al., 2010). It is easy to imagine similar processes working out for other sorts of intergroup interactions (e.g., not understanding emotional display rules in different cultures). Thus, it is important to know how people high and low on O2 are likely to act intergroup interactions.

Following from the preceding analyses, we expect higher-O2 people to: a.) show less anxiety during intergroup interactions, given their higher tolerance for uncertainty; b.) work to facilitate positive intergroup interactions, given their valuing of tolerance and equality; c.) seek out intergroup interactions, given their interest in social difference (see Chapter 2, for an example of this in cross-race interactions); and d.) take opportunities to learn about different groups and cultures, again given their interest in social difference. Agreeableness and Openness may correlate with some of these outcomes, too, but we suspect most to be unique to O2.

Who Gets to Belong in and Lead Society?

Finally, as the last several years have highlighted around the world: Who gets to belong in society, and who gets to lead it, are contentious, important questions. How do people high and low on O2 approach about these questions? We address this in three important domains: a.) attitudes toward Muslims, who have become a focal outgroup in the U.S. post-9/11 (Federal Bureau of Investigations, 2012; Hanes & Machin, 2014), b.) attitudes toward immigration to the U.S., and c.) voting in the 2016 U.S. Presidential election. As elsewhere, we expect that these predictions will hold independently of Agreeableness and Openness.

For attitudes toward Muslims, we predict that high-O2 individuals will hold more positive beliefs about Muslims, preferring to engage in more social interactions with Muslims when possible. Following the 9/11 terrorist attacks conducted by al-Qaeda, Muslims were held responsible for al-Qaeda's actions, targeted with hate crimes and negative sentiment in the following days and years (Federal Bureau of Investigations, 2012; Hanes & Machin, 2014). This treatment highlighted Muslims as an "other" an outgroup to the "core" US. As such, higher-O2 individuals should resist negative

claims about Muslims, given the inequality and oppression such claims support, instead preferring more positive claims about Muslims. Low-O2 individuals should do the opposite.

For attitudes toward immigration, we expect that high-O2 individuals will endorse positive claims about it (e.g., that it strengthens the U.S.) and reject negative claims about it (e.g., that it threatens the U.S.). Why? Despite that immigration to the U.S. often strengthens the country (see, e.g., the history of computing, Dyson, 2012), immigration has often been seen as a threat to those in power, who have, thus, enacted laws to limit immigration on the grounds that immigrants "dilute" the country (e.g., the Chinese Exclusion Act, the Johnson-Reed Act; Baum, 2006). Immigration, thus, occupies a dual position: It brings a host of new life to the U.S. (e.g., culture, knowledge) but threatens those who prefer the safety and power of culture they already know. We suspect high-O2 individuals will endorse the first of these positions and reject the second; low-O2 individuals will do the opposite.

For voting, we predict that high-O2 individuals will reject Donald J. Trump, whom low-O2 individuals should embrace. Starting in his campaign and continuing through his presidency, Trump expressed high degrees of xenophobia and implemented xenophobic policies (e.g., the Muslim ban, building a wall along the U.S. border with Mexico, terminating Deferred Action for Childhood Arrivals [DACA]). Hillary R. Clinton, the Democratic candidate, rejected these positions. Trump's xenophobia should attract low-O2 individuals, for it protects a traditional notion of the U.S. In contrast, it should repel high-O2 individuals, who believe interacting with outgroups is good and that immigration strengthens the U.S.

Major Questions to Be Addressed in Chapter 2

In Chapter 2, we apply Openness to Other to an important domain of social life: racial homophily, or having friends and acquaintances who are the same race as oneself (Rogers & Bhowmik, 1970). In the United States, recent estimates suggest that White Americans have mostly White friends (about 90%), Black Americans have mostly Black friends (about 83%), and Hispanic Americans have mostly Hispanic friends (about 64%; Cox et al., 2016). That people's friends and acquaintances tend to be the same race as them is called *racial homophily* (DiPrete et al., 2011; McPherson et al., 2001). This similarity can be beneficial: It may help produce shared reality and the joy that comes from experiencing mutual understanding (McPherson et al., 2001), leading to relationships characterized by greater intimacy and self-esteem, especially for members of marginalized groups (McGill et al., 2012). In diverse societies, however, this similarity can pose problems, ranging from the Black–White wealth gap (DiTomaso, 2013), to access to information and opportunity (McPherson et al., 2001), and the development of youths' attitudes toward intergroup contact (Eason et al., 2019).

Given these issues, we ask: What are the personality predictors of racial similarity in personal friend and acquaintance groups? Do interpersonal concerns (Agreeableness) or intergroup concerns (Openness) matter to racial homophily, or is a more focused construct necessary (Openness to Other)? Following Chapter 1, we expect that intergroup concerns (Openness) will better predict racial homophily than interpersonal concerns (Agreeableness), but that a construct more focused on intergroup concerns (O2) will best predict racial homophily.

Importantly, we also consider the interplay between personality and environmental factors in predicting racial homophily in personal friend and acquaintance groups. Traditionally, racial homophily has been conceptualized as a general phenomenon, with its origins located in structural features of society (e.g., proximity) and how these structures limit interactions between racial groups (McPherson et al., 2001). Individual differences in racial homophily have traditionally been ignored or treated as ephemeral variation due to variation in structural features (Kossinets & Watts, 2009). Consequently, little empirical research has examined the personality origins of individual differences in racial homophily (for a review, see Selden & Goodie, 2018). Recent work suggests, however, that individual differences in racial homophily do not result from context alone, but also from choice

(Currarini et al., 2010), suggesting that individual differences in racial homophily may originate from psychological features of individuals, including their personality traits. To probe this interplay between personality and environmental factors, we examine how personality effects vary, if at all, across friends and acquaintances in networks, before and after moving to a more diverse area, and for participants who are racial minorities or majorities. We also ask whether O2 predicts adding more different-race friends and acquaintances to one's network after transitioning to a more diverse environment.

Chapter 1

In the present chapter, we present fives studies on Openness to Other. First, in order to study O2, we need to measure it; thus, in Study 1 we describe a brief self-report measure of O2 and demonstrate that it functions as designed. In Study 2, we ask how Openness to Other fits into the broader dispositional trait space (i.e., Big Five). In Study 3, we ask what values people high and low on O2 hold (i.e., Values Circumplex). In Study 4, we examine how people high and low on O2 think, feel, and act during intergroup interactions, as reported from the perspective of knowledgeable peers. Finally, in Study 5, we examine which groups people high and low on O2 think should belong in their personal networks and in their country, as well as whether high or low O2 individuals think an openly racist, xenophobic candidate (Donald J. Trump) should lead their country as president. Throughout each study, we report results from multiple samples, including both self- and peer-reports, and contrast results for O2 with those for Agreeableness and Openness (where appropriate). We report how we determined our sample sizes, all data exclusions, all manipulations, and all measures across all studies. All preregistrations, materials, and data may be accessed on the Open Science Framework. All studies were approved by the University of California, Berkeley Committee for the Protection of Human Subjects, #2015-01-7025.

Study 1: Is Openness to Other a Coherent and Unidimensional Construct?

Is Openness to Other a single, coherent, unidimensional construct as described in our theory? We present two sets of analyses addressing this question. First, confirmatory factor analyses test the dimensionality of a brief self-report measure of O2. This ensures that results for O2 in subsequent studies can be interpreted in terms of variation in O2, compared to variation in multiple substantive dimensions. Second, we ask whether socially desirable responding accounts for responses to the measure of O2, via examining its link to Impression Management. Ruling out socially desirable responding is especially important for self-report measures of O2, given the documented reticence of people to endorse explicitly prejudiced items (Dovidio & Gaertner, 2004).

Method

Participants

For structural analyses, data came from Samples A (adults on MTurk), B, and D (both undergraduate self-report samples). For Impression Management, data came from a subset of Sample F (undergraduate self-report; N_{subset}=257). The adult sample was majority White, aged 30–60, employed, and living across the U.S. The undergraduate samples were majority Asian, in their early 20s, and living in Berkeley, CA. See Table 2 for full details of data cleaning and sample demographics.

Measures

The same 10-item measure of Openness to Other (see Table 3b for items) was administered as part of a large survey. The items were mixed into other sets of items so as to avoid creating connections between them for participants. Items were written to capture affective, behavioral, and cognitive aspects of O2. Thus, items describe feeling upset or anxious, vs. comfortable, in intergroup interactions; wanting to work and socialize with people from different backgrounds; and interest in learning about, vs. ignoring, social and cultural differences. From a candidate set, we selected 10 items that were balanced in content and keying direction and that scaled well along a single dimension. All

Table 2

Demographics for All Samples

				Sample				
Variable	A	B	C	D	E	F	Total
Design							
Time Collected	Spring '19	Fall '18	Fa '16 + Sp '19	Fall '17	Spring '17	Sp '17 + Su '17	–
Population	MTurk	Undergrad	Undergrad	Undergrad	Undergrad	Undergrad	–
N							
Precleaning	504	440	435	563	390	596	2928
Failed most attention checks ($\geq$2 of 3, 3 of 4)	19	18	–	33	–	28	98
Same response for >90% of items	0	14	16	34	17	22	103
Duplicate ID	0	0	72	1	5	6	84
Did not follow instructions	29	–	7	–	–	–	36
Not in the U.S.	11	–	–	–	–	–	11
Postcleaning	445	408	340	495	368	540	2596
Gender							
Female	43%	74%	71%	67.2%	72%	67.5%	65%
Male	57%	25%	29%	31.9%	27%	32.3%	34%
Trans•/Transgender	0%	1%	0%	0.2%	1%	0.2%	1%
Race							
Asian	5%	50%	51%	52%	46%	60%	44.3%

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Black	14%	1%	2%	1%	1%	1%	3.3%
Hispanic/Latinx	6%	9%	10%	11.3%	16%	11%	10.4%
Mixed/Other	1%	10%	11%	7.9%	7%	9%	8%
White	73%	29%	26%	27%	29%	19%	34%
M_{age} (SD)	38.26 (7.95)	20.09 (3.16)	21.63 (3.55)	20.77 (2.22)	20.90 (2.76)	21.01 (3.19)	23.84 (3.80)

Note. Some percentages may not sum to 100% due to missing data for the variables. For data cleaning, we followed the same procedures we preregistered for Sample F (see https://osf.io/fu6bq/). All sample sizes were determined by two rules: 1.) aim for a sample size $\geq$ 300, 2.) collect as much data as we can afford to. In order to meet these criteria for Samples C and F, we combined independently collected samples that had been administered identical surveys.

participants responded to the items using a 7-point Likert-type scale (from 1=*Disagree Strongly* to 7=*Agree Strongly*).

Impression Management was assessed using the best-validated measure of intentionally positive self-presentation, the 12-item Impression Management scale (Paulhus, 1991). Subjects rated each item on a 7-point scale. Alpha was .68 (*M*=3.75, *SD*=0.78).

Procedure

Participants were recruited to complete surveys broadly relevant to personality and social psychology (e.g., workplace attitudes and behaviors, social network structure, well-being, emotion regulation). As part of these surveys, they completed our 10-item measure of O2, which was mixed into other measures, as well as a measure of Impression Management.

Analytic Plan

To assess the unidimensionality of our scale measuring Openness to Other we conducted a series of nested confirmatory factor models comparing 1.) a simple unidimensional model of the scale to 2.) a unidimensional model accounting for acquiescence bias in responses (Aichholzer, 2014). We anticipated the second model accounting for acquiescence would fit better, given the well known phenomenon of acquiescence distorting unidimensional factor structures when scales contain both true- and false-keyed items (Cronbach, 1942; Primi et al., 2020). After comparing nested models, we examined item loadings from the confirmatory models. To examine reliability, we used coefficient alpha and coefficient omega. Alternative explanations were tested via correlations between O2 and Impression Management. All analyses were conducted in RStudio (RStudio Team, 2015) using the *lavaan* (Rosseel, 2012), *psych* (Revelle, 2019), and *Hmisc* (Harrell, 2019) packages.

Results and Discussion

Dimensionality

Table 3a shows results for confirmatory factor analysis models. As expected, the second model representing responses as a function of Openness to Other and acquiescence fit the data better than the simple model. Indeed, the simple model never met conventional cutoffs for fit statistics, whereas the model with acquiescence always did, and the $\Delta\chi^2$ test always favored the second model (all *p*'s < .001). Thus, the 10 items measuring O2 scaled well along a single dimension (excluding response bias). How did the items load onto these two factors?

Table 3a

Comparing Different Models of O2 in CFA

Sample	Model	χ^2 (df)	CFI	TLI	RMSEA	SRMR	BIC
	One Dimension	840.24 (35)	.634	.529	.227	.160	15646.71
A	One Dimension plus Acquiescence	94.13 (34)	**.973**	**.964**	**.063**	**.042**	14906.69
	One Dimension	189.17 (35)	.872	.835	.106	**.065**	11474.87
B	One Dimension plus Acquiescence	112.50 (34)	**.935**	**.913**	**.077**	**.050**	11404.17
	One Dimension	231.14 (35)	.862	.822	.108	**.062**	15338.82
D	One Dimension plus Acquiescence	135.87 (34)	**.928**	**.905**	**.079**	**.047**	15249.73

Note. Bolded values indicate CFI and TLI $\geq$ .900 and RMSEA and SRMR $\leq$ .080.

Table 3b shows item loadings from the confirmatory models in Table 3a. Loadings on the substantive factor are generally good, ranging approximately from .50–.70 (absolute values). True- and false-keyed items loaded in the expected directions. Importantly, loadings on the substantive Openness to Other factor always exceeded loadings on the acquiescence factor, even in the MTurk sample where acquiescence played a larger role in participants' responses. The most central (highest loading) items captured affective (e.g., appreciate different perspectives, feel awkward or uncomfortable), behavioral (e.g., interest in working on a team), and cognitive aspects (e.g., know differences are a strength), suggesting that all three of the ABC's are important to O2. In sum, these results suggest that the scale works as designed, with Openness to Other represented as a unidimensional construct.

Table 3b also reports two measures of reliability: coefficient alpha and omega hierarchical. Alpha was in the mid .80's, and omega hierarchical indicated that about 66% of variance in responses could be attributed to a single O2 factor vs. smaller sub-factors.

Ruling Out Socially Desirable Responding

Having established the dimensionality and reliability of the scale for O2, we next sought to rule out an important alternative explanation about sources of responses. As past work has documented, U.S. adults are reticent to endorse prejudiced statements (Dovidio & Gaertner, 2004). Thus, it was plausible that Impression Management concerns drove responses to our items.

Impression Management concerns did not account for response variance in the measure of O2. Replicating past research, Agreeableness (r=.29), but not Openness (r=-.07), was correlated with Impression Management. Importantly, Openness to Other was uncorrelated (r=.00) with Impression Management, indicating that responses were not driven by concerns about looking good or respectable.

In sum, the brief 10-item measure of O2 presented here scaled well along a single dimension, and responses to it were not drive by socially desirable responding. In the subsequent studies, we characterize people high and low on O2 in terms of systematic differences in affect, behavior, and cognition.

Table 3b

Factor Loadings from Confirmatory Models of Measure of Openness to Other

Items	Substantive Factor				Acquiescence Factor			
True-Keyed Items	A	B	D	*M*	A	B	D	*M*
I appreciate a wide range of cultural perspectives; they help me understand people's feelings and actions and guide my behavior towards people that are different.	.68	.68	.68	*.68*	.49	.30	.29	*.36*
I would be interested in working on a team with students from different backgrounds than mine (e.g., religion, ethnicity, sexual orientation, etc.).	.64	.68	.62	*.65*	.45	.25	.25	*.32*
I know that differences between people can create a great mix of diverse skills and perspectives and can thus make us stronger.	.59	.67	.60	*.62*	.46	.29	.32	*.36*
I am comfortable working on joint projects with people who are very different from me in ethnicity, customs, and behavior.	.57	.58	.55	*.57*	.47	.22	.21	*.31*
I am intrigued by cultural and ethnic differences; people who come from a different background are often more interesting to me.	.51	.59	.48	*.53*	.46	.23	.22	*.31*
Mean Loadings for True-Keyed Items	*.60*	*.64*	*.59*	*.61*	*.47*	*.26*	*.26*	*.33*
False-Keyed Items								
People who look different and act in ways I do not understand make me very uncomfortable.	-.81	-.62	-.69	*-.74*	.36	.20	.19	*.25*
I find it very hard to understand people who have different looks, clothes, customs, and behaviors.	-.75	-.65	-.69	*-.70*	.36	.23	.20	*.26*
I can see that cultural differences are real, but I often feel awkward around such people.	-.69	-.58	-.62	*-.63*	.35	.17	.17	*.23*
I don't get how "global issues" affect me or why they are important?	-.68	-.52	-.54	*-.58*	.35	.21	.19	*.25*
For me it is best to ignore cultural differences. Yes, there are some differences but I wonder: wouldn't it be better if we were all just the same?	-.52	-.49	-.47	*-.49*	.33	.17	.18	*.23*
Mean Loadings for False-Keyed Items	*.69*	*.57*	*.60*	*-.64*	*.35*	*.20*	*.19*	*.24*
Alpha	.87	.85	.84	*.85*	–	–	–	–
Omega Hierarchical	.58	.74	.67	*.66*	–	–	–	–

Note. M=mean loading across samples. Reliability indices were estimated outside of the reported factor models.

Study 2: Are Higher-O2 Individuals Curious and Compassionate?

Do people high and low on O2 differ systematically in their general patterns of affect, behavior, and cognition? Here, we ask where O2 fits into the broader dispositional trait space, specifically the Big Five traits and facets (Soto & John, 2017a). As outlined in the Introduction, we expect O2 to correlate more strongly with Openness and Agreeableness than the other Big Five. And within these two broad, parent traits, we expect O2 to correlate most strongly with the facets of Intellectual Curiosity and Compassion. Here, we test these predictions using both self- and peer-reports.

Method

Participants

Data from Samples A, B, C, and D were used. See Table 2 for all sample information.

Measures

Openness to Other was measured using the same 10-item measure introduced in Study 1. Participants in Sample C used a 5-point Likert scale for O2 instead of the usual 7-point scale. The Big Five were measured using either the full BFI-2 (Soto & John, 2017a) or the short or extra-short BFI-2 (Soto & John, 2017b). Sample A used the full form for Openness, short form for Agreeableness, and extra-short form for the remaining Big Five. Samples B and C used the full form for all Big Five. Sample D used the short form for all Big Five.

Participants from the peer-report sample (C) used a 5-point Likert scale (from 1=*Disagree Strongly* to 5=*Agree Strongly*). For the peer-report sample, items were rephrased to make sense from a third-person perspective (e.g., (Soto & John, 2017a)).

Analytic Plan

Our analyses proceeded in three steps. First, we examined zero-order correlations between O2 and traits and facets. In the second step, we predicted O2 from all Big Five traits simultaneously, as well as from the facets of Agreeableness and Openness. In the third step, we replicated the core results of the first two steps in peer reports.

Results and Discussion

Relationships with Traits

We first examined O2's relation to the broad Big Five traits. Table 4a shows these results for Samples A, B, and D. At the bivariate level, O2 correlated most strongly with Agreeableness and Openness, as predicted. Unexpectedly, O2 consistently correlated positively with Conscientiousness. O2 was inconsistently related to Extraversion and Neuroticism across samples. Given that the Big Five correlate modestly positively (Soto & John, 2017a), O2's relationship with Conscientiousness may result from overlap between Conscientiousness and the other Big Five, so comparing the Big Five in a multiple regression will be important.

At the multivariate level, O2's correlation with Conscientiousness shrank considerably and averaged only .09 across samples, although remained statistically significant. This suggests that most of the relationship between O2 and Conscientiousness was due to overlap with other Big Five rather than a substantive relationship between the two constructs. Importantly, O2's relationships with Agreeableness and Openness were preserved in the multivariate analyses, shrinking somewhat but remaining large (Funder & Ozer, 2019; Richard et al., 2003). In one sample, O2 related more strongly to Openness than Agreeableness (A); in the other two samples, the relationships were more equal in size, slightly favoring Agreeableness (B, D). Across samples, however, O2 related more strongly to Openness (*r*=.37) than to Agreeableness (*r*=.27). Overall, then, these analyses suggested that O2 fits into the Big Five as part of Openness and Agreeableness.

Table 4a

Predicting Openness to Other from Agreeableness, Openness, and Their Facets

	Single predictor models (*r*)				Multiple predictor models (*ß*)			
Big Five Domains	A	B	D	*Mean*	A	B	D	*Mean*
Agreeableness	**.37**	**.42**	**.43**	*.41*	.12	**.33**	**.34**	*.27*
Openness	**.60**	**.42**	**.36**	*.47*	**.55**	**.29**	.24	*.37*
Conscientiousness	**.36**	.24	**.25**	*.28*	.10	.08	.10	*.09*
Extraversion	.04	**.30**	.23	*.19*	-.16	.18	.10	*.04*
Neuroticism	-.16	-.02	-.09	*-.09*	-.02	.14	.12	*.08*
Agreeableness Facets								
Compassion	**.32**	**.46**	**.36**	*.38*	.09	**.31**	.12	*.18*
Respectfulness	**.38**	**.29**	**.31**	*.33*	.10	.08	.12	*.10*
Trust	.24	**.25**	**.36**	*.28*	.02	.07	.22	*.10*
Openness Facets								
Intellectual Curiosity	**.64**	**.39**	**.32**	*.46*	**.53**	.22	.16	*.31*
Aesthetic Sensitivity	**.48**	**.39**	.23	*.37*	.09	.22	.14	*.15*
Creative Imagination	**.48**	**.25**	**.29**	*.34*	-.02	-.04	.05	*-.00*

Note. Values ≥ .25 are bolded. For multiple predictor models, two models were run within each sample. The first model used all Big Five traits as predictors. The second used all facets of Agreeableness and Openness as predictors. Mean effect sizes were computed using Fisher's *r*-to-*z* method.

Relationships with Facets of Agreeableness and Openness

Next, we examined how O2 related to facets of Agreeableness and Openness. Table 4a also shows these results. Consistent with the trait correlations, all facets of Agreeableness and Openness were sizably and significantly correlated with O2, and facets of Openness correlated slightly higher with O2 than facets of Agreeableness. In multiple regressions including all six facets as predictors, Intellectual Curiosity emerged as a consistent and top predictor of O2. Compassion was a good predictor of O2 in two samples, as was Aesthetic Sensitivity. Respectfulness, Trust, and Creative Imagination were generally not good predictors of O2. These results suggest that curiosity, compassion, and aesthetic sensitivity are more central features of O2, compared to creating new things or assuming bad things about other people.

Taken together, these results portray the higher-O2 individual as someone who is curious and kind to other people, versus the lower-O2 individual who is uninterested and uncaring. Does this portrayal hold in peer reports?

Replicating Core Results for Big Five in Peer Reports

We next replicated the core results of Table 4a using peer-reported personality traits. Table 4b shows these results. Starting with the leftmost column, we see that peer-reported O2 was predicted roughly equally well by self-reported Agreeableness and Openness and their facets. As expected peer-reported O2 was best predicted by self-reported O2, indicating that self-reported O2 contains unique variance compared to the self-reported Big Five. Incidentally, that self-reported O2 can be verified by knowledgeable others rules out another alternative explanation of sources of responses to the measure of O2: that self-reported O2 is a self-invented fiction. Along the diagonal, we see that O2 was observed by peers at a level comparable to Agreeableness and Openness and at the high end of their facets. Finally, the top row shows that peers' ratings of Openness (and its facets) correlated with self-reported O2 more than Agreeableness (and its facets) did, replicating the finding that O2 goes with Openness more than with Agreeableness.

Importantly, the relationship between self- and peer-reported O2 was robust to both self- and peer-reported Agreeableness and Openness, and only Openness, not Agreeableness, predicted O2 in any of these multiple regressions. Predicting peer-reported O2 from self-reported Agreeableness, Openness, and O2, O2 was the only sizable, and significant, predictor, $ß=.40$, $SE=0.07$, $t(228)=5.54$, $p<.001$. Predicting self-reported O2 from peer-reported Agreeableness, Openness, and O2, Openness did significantly predict O2, $ß=.19$, $SE=0.07$, $t(245)=2.65$, $p=.009$, but O2 was the better predictor, $ß=.31$, $SE=.07$, $t(245)=4.18$, $p<.001$. Using facets of Agreeableness and Openness as predictors, O2 remained the best predictor by far (*peer O2 from self O2*: $ß=.38$, $SE=0.07$, $t(224)=5.15$, $p<.001$; *self O2 from peer O2*: $ß=.32$, $SE=0.08$, $t(241)=4.17$, $p<.001$).

Overall, these results for self- and peer-reports indicate that high-O2 individuals are more curious and more compassionate; that these differences in patterns of affect and behavior are affirmed by knowledgeable peers; that O2 is accurately perceived at levels similar to other facets and traits within the Big Five; and that accurate perception of O2 occurs independently of O2's parent traits Agreeableness and Openness and their facets. Altogether, these results support O2's status as independent trait that combines elements of Agreeableness and Openness. Next, we use broad goals and values to further differentiate O2 from Agreeableness and Openness in the affective domain.

Table 4b

Self–Peer Agreement Correlations for of Openness to Other Compared to Agreeableness, Openness, and Their Facets

Self reports	Peer reports								
	O2	A	Comp	Resp	Trust	O	IC	AS	CI
O2	*.44*	*.23*	*.18*	*.22*	*.17*	*.39*	*.35*	*.30*	*.34*
A	*.23*	*.45*	.25	.43	.42	.10	.11	.09	.06
Comp	*.19*	.32	*.21*	.31	.27	.16	.15	.13	.11
Resp	*.14*	.38	.16	*.43*	.34	.00	.01	.01	-.03
Trust	*.24*	.40	.24	.34	*.42*	.10	.11	.07	.06
O	*.19*	.15	.11	.16	.10	*.56*	.38	.55	.44
IC	*.21*	.15	.11	.16	.10	.42	*.41*	.30	.35
AS	*.17*	.12	.11	.11	.07	.50	.27	*.60*	.32
CI	*.07*	.09	.05	.11	.06	.41	.25	.37	*.40*

Note. O2=Openness to Other, A=Agreeableness, O=Openness to Experience. Comp=Compassion, Resp=Respectfulness, Trust=Trust. IC=Intellectual Curiosity, AS=Aesthetic Sensitivity, CI=Creative Imagination. Italics and bolding are for visual emphasis, not statistical significance. For peer reports, N=249 for O2 and N=248 for Big Five.

Study 3: What Kind of a World Do People High and Low on Openness to Other Value?

Do people high and low on O2 differ systematically in the enduring, cross-situational goals and desired states they hold? In other words, do they differ in terms of their values and general motivations? Using Schwartz's circumplex of values (Schwartz, 1994), we first examine O2's relations to 10 broad values common across cultures, contrasting O2 with Agreeableness and Openness. We next "zoom into" finer distinctions between O2, Agreeableness, and Openness in terms of the specific individual values held by people high and low on each trait.

Method

Participants

All data came from Sample C (undergraduate). See Table 2 for all sample information.

Measures

O2 was assessed using the same 10-item measure as in all prior studies. Agreeableness and Openness were assessed using the full BFI-2 (Soto & John, 2017a).

Broad values were assessed using Schwartz's Values Circumplex (Schwartz, 1994). This 55-item measure asks participants to indicate the overall relevance and degree of importance of various values to their lives (from -1=*Opposed to my values* to 6=*Very important* and 7=*Of supreme importance*). Values, here, are conceptualized as broad goals that span many contexts. Following recommendations, all responses were ipsatized to remove individual differences in endorsement frequency. The 10 broad values were scored as the mean of their respective items (subscales contained from 2–9 items, *Median*=5; alphas ranged from .11 (Security) to .68 (Power), *M*=.46, *SD*=.16). Individual values were simply the ipsatized items.

Procedure

All three sets of constructs were assessed at separate time points. O2 was separated from values by two weeks and from the Big Five by one week.

Analytic Plan

For values, we first examined correlations between the 10 broad values and Agreeableness, Openness, and Openness to Other. We next examined the highest single-value correlates of each personality trait, both in the positive and negative direction.

Results and Discussion

Broad Values and Goals

Table 5a shows correlations for the 10 values from the values circumplex (Schwartz, 1994) with Agreeableness, Openness, and Openness to Other. What did people high and low on these three traits value, both in common and distinctly?

People high on any of the three traits all valued Universalism (i.e., caring about others outside of one's group). Agreeableness diverged from Openness and O2 after this point. More agreeable people valued Benevolence (i.e., concern for the welfare of close others in day-to-day interactions), whereas people higher on Openness or O2 were somewhat indifferent. Similarly, more agreeable people were neutral on Tradition, Conformity, and Security, which more open and high-O2 people disavowed. More open and high-O2 people valued Self-Direction, which agreeable people were neutral on. Finally, more agreeable people disavowed Stimulation, Hedonism, Achievement, and especially Power; more open and hig-O2 people were neutral on the first three of these but also disavowed Power. Overall, people high and low on O2 shared many of the same values as people high or low on Openness, creating an apparent redundancy between Openness and O2. Yet, these broad values encompass a wide range of individual values—Universalism includes both valuing nature and valuing world peace. How did people high and low on Agreeableness, Openness, and O2 differ in the individual values they endorsed?

Table 5a

Correlations between Values and Agreeableness, Openness, and Openness to Other

Higher-Order Value Types	Values	A	O	O2
Self-Transcendence	Universalism	**.24**	**.27**	**.31**
	Benevolence	**.35**	**.11**	**.15**
Conservation	Tradition	.00	**-.29**	**-.25**
	Conformity	.08	**-.29**	**-.12**
	Security	-.03	**-.21**	**-.16**
Openness to Change	Self-Direction	.00	**.49**	**.29**
	Stimulation	**-.11**	.09	-.01
	Hedonism	**-.11**	-.05	-.03
Self-Enhancement	Power	**-.42**	**-.24**	**-.31**
	Achievement	**-.11**	.06	.09

Note. N was 346 for Agreeableness and Openness, and 327 for O2. Bolded values are significant at least at *p*<.05.

Individual Values and Goals

Table 5b shows the top three most correlated individual values for Agreeableness, Openness, and Openness to Other. Starting with negatively correlated values, people high on the three traits were similar in their disavowal of power-related values (e.g., wealth, protecting face), though people high on Openness or O2 were unique from agreeable people in their disavowal of security- and conformity-related values (e.g., national security, duty). Overall, however, people high on the three traits were fairly similar in the traits they rejected—there seemed to be a common core of values that people high on these traits stood against. More differentiation occurred amongst positively correlated values. Specifically, agreeable people emphasized values related to societal calm and getting along (e.g., "Free of war and conflict"); open people emphasized values related to personal growth and expression (e.g., "Uniqueness, imagination"); and people high on O2 emphasized values related to equality and correcting injustice (e.g., "Equal opportunity for all").

In sum, while people high on Agreeableness, Openness, or O2 all de-emphasized power and controlling others, they differed insofar as agreeable people emphasized "getting along" as a value, open people emphasized personal growth and exploration, and people higher on O2 emphasized equality and correcting injustice. These results highlight how O2 goes beyond its two parent traits of Agreeableness and Openness, functioning as an autonomous trait. In the next section, we examine how people high and low on O2 differ systematically in their affect, behavior, and cognition in intergroup interactions, highlighting distinctions from Agreeableness and Openness.

Study 4: How Do People High and Low on Openness to Other Emote, Act, and Think in Intergroup Interactions, According to their Peers?

In the previous studies, we have seen that people high on O2, compared to those low, are more curious and compassionate, in their own eyes as well as those of knowledgeable peers, and that they value equality and correcting injustice. How might these general patterns of affect, behavior, and cognition manifest in interactions with people from different social and cultural groups?

We suspect that that high-O2 individuals will be better able to handle the uncertainty that can accompany intergroup interactions (Stephan & Stephan, 1985), leading to their feeling less anxiety and more comfort. Relatedly, high-O2 individuals should spend more time interacting with people from different groups (e.g., Chapter 2). Importantly, given their values of tolerance and equality, high-O2 individuals should work to make sure intergroup interactions go well and that people involved can express themselves. Finally, given their curiosity for culture, high-O2 individuals should be more likely to spend time learning about social and cultural groups different from their own.

Method

Participants

All data came from Sample C (undergraduate). See Table 2 for all sample information.

Measures

O2 was assessed using the same 10-item measure as in all prior studies. Agreeableness and Openness were assessed using the full BFI-2 (Soto & John, 2017a).

We assessed affect, behavior, and cognition in intergroup interactions using 12 original items that could be reported by peers from a third-person perspective. Items were written to capture behaviors characteristic of people high and low on O2, approach motivation for intergroup interactions, and joy from intergroup interactions. On average, items correlated .29 (absolute correlations; *SD*=.10, *min*=.05, *max*=.55).

Procedure

All three sets of constructs were assessed at separate time points. O2 was separated from the Big Five by one week and from the peer-reported affect, behavior, and cognition by two weeks.

Analytic Plan

We examined correlations between the three (self-reported) personality traits and the 12 peer-reported acts and motives.

Results and Discussion

Table 6 displays the correlations and multiple regressions for Agreeableness, Openness, and O2 with the peer-reported emotions, behaviors, and thoughts relevant to intergroup interactions.

In terms of emotions in intergroup interactions, higher-O2 individuals were described as calm and relaxed, and not nervous or upset, with correlations about twice the size of those for Agreeableness and Openness. In multiple regressions, O2 was the only unique predictor.

In terms of behaviors, higher-O2 individuals were described as actively working to facilitate successful intergroup interactions, such as intervening in social or cultural conflict and defending people's right to express their backgrounds. Again, these correlations were larger than those for Agreeableness and Openness, and only O2 was a unique predictor. As well, higher-O2 individuals were described as seeking out intergroup interactions in their work, romantic, and casual social lives. These latter correlations were generally about the same size as those for Agreeableness and Openness and unique to both Openness and O2, a surprising result given that O2 predicts having different-race friends and acquaintances much better than both Agreeableness and Openness (see Chapter 2).

Finally, in terms of thoughts, higher-O2 individuals were described as seeking out opportunities to learn about different cultural and social groups and as using this knowledge when relevant in social interactions. These correlations were generally larger than those for Agreeableness and Openness and,

Table 6

Correlations between Peer-Ratings of Openness to Other ABCs with Self-Reported Agreeableness, Openness, and Openness to Other

	Single predictor models (r)			Multiple predictor models (β)		
Affect: Intergroup Anxiety	A	O	O2	A	O	O2
Is nervous or upset when interacting with people from different cultural backgrounds.	**-.17**	**-.17**	**-.28**	-.10	-.11	**-.18**
Is calm and relaxed around people from different social backgrounds.	.10	**.14**	**.29**	-.01	.02	**.30**
Behavior: Acting to Facilitate Intergroup Interactions						
Defends people's right to express themselves and their backgrounds.	**.19**	**.15**	**.28**	.11	.02	**.26**
Doesn't intervene when they see a social or cultural conflict	-.04	-.09	**-.20**	.02	-.04	**-.20**
Values social justice	.11	**.18**	**.32**	.01	.07	**.30**
Tries to find ways to help people from different cultural groups get along together.	**.18**	.00	**.22**	.11	-.14	**.25**
Behavior: Seeking Out Intergroup Interactions						
Seeks opportunities to work with diverse groups and in multicultural settings.	.12	.01	**.23**	.08	-.12	**.28**
Would date a person from a different cultural or ethnic background.	.10	**.23**	**.28**	-.01	**.17**	**.19**
Frequently spends time with people from different cultural and ethnic backgrounds.	.05	**.18**	**.18**	-.04	.14	.13
Cognition: Learning about Different Cultures						
Loves to learn about how people from different parts of the world think, feel, and act.	**.13**	**.22**	**.30**	.05	.12	**.24**
Loves watching documentaries about people from different parts of the world.	.09	.11	**.20**	.04	.02	**.18**
Ignores cultural differences as much as possible, even when it would be better to not do so.	**-.15**	-.07	**-.20**	-.10	.02	**-.19**

Note. Bolded values are significant at least at $p<.05$. N was 248 for Agreeableness and Openness, and 249 for O2. N was 228 for all multiple predictor models.

again, unique to O2.

Overall, these results portray people higher on O2 as uniquely (compared to Agreeableness and Openness) calm and relaxed in intergroup settings, actively working to make sure such interactions go well, and seeking opportunities to learn about people and cultures different from their own., In contrast, whereas individuals lower on O2 were described as anxious and avoidant of intergroup interactions. These results highlight that O2 tracks affect, behavior, and cognition in specific situations as we would expect it to and that O2 goes beyond its two parent traits of Agreeableness and Openness, functioning as an autonomous trait. In the next and final study, we expand our focus to the sociopolitical sphere, asking how O2 manifests in beliefs about which groups get to belong in society and decisions about who gets to lead society.

Study 5: Who Gets to Belong and Who Gets to Lead?
Openness to Other in the Sociopolitical Sphere

As the last several years have highlighted around the world: Societies must answer the difficult, contentious questions of who gets to belong in society and who gets to lead it. Here, we ask how people high and low on O2 who are living in the U.S. approach these questions in three ways. First, since 9/11, Muslims have become a more central, targeted outgroup in the U.S. (Federal Bureau of Investigations, 2012; (Hanes & Machin, 2014)). Thus, we ask what people high and low on O2 think about Muslims pushing for equal treatment and rights; how willing they would be to enter various social relationships with Muslims; and whether they want more or less immigration to the U.S. by Muslims. Second, immigration (broadly) has been, and continues to be, an important and contentious issue in the U.S. (see, e.g., Baum, 2006). Do Americans see themselves as a nation of immigrants, or do they prefer to keep immigrants out? We ask whether differences in O2 track differences in viewing immigration as strength or threat to the U.S. Third, the 2016 U.S. Presidential election pitted an openly racist, xenophobic candidate (Donald J. Trump) against a moderate candidate (Hillary R. Clinton). Whom did people high and low on O2 vote for to lead their country?

Method

Participants

Data came from Samples A (MTurk), D, E, and F (all three undergraduate). Because not everyone votes, sample sizes were smaller for the voting data. See Table 2 for all sample information.

Measures

Personality traits. O2 was assessed using the same 10-item measure as in all other studies. Agreeableness and Openness were assessed with either the full-form (Soto & John, 2017a) or short-form BFI-2 (Soto & John, 2017b).

Attitudes toward Muslims. Three attitudes toward Muslims were assessed. First was Modern Racism, which describes the belief that Muslims are violating cherished values and making illegitimate demands for changes in the racial status quo (e.g., "The racial profiling of Muslims at airports is simply being pragmatic about security."; Leith & Wilson, 2014; McConahay et al., 1981). We used both the original 7-item version (alpha=.85, Sample E) and a two-item adaptation (alpha=.89, Sample A). Second was Social Distance, which describes how willing participants would be to enter into a variety of casual and serious relationships with Muslims (e.g., coworker, neighbor, spouse, child-in-law; Bogardus, 1933). We used both the original 8-item version (alpha=.94, Sample E), and a 3-item adaptation (alpha=.94, Sample A) consisting of three low to moderately involved relationships (e.g., work colleague) that we made after finding that the eight individual items correlated very highly (generally ≥.70). Third was participants' desire for more or less immigration to the U.S. by Muslims. This was an adaptation of an item from a report by the Public Religion Research Institute (Cooper et al., 2016). Modern Racism and Social Distance correlated -.56 (Sample A) and -.60 (Sample E); Social

Distance and Immigration were never administered in the same subsample, nor were Modern Racism and Immigration.

   Attitudes toward immigration. Our two general attitudes about immigration were whether participants believed immigration threatened or strengthened the U.S. These were taken from a report by the Public Religion Research Institute (Cooper et al., 2016). They correlated -.36 (Sample D), -.44 (Sample A), and -.44 (Sample F).

   Voting. Finally, voting in the 2016 U.S. Presidential election was assessed by first asking participants whether they were eligible to vote and did vote, and then by asking which candidate from all possible candidates they voted for (i.e., Donald Trump, Hillary Clinton, Gary Johnson, Jill Stein, Darrell Castle, or someone else they wrote in). For analyses with voting, we examined only participants who voted for either Donald J. Trump (49% of subsample) or Hillary R. Clinton (51% of subsample).

Procedure

   All measures were administered in a single session. Personality measures were interspersed with each other. Attitudes measures were interspersed with each other where possible.

Analytic Plan

   We first examined correlations between Agreeableness, Openness, and O2 with all outcomes; then, we examined how the three personality traits compared in a multiple predictor model. For voting, we added three control variables, coded to contrast the group with the most social power vs. all other groups: gender (men vs. women and non-binary people), race (White vs. People of Color), and age.

Results and Discussion

Attitudes Toward Muslims and Immigration

   Table 7a shows relationships between the three attitudes toward Muslims, as well as toward immigration as a threat or strength, with Agreeableness, Openness, and Openness to Other. For correlations, Agreeableness, Openness, and O2 all related to these attitudes in the expected directions. People higher on these traits rejected modernly racist statements about Muslims, reported greater willingness to enter various social relationships with Muslims, and wanted more immigration to the U.S. from Muslims. People higher on these traits also viewed immigration (in general) not as a threat to the U.S., but a strength. In the multiple predictor models, O2 had the only unique effect, and that was consistent across all three samples. In fact, in general, the correlations for Agreeableness and Openness reduced to very close to zero in the multiple predictor models, indicating that O2 fully accounted for their effects and was itself not accounted for by these higher order traits.

Table 7a

Relationships between Attitudes Toward Muslims and Attitudes Toward Immigration with Agreeableness, Openness, and Openness to Other

	Muslim-specific attitudes							Group-general attitudes						
	Modern Racism		Social Distance			Immigration Amount		Immigration as Threat			Immigration as Strength			*Mean*
Trait	A^	E	A^	E	F^	D	F	A	D	F	A	D	F	
Single predictor models (r)														
A	**-.31**	**-.25**	**.24**	**.17**	.10	.11	.17	**-.26**	**-.22**	**-.23**	.09	**.17**	.05	*.18*
O	**-.43**	**-.34**	**.29**	**.28**	**.34**	.10	**.25**	**-.42**	**-.16**	**-.17**	**.20**	**.16**	.07	*.25*
O2	**-.68**	**-.54**	**.58**	**.47**	**.36**	**.23**	**.36**	**-.71**	**-.41**	**-.42**	**.43**	**.37**	**.44**	*.47*
Multiple predictor models (ß)														
A	-.06	.01	.04	.00	-.05	.01	.05	.01	-.06	-.08	-.07	.01	-.14	*.00*
O	-.02	-.10	**-.11**	.08	**.20**	.03	**.18**	-.01	-.00	-.08	-.06	.03	-.03	*.04*
O2	**-.65**	**-.46**	**.63**	**.42**	**.27**	**.21**	**.27**	**-.72**	**-.38**	**-.37**	**.49**	**.35**	**.50**	*.45*

Note. Bolded coefficients are significant at least $p < .05$. "^" indicates that a short form of the outcome variable was used in a particular sample. Mean effect sizes were computed using Fisher's *r*-to-*z* method.

Voting for Leadership: Donald J. Trump vs. Hillary R. Clinton in 2016

Finally, we examined how O2 related to voting in the 2016 U.S. Presidential election in our sample of employed adults aged 30–60 living across the U.S. (Sample A). Did higher O2 individuals reject Donald Trump in favor of Hillary Clinton due to his open racism and xenophobia? Table 7b shows results for Agreeableness, Openness, and Openness to Other, as well as gender, race, and age. In the single predictor models for all six variables, all three personality traits predicted a lower likelihood of voting for Donald Trump. In addition, women and non-binary people were less likely to vote for Donald Trump than men. Were these effects unique?

In the multiple predictor model, O2 was the only personality trait with a unique, significant correlation with voting. Individuals higher on O2 were considerably less likely to vote for Donald Trump. The gender difference also remained significant in the multiple predictor model.

Figure 1 shows the slope of O2 from the multiple predictor model. At the lowest levels of O2 (i.e., answering "Disagree Strongly" to all items), there was almost a perfect probability (=1) of voting for Donald Trump. At middle levels of O2 (i.e., moderately elevated endorsement of items), this chance dropped to roughly chance (=.5). Finally, at the highest levels of O2 (i.e., answering "Agree Strongly" to all items), the chance of voting for Donald Trump dropped to as low as 1 out of 4 (=.25).

In sum, people high on O2 were more likely to reject racist statements about Muslims, to be willing to enter less and more involved social relationships with Muslims, and to want more immigration to the U.S. by Muslims. They also believed that immigration (broadly) was not a threat to the U.S., but a strength. Finally, they rejected a xenophobic candidate for president, Donald J. Trump. Critically, all of these effects were independent of Agreeableness and Openness, O2's parent traits, further demonstrating O2's status as an autonomous trait.

Table 7b

Model Predicting Voting for Donald J. Trump vs. Hillary R. Clinton for U.S. President in 2016: Odds Ratios [with 95% Confidence Intervals]

Predictor	Single Predictor Models	Multiple Predictor Model
Agreeableness	**0.79 [0.64,0.99]**	1.28 [0.96,1.71]
Openness	**0.54 [0.41,0.70]**	0.77 [0.57,1.03]
O2	**0.39 [0.30,0.50]**	**0.42 [0.31,0.59]**
Gender (Women + Non-binary)	**0.53 [0.35,0.83]**	**0.60 [0.36,0.99]**
Race (People of Color)	1.10 [0.68,1.78]	1.07 [0.62,1.88]
Age	0.99 [0.97,1.02]	1.00 [0.97,1.03]

Note. Data were from Sample A (MTurk). N=325 due to missing data (participants not voting). Effect estimates set in bold are significant at least at *p*<.05.

Figure 1

Predicted Probability of Voting for Donald J. Trump vs. Hillary R. Clinton: Effect of Openness to Other from the Multiple Predictor Model

Study 4: Voting in 2016 U.S. Presidential Election: Effect of Openness to Other
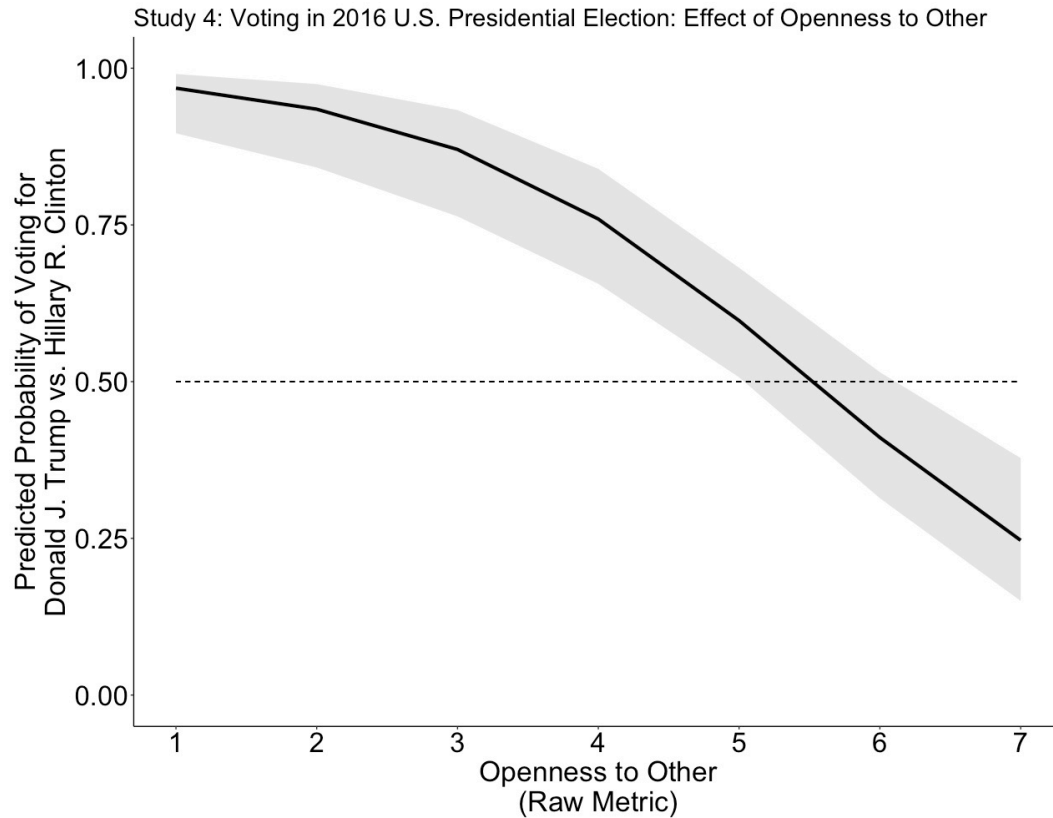
Note. The dashed line indicates an equal probability (=.50) of voting for each candidate. Participants with O2 scores corresponding to portions of the regression line above this dashed line were more likely to vote for Donald J. Trump. Participants with O2 scores corresponding to portions of the regression line below the dashed line were more likely to vote for Hillary R. Clinton.

Chapter 2

In the present chapter, we tested whether personality traits were associated with lower rates of racial homophily across four studies. We collected data both from a more general, national sample of middle-aged adults in the U.S. (MTurk, Study 2) and from college student samples at a fairly diverse public university (UC Berkeley, Studies 1, 3, and 4) to test the generality of the phenomenon, as well as specific contextual aspects of it. Importantly, we examined racial homophily in naturalistic contexts where the effects of personality have the opportunity to unfold over time, rather than in short-term experiments. And, we employed a variety of study designs to test our central hypothesis and rule out important alternative explanations. We report how we determined our sample sizes, all data exclusions, all manipulations, and all measures across all studies. All pre-registrations, materials, and data may be accessed on the Open Science Framework at https://osf.io/fbct5/. All studies were approved by the University of California, Berkeley Committee for the Protection of Human Subjects, #2015-01-7025.

Study 1: Initial Test with Self- and Peer-Reported Personality Traits

Given our hypotheses, we focus on three personality traits: Agreeableness, Openness, and Openness to Other. In addition to our primary hypotheses comparing Agreeableness with Openness and Openness with O2, we also sought to rule out a number of potential methodological issues. First, to rule out demand or carry-over effects, we measured personality traits at least one week prior to the social network assessment, guarding against effects of asking participants about their personality and the racial composition of their social network in the same session. Second, we sought to rule out method overlap by measuring personality traits with not only self-reports but also with peer reports. If the peer reports replicate the results obtained with self-reports, then method overlap cannot explain results obtained for self-reports. Importantly, we pre-registered this study (https://osf.io/esx6d/).

Method

Participants. Three-hundred forty participants completed both the self-reported personality measures and, at least one week later, a social network nomination task for partial course credit in their large psychology course. All data were collected using an online platform. Of these participants, 266 (71%) were women. As is typically true of UC Berkeley, the largest racial group on campus were Asian (*n*=199; 51%), with White participants the next largest group (*n*=97; 26%). See Table 2 (Sample C) for further details about sample demographics and data cleaning procedures.

All participants were instructed to nominate a friend or peer who knew them well enough to describe their personality. The peer was then invited to rate the personality of the target participant, and peer ratings were available for 252 of the target participants.

Personality. The Big Five domains of Agreeableness and Openness were assessed with the BFI-2 (Soto & John, 2017a), which uses a rating scale ranging from 1 (Disagree strongly) to 5 (Agree strongly). The 12-item Agreeableness domain scale (e.g., "Is compassionate, has a soft heart") had an alpha of .86 (*M*=3.69, *SD*=0.63). The 12-item Openness domain scale (e.g., "Is curious about many different things") had an alpha reliability of .84 (*M*=3.83, *SD*=0.64). Agreeableness and Openness correlated .27, similar to previous studies (Soto & John, 2017a).

Openness to Other (O2) is a new facet of Openness (see Chapter 1), measured with five true-keyed items and five false-keyed items. In this study items were rated on a 5-point scale (1="Strongly Disagree" to 5="Strongly agree"). Alpha was .86 (*M*=3.93, *SD*=0.59). Prior research has found that the O2 scale shows temporal stability similar to other measures of personality traits and correlates with conceptually related constructs (e.g., universalism), as well as with peer ratings (see Chapter 2). As in these earlier studies, O2 correlated most strongly with its superordinate domain of Openness (*r*=.39) and moderately with Agreeableness (*r*=.27).

Peer-reported personality traits were measured using the same instrument as the self-reports, with items adapted for observer reports (i.e., using 3rd-person format; see Soto & John, 2017a). Peers

rated each item on the same 5-point scale as the self-reports. The alpha reliability coefficients were above .80 for all three traits: .85 for Agreeableness, .86 for Openness, and .83 for O2.

     Social networks. We used an elaborated and unobtrusive procedure to sample the participants' social networks as broadly and comprehensively as possible. Specifically, participants first completed a standard *name generator* task (Wasserman & Faust, 1994), in which they reflected about individuals with whom they interacted to realize each of 17 common interpersonal goals (e.g., to discuss a personal problem with; to borrow money from) and then listed at least one person for each goal. Participants were then asked to select 10 people to represent their social network, with the following constraints: (a) three network members had to be family members (mother or mother-like figure, father or father-like figure, sibling or sibling-like figure); (b) four friends, and (c) three new acquaintances met in the last year. In this study (and all other studies) we restricted the number of network members that could be reported in order to avoid participant fatigue (Smith, 2002) and to avoid confounding racial homophily with network size.

     Family members were included in the beginning of the nomination task because they are usually part of college students' social networks and provided an easy and natural start for the network nomination task. However, they are not relevant for our analyses of racial heterophily because family are usually not freely chosen and, thus, do not count as *choice heterophily* (McPherson et al., 2001). This left seven network members (four stable friends and three new acquaintances) for the present analyses.

     After selecting the final network members, participants reported basic demographics (e.g., age, race, gender) for each member. The following options for race were given: *African American*, *Asian or Asian American*, *Caucasian/White*, *Hispanic/Latin American*, and *Other/Mixed*. These options correspond closely to the options used by the U.S. Census (U.S. Census Bureau, 2020), with the exception of treating *Hispanic/Latin American* as a separate racial category (cf. Page-Gould et al., 2008). On a separate page, when participants could no longer change the nominated members, participants reported on additional aspects of each relationship (e.g., how many years they had known each person). After reporting on their network, participants were asked about their own demographics; the critical variable was race, using the same options as for the race of their network members.

     In this multi-level design, each network member represents an independent observation, nested within participant. The critical dependent variable was whether each network member was of the same race or a different race as the participant (0=*same race*; 1=*different race*). Higher scores indicate higher racial heterophily in the network. Aggregated across the 7 individual network members, scores could range from 0 (all network members were of the *same* race as the participant) to 7 (all network members were of a *different* race from the participant).

     Procedure: Separating personality from network assessments. To eliminate potential demand and carry-over effects, we collected all self-reported personality measures at least one week before the network assessment. All peer-reported personality measures were also separated by at least one week from the network assessment. Moreover, the O2 items were embedded within a longer personality questionnaire. This temporal separation ensures that connections between measures were not apparent to participants, thus protecting against demand effects and against inflation of effect estimates due to shared time of testing. Data from each time point were cleaned separately (i.e., data were not combined before data cleaning). We did not impute or replace missing data, so degrees of freedom may vary slightly across analyses, depending on missing data. All available participants were included in all analyses.

     Analytical approach using multi-level modeling. Due to the hierarchical, non-independent nature of the network data (i.e., 7 network members nested in each participant) and because we planned to examine cross-level interactions between attributes of participants and attributes of network

members, we analyzed the data using multi-level modeling (Offer & Fischer, 2018; Rabe-Hesketh & Skrondal, 2012). Because the dependent variable is dichotomous (same vs. different race), we used logistic multi-level models. For the one continuous DV (time known each network member), we used a Gaussian distribution. In the few cases where we collapsed repeated-measure observations (i.e., summed dichotomous variables), we used standard linear regression with a Gaussian distribution (due to violating assumptions of the Poisson distribution).

The generalized model we used was the following (*eq1*):

$$Y_{ij} = \beta_0 + \beta_1 \text{Trait}_j + \beta_2 X_{2,ij} + \beta_3 \text{Trait}_j * X_{2,ij} + \zeta_{0j} + \zeta_{2j} X_2 + \varepsilon_{ij}$$
$$\zeta_{0j} \sim N(0, \psi_0)$$
$$\zeta_{2j} \sim N(0, \psi_2)$$
$$\varepsilon_{ij} \sim N(0, \psi_\varepsilon)$$

Characteristics (Y) of a specific network member (i) of a specific participant (j) were modeled as a function of a participant-specific intercept ($\beta_0 + \zeta_{0j}$), a level-1 covariate (X_2), a participant-specific slope for the covariate X_2 ($\beta_2 + \zeta_{2j}$), the level-2 covariate Trait (e.g., Openness, Agreeableness, or O2), and the cross-level interaction covariate Trait*X_2. β_1 was the coefficient for Trait; β_2, for X_2; and β_3, for the interaction between Trait and X_2. The ζ_{0j} in the intercept represented a normally distributed participant-specific error term with mean 0 and variance ψ_0. The ζ_{2j} in the slope for X_2 represented a normally distributed participant-specific error term with mean 0 and variance ψ_2. Depending on the analysis, all terms involving X_2 could be removed (e.g., if analyzing only the simple relationship between O2 and some network characteristic), or additional Trait terms could be added (e.g., if controlling for a variable posing an alternative explanation to O2, like Openness or Agreeableness).

Given that higher scores on our DV indicate having *more different-race ties (i.e., more heterophily, less homophily)*, a positive correlation between personality traits and the DV (i.e., $\beta_1 > 0$) indicates that people higher on the trait were more likely to have different-race ties. A negative correlation ($\beta_1 < 0$) indicates that people higher on the trait were less likely to have different-race ties. We predicted that Agreeableness, Openness, and O2 would all relate positively to greater heterophily (i.e., lower engagement in homophily), with $\beta_1 > 0$. Similarly, for any additional, non-trait variables (represented by X_2), the same direction of effects applies (e.g., a positive correlation with $\beta_2 > 0$ indicates that higher values on the variable were more likely to have different-race ties).

Models for non-hierarchical regression followed the same logic as *eq1*, but omitting all random effects. All analyses were conducted in RStudio (RStudio Team, 2015), using R version 3.6.2 (R Core Team, 2019) and the *lme4* (Bates et al., 2015), *nlme (Pinheiro et al., 2019)*, *psych* (Revelle, 2019), and *sjPlot* (Lüdecke, 2020) packages.

Results

Racial heterophily in the average network: Stable friends, new acquaintances, and length of relationship. Across all participants and network members, 61% of network members were the same race as the participant. Examining the data differently, we found that perfect homophily (i.e., zero different-race network members) was the modal pattern in this sample (20% of participants). Thus, even in a fairly diverse college context, racial homophily was the rule for the average network. This finding replicates prior research reporting that heterophily is the exception and homophily is the rule, on average, with about a 2:1 ratio of same-race vs. different-race members in our sample. Table 8 shows the proportion of different-race members for friends, new acquaintances, and the entire network in Study 1. Participants had a greater number of different-race individuals in their new-acquaintance networks (*M*=49%) than in their stable-friends networks (*M*=32%), *p*<.001.

Table 8

M (SD) for Different-Race Network Members Across Network Periods and Samples

	Network period				
	Past	Current			Overall
Study	Friends	Friends	New acquaintances	All ties	
1	–	.32 (.47)	.49 (.50)	.39 (.49)	.39 (.49)
2	–	.33 (.47)	.35 (.48)	.34 (.47)	.34 (.47)
3	.33 (.47)	.38 (.49)	.41 (.49)	.39 (.49)	.36 (.48)
4	.25 (.43)	.32 (.47)	.40 (.49)	.36 (.48)	.30 (.46)
Mean	*.29*	*.34*	*.41*	*.37*	*.35*

Note. These statistics should be interpreted as proportions (or, multiplied by 100, as percentages) of network members that were different-race from participants.

Overall, participants had known their network members for about 4 years (*M*=3.84, *SD*=4.30). As expected, participants reported they had known individuals nominated as friends longer (*M*=5.42 years, *SD*=4.66) than individuals nominated as acquaintances (*M*=1.74 years, *SD*=2.57), and this mean difference of 3.7 years was statistically significant, B=3.67, *t*(372)=19.50, *p*<.001. Interestingly, different-race members had been known for less time (*M*=2.93 years, *SD*=3.37) than same-race members (*M*=4.43 years, *SD*=4.72), B=-1.67, *t*(381)=-8.35, *p*<.001. Moreover, this difference between same- and different-race network members was not entirely explained by different-race members' higher likelihood of being nominated as acquaintances. When entered simultaneously in the multi-level model, both different-race status, B=-1.01, *t*(394)=-5.45, *p*<.001, and being an acquaintance, B=-3.45, *t*(2252)=-25.67, *p*<.001, significantly predicted being known for less time. Independently of their position in the network (friend or acquaintance), different-race individuals had been known for less time than their same-race counterparts.

Predicting individual differences in network racial heterophily: Separate and joint effects for self-reported personality traits. Although homophily described the average participant's network, we also found substantial variation across individuals, opening the question of individual differences in racial homophily. Were these individual differences predictable from personality traits?

The left half of Table 9 ("Single predictor models") shows odds ratios and their 95% confidence intervals for the relations between each of the three personality predictors and network racial heterophily as the outcome, estimated from the multi-level models. Odds-ratios indicate the odds of an outcome in the presence or absence of a second variable. Odds-ratios larger than 1 indicate higher likelihood of the outcome occurring; below 1, lower likelihood; equal to 1, a null effect. Here, odds-ratios indicate how much more (or less) likely participants are to have different- versus same-race network members as they increase on Agreeableness, Openness, or O2.

For self-reported personality, Agreeableness was not significantly associated with having more different-race network members, *OR*=1.04, 95% CI [0.84, 1.19]. The odds-ratio of 1.04 means that people higher on Agreeableness were about equally likely as people lower on Agreeableness to have different-race network members. Since the confidence interval includes 1, the odds-ratio of 1.04 is not significantly different from a null result wherein Agreeableness is not related to change in the likelihood of having different-race network members. Thus, interpersonal kindness was insufficient for the development of different-race friends and acquaintances.

In contrast, Openness was positively associated with having more different-race ties and significantly so, *OR*=1.40, 95% CI [1.11,1.78]. Thus, individuals higher on Openness were more likely to have different-race (vs. same-race) individuals in their networks than individuals lower on Openness, showing that intergroup concerns were relevant to individual differences in racial heterophily.[1]

How did the Openness effect compare to the effect for O2? Individuals higher on O2 were also more likely to have different-race individuals in their networks, *OR*=1.64, 95% CI [1.27,2.12]. To test whether the O2 effect held even when Agreeableness and Openness were controlled, we entered each of these traits simultaneously into a multiple predictor multi-level model. The right half of Table 9 ("Multiple predictor model") shows odds ratios (and 95% CI's) for this three-predictor model. O2 remained the strongest significant predictor of racial heterophily, *OR*=1.45, 95% CI [1.07,1.95], and Openness was significant as well, *OR*=1.37, 95% CI [1.04,1.80]. As shown in Table 9, Agreeableness did not significantly predict racial heterophily, just as in the single predictor model.

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1 For completeness, we report results for the remaining Big Five. Neither Conscientiousness (B$_{Self}$=-0.07, *z*=-0.65, *p*=.515, *OR*=0.93; B$_{peers}$=-0.02, *z*=-0.13, *p*=.893, *OR*=0.99), Extraversion (B$_{Self}$=-0.03, *z*=-0.25, *p*=.805, *OR*=0.98; B$_{Peers}$=0.12, *z*=1.11, *p*=.269, *OR*=1.13), nor Neuroticism (B$_{Self}$=0.14, *z*=1.45, *p*=.146, *OR*=1.14; B$_{Peers}$=0.05, *z*=0.53, *p*=.597, *OR*=1.05) was significantly related to racial heterophily.

Table 9

Personality Traits (Openness, Agreeableness, and Openness to Other) Predicting Network Racial Heterophily in Networks Including All Members: Odds Ratios [with 95% Confidence Intervals]

Study (no. of network members)	Models					
	Single predictor models			Multiple predictor model		
	A	O	O2	A	O	O2
1–Self (7)	1.04 [0.82,1.19]	**1.40** **[1.11,1.78]**	**1.64** **[1.27,2.12]**	0.80 [0.61,1.04]	**1.37** **[1.04,1.80]**	**1.45** **[1.07,1.95]**
1–Peer (7)	1.22 [0.95,1.55]	**1.29** **[1.02,1.63]**	**1.57** **[1.22,2.02]**	0.95 [0.72,1.26]	1.00 [0.75,1.34]	**1.61** **[1.13,2.29]**
2 (10)	1.02 [0.81,1.29]	1.12 [0.89,1.40]	**1.25** **[1.07,1.46]**	0.89 [0.69,1.16]	0.91 [0.68,1.21]	**1.34** **[1.10,1.64]**
3 (14)	**1.27** **[1.06,1.51]**	**1.31** **[1.10,1.56]**	**1.67** **[1.45,1.93]**	0.97 [0.80,1.17]	1.09 [0.92,1.31]	**1.64** **[1.39,1.94]**
4 (14)	1.13 [0.89,1.44]	**1.33** **[1.15,1.53]**	**2.15** **[1.79,2.59]**	0.87 [0.67,1.12]	1.25 [0.95,1.64]	**1.85** **[1.32,2.60]**
Mean	*1.14*	*1.29*	*1.66*	*0.90*	*1.12*	*1.58*

Note. Odds ratios above 1 indicate that the likelihood of a different-race network member increases as the personality traits increases; values below 1 indicate that the likelihood decreases as personality traits increase. An odds ratio of 1 indicates a null effect. Effect estimates set in bold are significant at least at $p<.05$. A = Agreeableness; O = Openness to Experience; O2 = Openness to Other. All analyses use the whole network, collapsing across type of relationship (friend or acquaintance) and network period (pre- or at-Berkeley).

Predicting individual differences in network racial heterophily: Replication with peer-reported personality traits. Results for peer-reported personality traits (Study 1–Peer) are shown in the second row of Table 3, just below those for the self-reports. In the single predictor models, both Openness and O2, but not Agreeableness, were significantly related to having more different-race network members, exactly replicating the self-report findings. Most important, when all three personality traits were entered into the same model, O2 still predicted having more different-race network members. The broad Openness domain was no longer significant, and this was the only difference from the self-reports.

Illustrating the O2 effect on overall network heterophily: Self and peers. For illustration, Figure 2 plots the results for self- and peer-reported O2 using predicted counts of same- and different-race network members on the y-axis. On the x-axis, we show individuals at three levels of O2: low (one SD below the mean), average (at the mean), and high (one SD above the mean). Figure 2 shows the effect for self-reported O2 in the panel on the left. High-O2 participants (scoring +1SD above the mean of O2) had almost as many same- as different-race network members, with a ratio of 1.17 being close to 1. In contrast, low-O2 participants (scoring -1SD below the mean of O2) were predicted to have 3.20 times as many same- as different-race network members. Thus, whereas people high on O2 had nearly equal numbers of same- and different-race network members, people scoring low on O2 had over three times as many same- as different-race network members.

Results for peer-reported O2, in the right-hand panel of Figure 2, showed a very similar pattern and, thus, a close replication of the self-report findings.

Figure 2

Predicted Mean Numbers of Same- and Different-Race Network Members (Study 1): Effects of Openness to Other Measure with Self-Reports (Panel A) and Peer-Reports (Panel B)
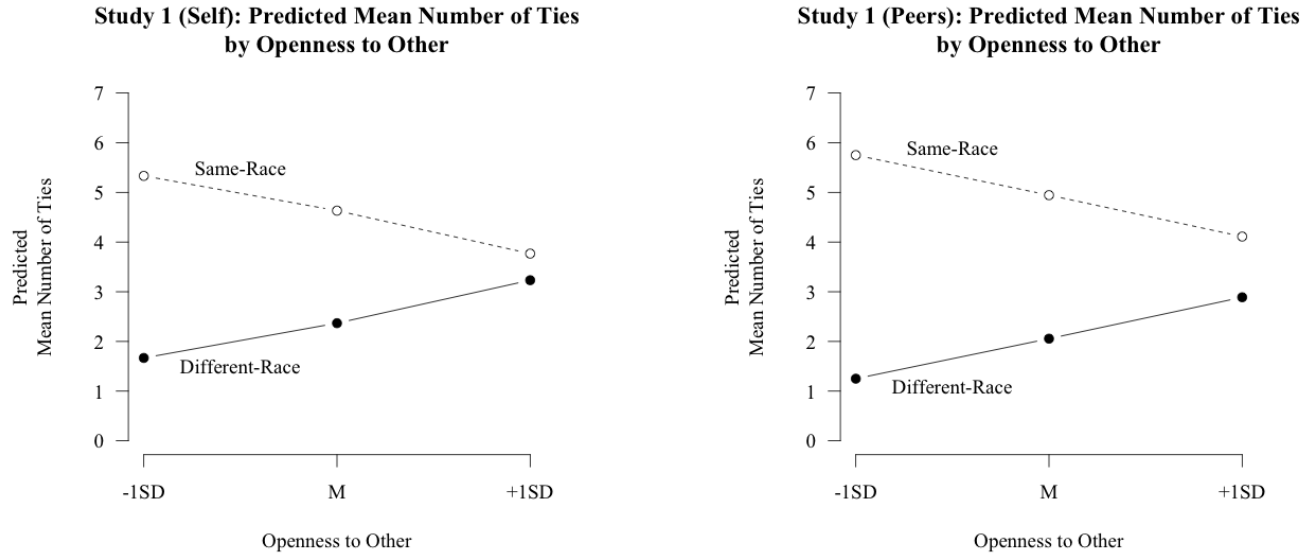
Note. Predicted mean numbers of same- and different-race ties across the whole network at low (-1SD), medium (the mean, M), and high (+1SD) levels of Openness to Other (O2) for self-reported O2 (left panel) and peer-reported O2 (right panel) in Study 1. Note that the peer data are for a subset of the participants from the self-report data, so only the overall shape of the effect should replicate, not the exact details.

Controlling for environmental structure: Base rates. In this West Coast college sample, Asian-American participants were the largest and majority group (51%) and, thus, had the lowest chance to interact with peers from another race. Indeed, Asian participants had a smaller proportion of different-race network members (M=.33, SD=.47) than non-Asian participants (M=.46, SD=.50), B=-0.62, z=-4.33, p<.001. They also scored lower on O2 (M=3.82, SD=0.56) than non-Asian participants (M=4.03, SD=0.60), B=-0.21, t(338)=-3.29, p=.001. Hence, being Asian could account for the observed relationship between Openness to Other and network racial heterophily.

To examine this potential confound, we entered a set of dummy variables indicating participants' races into the multi-level model, with being Asian as the reference group. The odds-ratio for O2 decreased from 1.64 in the bivariate case to 1.63 and clearly remained significant, 95% CI [1.28,2.08]. Thus, O2 still predicted having more different-race network members even when accounting for structural differences in participants' ability to form different-race relationships, and Asian participants continued to be less likely to have different-race network members, B=-0.75, z=-7.47, p<.001, OR=0.47, 95% CI [0.39,0.58].[2] The same results were obtained for peer-reported O2, OR=1.59, 95% CI [1.25,2.02].

Contrasting majority and minority participants. We further examined robustness to structural differences by testing whether participants' being members of the racial majority group (i.e., Asian) or members of a racial minority group (i.e., non-Asian) moderated the relationship of O2 (either self- or peer-reported) with racial heterophily. The results were clear: Even in this design, O2 still predicted racial heterophily, and the effect held again for both self-reported O2, OR=1.53, 95% CI [1.18,1.98], and peer-reported O2, OR=1.48, 95% CI [1.15,1.91]. Consistent with the structural explanation, majority-race participants were less likely to have different-race network members (OR_{Self}=0.59, 95% CI [0.44,0.80]; OR_{Peers}=0.70, 95% CI [0.51,0.96]). Finally, O2's effect did not differ significantly between majority and minority participants (p_{Self}=.246; p_{Peers}=.271). Figure 3 depicts these models, clearly displaying the positive relationship of O2 with heterophily across majority and minority participants, as well as the mean difference between majority and minority participants, for both self-reported and peer-reported personality.

Racial heterophily in acquaintances vs. long-term friends: Consistency across two kinds of relationships and O2 effects for self and peers. So far, we have focused on the entire network (i.e., all 7 members nominated); now, we consider friends and acquaintances separately, providing racial heterophily measures for two different contexts (i.e., closer vs. less close relationships). Did they lead to consistent estimates of the racial heterophily in the individual's social life? Note that these two separate measures are much shorter (especially when based on only four friends and three acquaintances) and thus will provide less stable estimates of heterophily, leading to lower-bound estimates of cross-relationship consistency. Nonetheless, individual differences in heterophily of friends correlated with heterophily of acquaintances, r=.45, 95% CI [.37,.52]. Thus, participants who had more different-race friends tended to also have more different-race acquaintances.

How was O2 related to heterophily in these two kinds of relationship contexts? O2 predicted racial heterophily for both: OR=1.77, 95% CI [1.18,2.64], for friends and OR=1.70, 95% CI [1.28,2.26], for acquaintances, and these effects did not differ (p=.804). In other words, O2 did not relate differently to having more racially different acquaintances and friends. Again, these results replicated with the peer reports (p_{Intx}=.155; $OR_{Friends}$=1.93, 95% CI [1.30,2.86]; $OR_{Acquaintances}$=1.41, 95% CI [1.05,1.89].

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2   Given self-reported Openness' significance in the multiple predictor personality model, we repeated the base rate analysis for Openness. Controlling for participant race, self-reported Openness remained a significant predictor of racial heterophily, OR=1.39, 95% CI [1.12,1.73].

Figure 3

Probability that a Network Member is Different-Race: Effects of Openness to Other for Racial Minority and Majority Participants (Study 1)
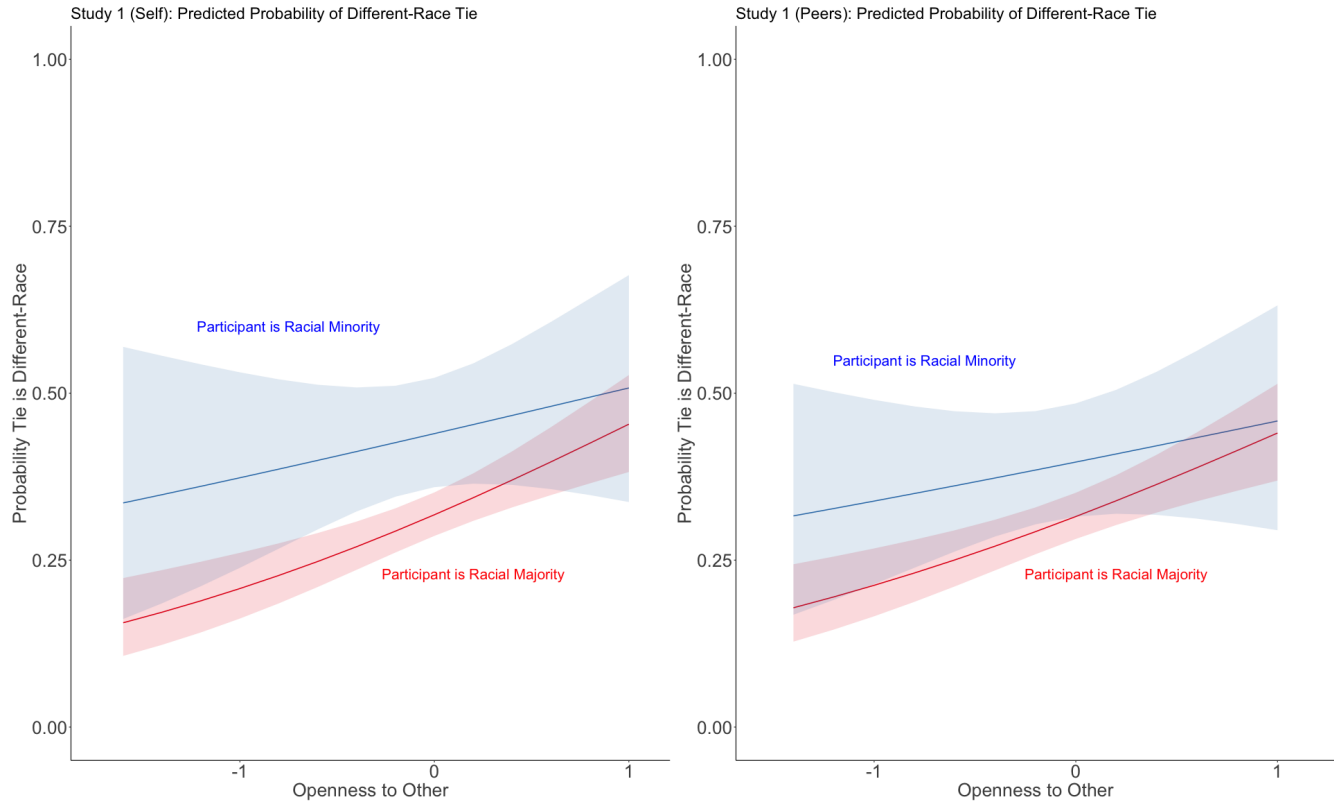
Note. Probability of a different-race tie predicted by Openness to Other (O2) separately for whether a participant is a racial majority (Asian) or minority (non-Asian) in Study 1. Effects for self-reported O2 are depicted in the left panel and for peer-reported O2, the right panel.

Discussion

Contrary to the interpersonal hypothesis, Agreeableness did not significantly predict racial heterophily, with an effect size close to a true null of an odds ratio of 1. This suggests that the important interpersonal characteristics at the core of Agreeableness—compassion, respect, and trust—were not sufficient for making different-race friends or acquaintances.

In contrast, our Big Five candidate trait for intergroup concerns, Openness, was positively related to racial heterophily in the single predictor models, and this effect held in both the self- and peer-reports. However, in the multiple predictor models, the Openness effect remained significant only in self-reports, not peer-reports.

Importantly, O2 was associated with having more different-race network members, and it showed the numerically largest effect. Participants high on O2 (+1SD above the mean) had nearly equal amounts of same- and different-race network members, whereas participants low on O2 (-1SD below the mean) had about three times as many same- as different-race network members.

This link was robust to a variety of alternative explanations and generalizability checks. First, even though O2 correlated positively with both the Openness and Agreeableness domains (consistent with earlier findings), controlling for both of these broader personality traits did not account for O2's link to racial heterophily. Second, and most important, peer-reported O2 correlated with racial heterophily just the same as self-reported O2, indicating that results for the self-reports were not due to self-report method overlap and, in contrast to global Openness, O2 had a significant unique effect in both self-reports and peer ratings. Third, results for O2's effect self-reports and peer-reports did not significantly vary between the Asian majority group and the non-Asian minority group.

Fourth, neither of the two contextual variables we studied made a difference. Structural differences in opportunities to form different-race relationships (i.e., the relative size of one's racial group on campus) predicted racial heterophily, as expected, but did not account for the O2 effect. Similarly, the O2 effect also held separately for both parts of the network, long-term friends and new acquaintances.

Overall, this pattern of findings—significant and consistently positive effects for Openness and O2 but null effects for Agreeableness—supports the view that cross-race relationships involve distinct personality predictors and, thus, different psychological processes than interpersonal relationships within the ingroup. Of course, this finding needs to be replicated in additional samples and in different populations.

In terms of limitations, the present sample consisted of college students at a public university on the West Coast and included social connections students had made while at UC Berkeley, a campus marked by high racial diversity overall. Thus, in the following studies, we planned to test our hypotheses (a) in a sample of middle-aged adults (Study 2) and (b) to extend the network assessment to cover students' past, pre-Berkeley networks (Studies 3 and 4), thus allowing us to study personality effects for both earlier and current college networks.

Study 2: Do the Differential Personality Effects Generalize to a Middle-Aged Adult Sample?

To test whether Study 1's results were limited to the public university context in which the data were collected, we recruited a sample of adults aged 30–60 living in the U.S. from Amazon's Mechanical Turk. This middle-aged sample provides three interesting generalizability tests compared to Study 1: First, MTurk, unlike the Berkeley campus but like the rest of the U.S., is majority White. At UC Berkeley, the majority group is Asian students. Second, MTurkers live in a variety of areas around the U.S., which are typically less diverse than the particularly diverse areas surrounding UC Berkeley (the greater San Francisco Bay Area and Alameda County; Olson, 2014) and would thus provide fewer opportunities for different-race relationships than Study 1. Third, attitudes toward cross-race relationships in the U.S. are neutral overall, despite growing more positive recently (Pew Research

Center, 2017). In contrast, UC Berkeley holds strong pro-diversity norms. Berkeley's administration has endorsed diversity as a core value (UC Berkeley Division of Equity and Inclusion, n.d.), and, on average, students also show a strong commitment to diversity (Fuller & Mele, 2017). U.S. norms might inhibit the formation of cross-race relationships. In short, this replication study offers a strong test, changing three facets of generalizability from Study 1: age group of participants, diversity in participants' environment, and explicit support of pro-diversity norms.

Method

  Participants. We posted 500 HITs to MTurk for a 20-minute survey restricted to employed adults aged 30–60. Due to oversupply of workers, we had responses from 587 workers. Of these, 83 opened the survey but opted not to take it and were removed prior to any analyses. As summarized in Table 1 (on p. 19), another 19 failed to pass at least three of four embedded attention checks, and another 40 were cut for giving random or meaningless responses to required written responses, leaving a final sample size of 445 participants. As in Study 1 and all subsequent studies, we included all available participants in all analyses and did not impute or replace missing data, so degrees of freedom may vary slightly across analyses. Participants resembled typical MTurk samples (see Buhrmester et al., 2011) and were, thus, quite different from the student sample in Study 1: about 50% women, about 75% White, and an average age near 40 (mean age = 38.09 years, SD = 8.25); see Table 2 (Sample A) for full demographics. Participants were paid \$2.50 for participating in this study.

  Personality. Openness was again assessed with the 12-item BFI-2 scale; alpha reliability was .89 (M=3.76, SD=0.80; Soto & John, 2017a). For space reasons, we used the shorter 6-item scale from the BFI-2S to measure Agreeableness (Soto & John, 2017b); alpha was .77 (M=3.74, SD=0.77). As the remaining three Big Five were not of central interest, we used the 3-item marker scales from the BFI-2XS (Soto & John, 2017b), which had alphas of .75 (Neuroticism), .63 (Extraversion), and .68 (Conscientiousness). Openness and Agreeableness correlated more strongly (.41) with each other in this sample. O2 was assessed with the same 10 items as in Study 1, rated on the usual seven-point scale ranging from 1 (Disagree Strongly) to 7 (Agree Strongly). Alpha was .87 (M=5.33, SD=1.14). Consistent with theory and Study 1, O2 correlated most strongly with Openness (r=.60) and moderately with Agreeableness (r=.37), but note that these correlations were higher than in Study 1.

  Social Networks. Participants were told that we were interested in their "effective social network" (i.e., the people with whom they interact regularly) and asked to nominate seven current friends and three recent acquaintances for a total of ten current network members. Nomination of network members occurred on a single web page separate from any further questions about these members, thus providing no clue that the race of the network members was of interest. Participants could decline to nominate a network member if they could not think of more friends or acquaintances beyond those already named. Any "decline to answer" responses were recoded as missing data. After nominating all 10 members, participants were taken to a new web page in which members' initials were displayed in a non-editable fashion (i.e., participants could not go back and change any network members) and then information about each of these network members (e.g., their race) was obtained. To ensure data quality (Bai, 2018), we manually inspected network members' names and removed any nonsensical entries (e.g., "good," "nice," "school," "wooded"). After reporting data on their network, participants reported their own demographics, using the same race options as in Study 1.

  The critical dependent variable was again whether each network member was of the same race or a different race as the participant (0=*same race*; 1=*different race).* Aggregated across all 10 network members, scores could thus range from 0 (none of the network members were of a different race from the participant, perfect racial homophily) to 10 (all network members were of a different race from the participant, no racial homophily).

Procedure: Separating personality from network assessments. Because all data were collected at a single time point (rather than at different times), all personality items preceded all network items in order to hide any connection between the two. To minimize demand and carry-over effects and avoid inflation of estimates, the personality items were embedded within a larger personality inventory. Openness to Other and the Big Five personality measures were administered at the start of the survey, followed by an unrelated task assessing seating preferences during business meetings. The social network task followed at the very end, so as to maximize the distance to the personality trait measures.

Analytical approach using multi-level modeling: Predicting individual differences in racial heterophily. We used the same analytical approach as in Study 1.

Results

Racial homophily in the average network: Stable friends and new acquaintances. Across all participants and network members, 66% of network members were the same race as the participant (see Table 8). Like the college students in Study 1, the modal number of different-race network members was 0 (indicating perfect homophily; 33% of participants). In contrast to the college students of Study 1, these middle-aged adults had similar percentages of different-race individuals in their new-acquaintance networks (*M*=35%) and in their stable-friends networks (*M*=33%), B=0.18, *z*=1.77, *p*=.077, 95% CI [-0.04,0.39]. This difference between samples suggests that the middle-aged adults in this study were not meeting different-race people more often than they retained them as friends. We discuss this further in the General Discussion.

Predicting individual differences in network racial heterophily. Even though racial homophily described the average participant's network, we again found substantial variation across individuals.

The personality trait effects are shown in Table 9 for the entire network of 10 members. Replicating Study 1, Agreeableness was not significantly associated with having more different-race network members, *OR*=1.02, 95% CI [0.81, 1.29]. Openness was positively, but not significantly, associated with having more different-race ties, *OR* =1.12, 95% CI [0.89,1.40]. In contrast to this weak relationship for broad Openness, people higher on O2 were significantly more likely to have more different-race network members, *OR*=1.25, 95% CI [1.07,1.46], suggesting that intergroup concerns were indeed predictive, but only when measured at the more narrow facet level.[3]

As in Study 1, we used a multiple predictor multi-level model to test which of the three traits uniquely predicted racial heterophily. Table 9 shows that O2 remained the strongest and only significant predictor of racial heterophily, *OR*=1.34, 95% CI [1.10,1.64].

Illustrating the O2 effect on overall network heterophily. Panel A of Figure 4 illustrates the relationship between O2 and racial heterophily in the entire network using plots of predicted counts of same- and different-race networks members. Participants high on O2 had 5.61 same-race members and 4.39 different-race members, that is, 1.28 times as many same- as different-race network members, close to an even split. In contrast, participants low on O2 had 7.09 same-race members and 2.91 different-race members, for a ratio of 2.44 times as many. Thus, participants high on O2 had nearly even amounts of same- and different-race network members, as reflected in their ratio near 1, whereas people low on O2 showed a much stronger tendency toward homophily, with more than twice as many same- as different-race members.

Controlling for environmental structure: Base rates. White participants were by far the largest group (73%; see Table 1 on p. 19), giving them more opportunities for same-race contacts. Indeed, White participants had a much smaller percentage of different-race network members (*M*=24%,

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3 For completeness, we report results for the remaining Big Five. Neither Conscientiousness (B=0.01, *z*=0.12, *p*=.901, *OR*=1.01), Extraversion (B=0.17, *z*=1.76, *p*=.080, *OR*=1.18), nor Neuroticism (B=-0.11, *z*=-1.30, *p*=.193, *OR*=0.90) was significantly related to racial heterophily.

Figure 4

Predicted Mean Numbers of Same- and Different-Race Network Members (Studies 2–4): Effects of Openness to Other
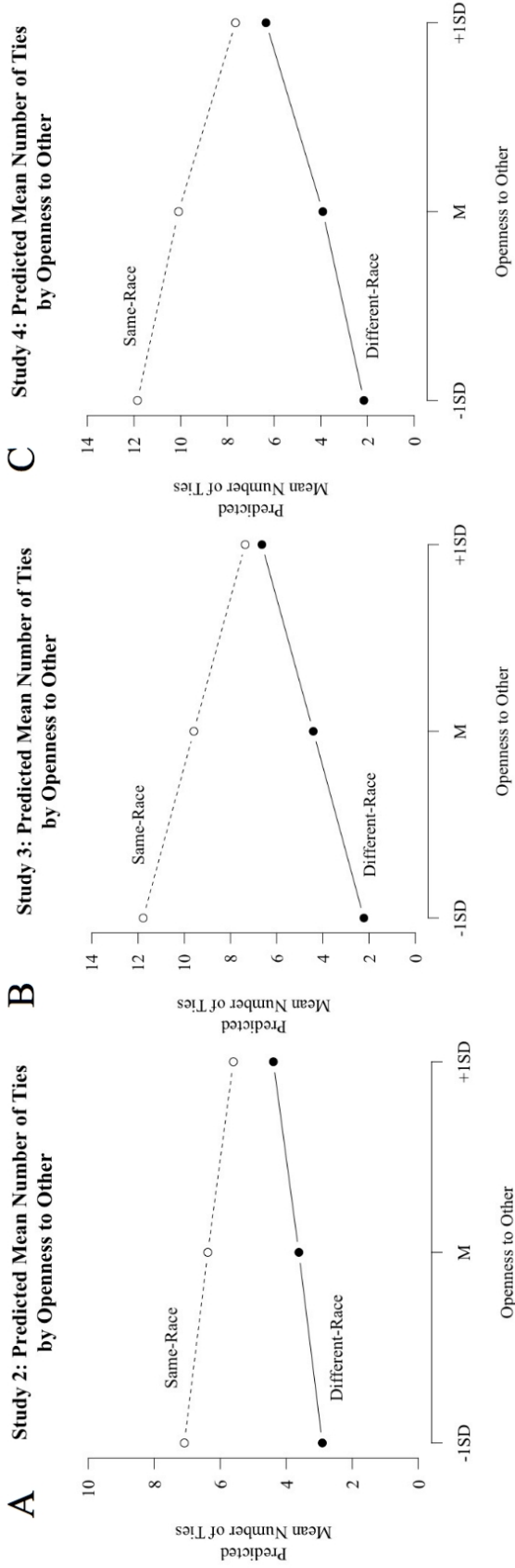
Note. Predicted mean numbers of same- and different-race ties across the whole network at low (-1SD), medium (the mean, M), and high (+1SD) levels of Openness to Other for Studies 2 (Panel A), 3 (Panel B), and 4 (Panel C). Note that Study 2 included a smaller number of total network members (10) than Studies 3 and 4 (both 14).

SD=.43) than non-White participants (*M*=59%, *SD*=.49), *B*=-1.92, *z*=-11.44, *p*<.001. However, White participants did not score significantly lower on O2 (*M*=5.31, *SD*=1.13) than non-White participants (*M*=5.36, *SD*=1.18), B=-0.05, *t*(435)=-0.38, *p*=.703. Thus, being White did not strictly satisfy the conditions for being a third variable confound for the observed relationship between O2 and racial homophily, but ruling out base rates as an alternative explanation is still important (McPherson et al., 2001).

As in Study 1, we entered a set of dummy variables indicating participants' race into the multi-level model, with being White as the reference group. The odds-ratio for O2 decreased only slightly, from 1.25 in the bivariate case to 1.19 when base rates were controlled, and remained significant, 95% CI [1.05,1.36]. Thus, O2 still predicted racial heterophily even when accounting for structural differences in participants' opportunities to form different-race relationships. White participants continued to be less likely to have different-race network members, B=-1.47, *z*=-16.11, *p*<.001, *OR*=0.23, 95% CI [0.19,0.27].

Contrasting majority and minority participants. We further examined robustness of the O2 effect by testing whether participants' majority vs. minority status (here, White vs. non-White) moderated O2's relationship with racial heterophily. Again, O2 positively predicted racial heterophily, *OR*=1.23, 95% CI [1.07,1.42], and majority-race participants were less likely to have different-race network members, *OR*=0.15, 95% CI [0.11,0.21]. Critically, O2's effect did not significantly vary between majority and minority participants (*p*=.570). Panel A of Figure 5 depicts this model, clearly displaying the positive relationship of O2 across majority- and minority-race participants, as well as the mean difference between majority- and minority-race participants. This pattern replicates Study 1, even though the majority group changed from Asian in Study 1 to White in Study 2.

Racial heterophily in acquaintances vs. long-term friends: Consistency and O2 effects. The previous analyses focused on the entire network with 10 members, including both friends (*k*=7) and acquaintances (*k*=3). Here we examine these two parts separately, providing racial heterophily measures for two different kinds of relationships. Individual differences in heterophily for friends correlated .57 (95% CI [.50,.63]) with heterophily for acquaintances. Thus, participants who had more different-race friends also had more different-race acquaintances.

How was O2 related to racial heterophily in these two kinds of relationship contexts? Separate analyses showed that O2 predicted racial heterophily both for friends, *OR*=1.25, 95% CI [1.05,1.48] and for acquaintances, *OR*=1.20, 95% CI [1.003,1.44], and these two effects did not differ significantly (*p*=.709). In other words, just as in Study 1, O2 did not differentially relate to having more different-race friends vs. acquaintances.

Figure 5

Probability that a Network Member is Different-Race: Effects of Openness to Other for Racial Minority and Majority Participants (Studies 2–4)
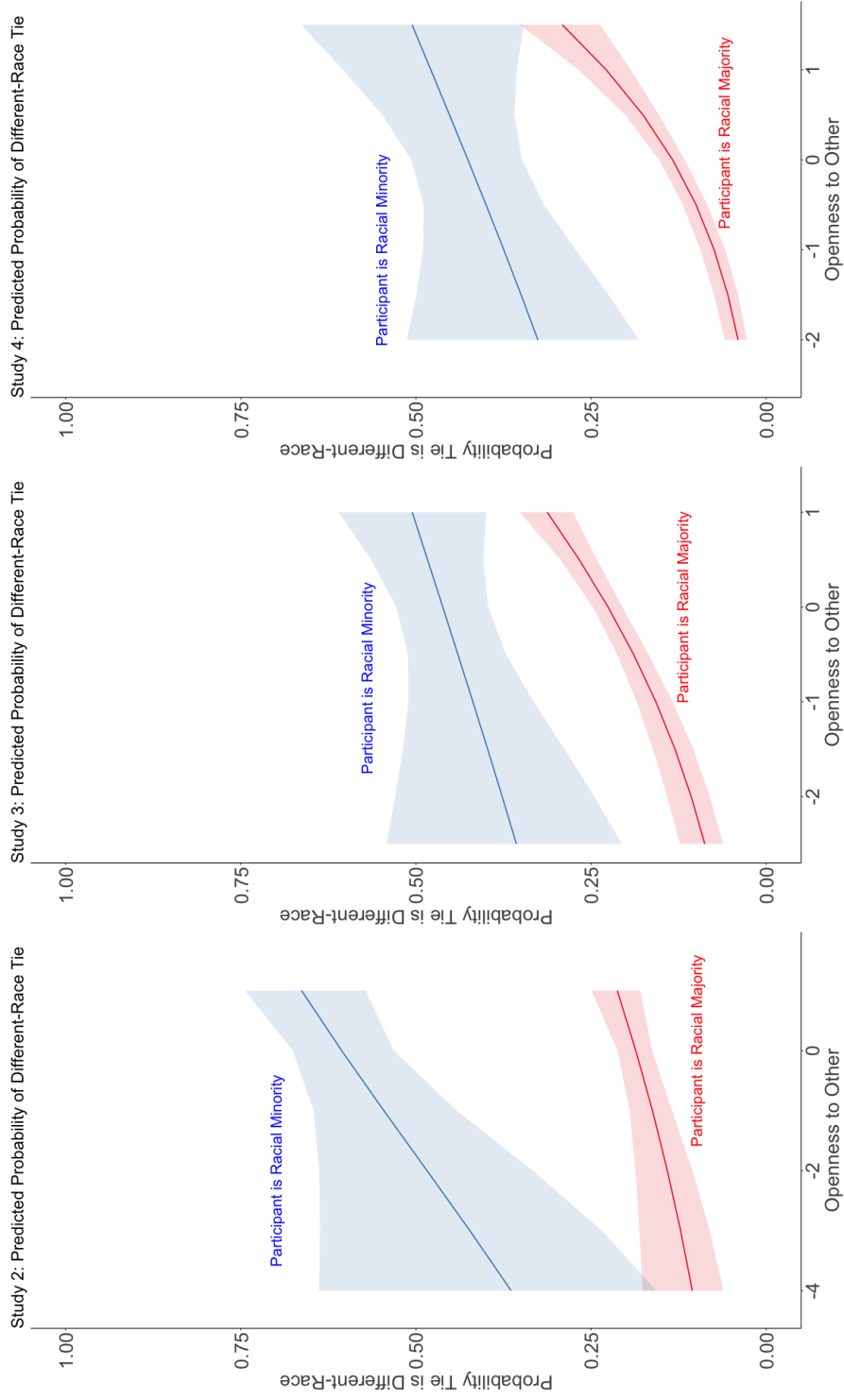
Note. Probability of a different-race tie predicted by Openness to Other separately for whether a participant is a racial majority (White in Study 2; Asian in Studies 3 and 4) or minority (non-White in Study 2; non-Asian in Studies 3 and 4).

Discussion

In this sample of middle-aged, mostly White adults from across the U.S., Agreeableness again failed to predict racial heterophily, and its effect sizes were close to a true null of an odds ratio of 1, thus replicating Study 1. These Agreeableness results reaffirm that being generally prosocial is not sufficient for the formation of different-race friends and acquaintances, highlighting the need to differentiate the personality factors important for the interpersonal vs. the intergroup domain.

The Openness effect was, as expected, positive but small and fell short of significance, thus failing to replicate Study 1. In contrast, the more narrowly conceptualized O2 facet was associated with having more different-race network members. Participants high on O2 had nearly equal amounts of same- and different-race network members, whereas participants low on O2 had about twice as many same- as different-race network members. This link was again robust to all alternative explanations. First, even though O2 correlated positively and substantially with Openness and Agreeableness, controlling for both of these broader personality traits did not account for O2's link to racial heterophily. Second, the O2 effect was again not significantly moderated by whether participants were members of the majority-race (here, White) or minority-race (here, non-White) group. Third, neither of the contextual factors explained the effect. Structural differences in opportunities to form different-race relationships (i.e., relative size of one's racial group) predicted racial heterophily but did not account for the O2 effect. In addition, O2 predicted heterophily for both long-term friends and acquaintances. This pattern of findings provides a powerful replication of the findings from Study 1, even though the samples differed in the age and employment status of the participants, changed the majority group from one (Asian) to another (White), and took place in less diverse and less pro-diversity contexts.

Overall, Study 2 showed that the O2 effect is not limited to highly diverse contexts where diversity is not only present but also valued and encouraged. The effect was also obtained in comparatively homogeneous contexts with neutral attitudes toward cross-race contact. In the following studies, we further probe the generalizability of our results and extend them by examining students' networks from before they came to UC Berkeley.

Study 3: Consistency and Change from Pre-College to At-College Networks

Studies 1 and 2 demonstrated that O2 predicted network racial heterophily in a college student sample on a relatively diverse campus as well as in a middle-aged, national adult sample. The present study aimed to replicate these results and added a new feature: We asked participants to report the social networks they had before they moved to UC Berkeley (for most students, their high school network). Thus, we could test how students higher and lower on O2 responded differentially to the increased diversity in the San Francisco Bay Area compared to the other parts of the U.S. they had moved from. In particular, conditional on the racial heterophily of pre-Berkeley networks, a positive relationship between O2 and racial heterophily of Berkeley networks would suggest that higher-O2 students at Berkeley formed more different-race network members on campus than would be expected solely based on their pre-Berkeley networks.

Method

Participants. Data were collected from 563 undergraduates at UC Berkeley for partial course credit. We filed a pre-registration (May 2017; available at https://osf.io/fu6bq/) before the data for this study and for Study 4 were collected. While we do not count this study as pre-registered, we did follow all of the data cleaning and analytic procedures described in the pre-registration. In particular, Section 4b (within Hypotheses) of the pre-registration describes the general logic for linking O2 with racial heterophily in the networks. The final section of the pre-registration describes data exclusion procedures, which we followed for Study 3 and Study 4. After exclusions, our final sample size was 495 participants. Sixty seven percent of these participants were women; following norms at UC

Berkeley, Asian students were the largest racial group (52%) and White students the second largest (27%). See Table 2 (Sample D) for further details about sample demographics.

Personality. We used the 6-item BFI-2S scales (Soto & John, 2017b) to measure Agreeableness (α=.76, *M*=3.73, *SD*=0.74) and Openness (α=.75, *M*=3.73, *SD*=0.75). Agreeableness and Openness correlated .27. O2 was measured with the same items and seven-point scale as in Study 2 (α=.84, *M*=5.71, *SD*=0.87). As in Studies 1 and 2, O2 correlated positively with Openness (*r*=.36) and Agreeableness (*r*=.43), but note that in this sample, unusually, the correlation with Agreeableness was stronger.

Social networks. We used a similar nomination procedure as in Study 2, but with some modifications and extensions. As before, participants were told that we were interested in their "effective social network" (i.e., people with whom they interact regularly). In Study 1, we did not distinguish friends from *before* Berkeley and friends *from* Berkeley, but that distinction should make an important difference because Berkeley is more racially diverse than most other parts of the U.S. (Olson, 2014). Thus, in Study 3, we asked participants to list seven friends from before they came to Berkeley (most commonly their high school friends), as well as four friends and three new acquaintances they made since coming to Berkeley (whether at UC Berkeley or outside of UC Berkeley). This expanded network task yielded 14 network members in total—the longest and most extensive network nomination used in the present studies.

As in Study 2, name generation occurred on a separate page from, and prior to, reporting any characteristics of the network members so that names of network members could not be changed after the initial generation page. After reporting data on their network, participants reported their own demographics. The critical dependent variable was again whether each network member was of the same race (=0) or a difference race (=1) as the participant.

Procedure and analytical approach. Data were collected during a single assessment, using the same procedure as in Study 2 to protect against demand and carry-over effects. For the multi-level modeling, we used the same analytical approach as in the two earlier studies.

Results

Describing the pre-Berkeley and at-Berkeley networks and how they differ. Overall, about two-thirds of networks members were of the same race as the participants (*M*=64%). Table 8 shows that new acquaintances were more likely to be of a different race (*M*=41%) than long-term friends (*M*=38%), B=0.31, *z*=3.02, *p*=.003, replicating Study 1.

What opportunities for cross-race interactions were available before and at UC Berkeley? Friends made before participants came to UC Berkeley (i.e., for most students, their high school friends) were even less likely to be of a different race (*M*=33%) than current network members at UC Berkeley (*M*=39%), B=0.47, *z*=5.30, *p*<.001, consistent with the idea that one's immediate environment (here, students' less diverse hometowns vs. UC Berkeley) is an important determinant of cross-race relationships. The left panel of Figure 6 depicts this difference in the form of counts of different-race network members. Before coming to UC Berkeley, 32% of participants had 0 different-race network members, whereas at UC Berkeley only 24% did.

On average, participants had known their 14 total network members for 4.32 years (*SD*=4.17) and had followed our instructions when listing their three kinds of networks members: Acquaintances met at UC Berkeley had been known for less time (*M*=1.00 years, *SD*=1.15) than friends at UC Berkeley (*M*=2.02 years, *SD*=1.87), B=1.00, *t*(2596)=14.86, *p*<.001; moreover, network members at UC Berkeley had been known for less time (*M*=1.67 years, *SD*=1.73) than friends from before UC Berkeley (*M*=6.87 years, *SD*=4.23), B=-5.20, *t*(6029)=-37.18, *p*<.001.

Figure 6

Number of Different-Race Network Members Before and At UC Berkeley (Studies 3–4)
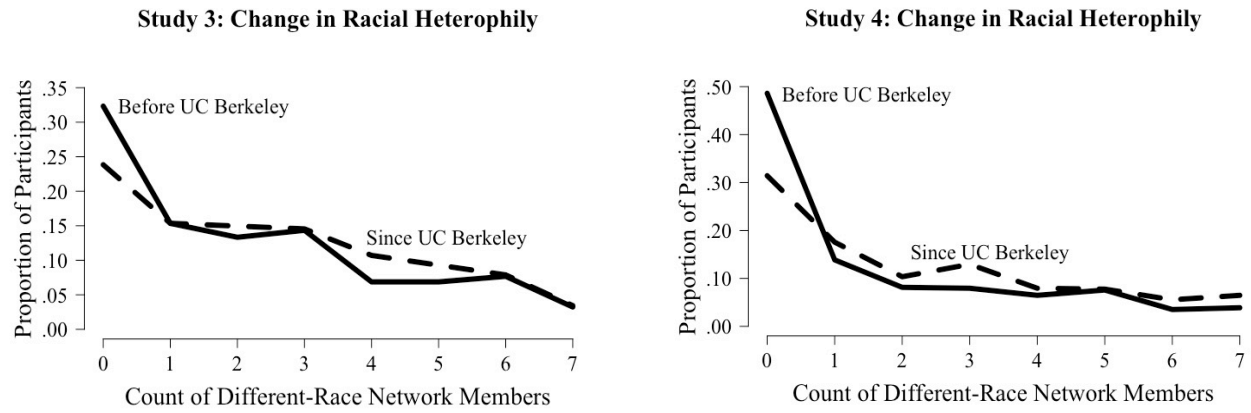
Note. Proportion of participants in Study 3 (left panel) and Study 4 (right panel) with different counts of different-race network members before and at UC Berkeley.

As in Study 1, different-race individuals had been known for less time (*M*=3.84 years, *SD*=3.78) than same-race individuals (*M*=4.72 years, *SD*=4.33), B=-0.96, *t*(5839)=-6.74, *p*<.001. This difference was not explained solely by different-race individuals' higher likelihood of having been met at UC Berkeley or of being acquaintances. When entered simultaneously in the multi-level model, all three predicted being known for less time: different-race status, B=-0.50, *t*(5722)=-6.01, *p*<.001; having been met at UC Berkeley, B=-4.99, *t*(5722)=-35.77, *p*<.001; and being an acquaintance, B=-0.98, *t*(5722)=9.94, *p*<.001.

Predicting racial heterophily from personality traits. At the bivariate level, Agreeableness, Openness, and Openness to Other significantly predicted having more racially heterophilous networks (all *p*'s<.01; see Table 9). Recall, however, that Agreeableness was more strongly correlated with O2 than in previous samples, so the bivariate result for Agreeableness may reflect its greater overlap with O2. Indeed, when entered simultaneously into a multiple predictor model, Agreeableness was no longer significant, and O2 was the only significant predictor (*p*<.001; see Table 9).[4] Thus, intergroup concerns, especially measured at the facet level, again won out over interpersonal concerns.

Panel B of Figure 4 illustrates the O2 effect. High-O2 individuals were expected to have 1.10 as many same- as different-race network members—approaching the 50:50 ratio as in our earlier studies—whereas low-O2 individuals were expected to have 5.29 times as many same- as different-race network members.

Finally, Asian participants again comprised the largest racial group in our sample (and on campus) and had fewer different-race network member (*M*=.26, *SD*=.44) than non-Asian participants (*M*=.48, *SD*=.50), B=-1.23, *z*=-10.25, *p*<.001. They also scored lower on O2 (*M*=5.45, *SD*=0.88) than non-Asian participants (*M*=6.00, *SD*=0.77), B=-0.55, *t*(487)=-7.33, *p*<.001. Nonetheless, when we controlled for participants' races, O2 remained a significant predictor, B=0.31, *z*=4.63, *p*<.001, *OR*=1.36, 95% CI [1.20,1.56], as did being Asian, B=-1.23, *z*=-15.50, *p*<.001, *OR*=0.29, 95% CI [0.25,0.34].

The majority vs. minority (Asian vs. non-Asian) analyses also replicated the previous studies: Racial majority membership did not significantly moderate (*p*=.060) the link between O2 and racial heterophily, *OR*=1.36, 95% CI [1.18,1.57]. The middle panel of Figure 5 shows the results: The slope for O2 was positive in both majority and minority participants, and the minority participants again had much higher levels of cross-race friendship than the majority participants.

Acquaintances vs. long-term friends: Consistency across three kinds of relationships and O2 effects. Here, we examined the three parts of the network separately. Within the UC Berkeley network, individuals who had more different-race friends also had more different-race acquaintances, as indicated by a moderately high correlation between the two, *r*=.41, 95% CI [.33,.48]. Racial heterophily was not only consistent within the two Berkeley networks but also stable across their earlier high school vs. current college networks: heterophily of pre-Berkeley friends correlated positively both with heterophily of Berkeley friends, *r*=.45, 95% CI [.37,.51], and with heterophily of Berkeley acquaintances, *r*=.36, 95% CI [.28,.43].

How was O2 related to heterophily in these three relationship contexts? O2 predicted heterophily for each: for pre-Berkeley friends, *OR*=1.72, 95% CI [1.40,2.11]; for friends at Berkeley, *OR*=1.94, 95% CI [1.55,2.42]; and for acquaintances at Berkeley, *OR*=1.62, 95% CI [1.33,1.99]. These three effect sizes did not differ from each other significantly, all *p*'s>.150.

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4 In contrast to Studies 1 and 2, two of the other three Big Five traits had positive associations with racial heterophily: for Conscientiousness, B=0.25, *z*=2.89, *p*<.001, *OR*=1.29; for Extraversion, B=0.16, *z*=2.17, *p*=.030, *OR*=1.18; and for Neuroticism, B=0.02, *z*=0.31, *p*=.756, *OR*=1.02.

Finally, we examined how students constructed their new networks in Berkeley's more diverse environment, compared to their network from before Berkeley. In particular, would high-O2 individuals take greater advantage of the more diverse Berkeley environment? Thus, if we are predicting the number of different-race members at UC Berkeley, would O2 predict an increase relative to the number of different-race members participants had before UC Berkeley? To test this hypothesis, we first entered the proportion of different-race friends from before UC Berkeley (thus controlling for prior heterophily), then O2, and predicted the proportions of (a) different-race friends and (b) different-race acquaintances at UC Berkeley (see Panel A of Figure 7).

In this model, a positive effect of O2 would indicate that, holding constant the proportion of different-race friends before Berkeley, those higher on O2 had made more different-race relationships at Berkeley than those lower on O2. The findings are summarized in Panel A of Figure 7: Higher-O2 participants, compared to their lower-O2 peers, had both more different-race friends ($\beta=.17$, $p<.001$) and acquaintances ($\beta=.15$, $p<.01$) at Berkeley than would be predicted on the basis of their high school friends alone. This pattern of results suggests an *additive* process: When afforded the opportunity, individuals higher on O2 select different-race relationships above what they had previously. It also indicates that O2's effect on racial heterophily is not redundant with the heterophily of the previous network. This finding, if replicated, constitutes a relatively strong test of O2's association with racial heterophily since usually past behavior is by far the best predictor of future behavior (Ouellette & Wood, 1998).

Discussion

As in Studies 1 and 2, we found that only O2 was uniquely associated with having more different-race network members, and this effect held across all of our robustness checks. Critically, the O2 effect could not be attributed simply to the networks at UC Berkeley being unusually diverse, as the same link held in the networks established before these participants moved to UC Berkeley.

We also found that individual differences in network racial heterophily showed surprising levels of consistency, as well as some indication of an environmental effect, namely a change (an increase) from one context (high school, or pre-Berkeley) to the other (college, or at-Berkeley). Of course, our pre-Berkeley network was retrospective, assessed from today's perspective, and although participants seemed able to remember their pre-Berkeley friends well, a longitudinal design is preferable and needed for observing change over time.

Finally, O2 was not redundant with racial heterophily in the pre-Berkeley network when predicting racial heterophily in the current network. Even when controlling for pre-Berkeley racial heterophily, O2 remained a significant predictor of racial heterophily at Berkeley. These findings are consistent with the idea that high O2 would predict an increase in racial heterophily after transitioning from a less to a more diverse environment—in other words, that O2 is responsive to environmental affordances, with high-O2 people constructing a more racially heterophilous network when the environment affords such choice. We discuss this finding further in the General Discussion. To assess the reliability of these results, we ran a replication of Study 3.

Figure 7

Predicting Racial Heterophily Among Current Friends (Panel A) and Current Acquaintances (Panel B): Effects of Racial Heterophily Among Past Friends and Openness to Other
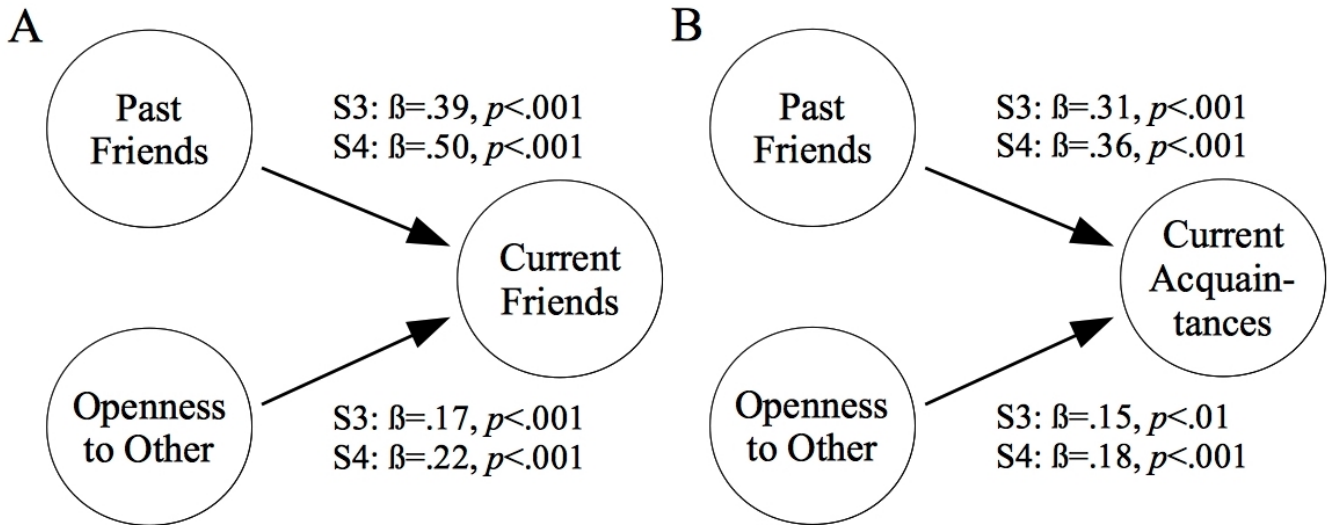
Note. Results for multiple regressions predicting individual differences in racial heterophily in current friends (Panel A) and current acquaintances (Panel B) from racial heterophily in past friends and Openness to Other. S3 = results for Study 3; S4 = results for Study 4. Note that the arrows do not indicate causal directions, but rather clarify how the regression was run, from two predictors on the left to the outcome on the right.

Study 4: Replication of Study 3

Study 4 replicated Study 3 in a separate sample with a pre-registered design and analysis plan (available at https://osf.io/fu6bq/; see Section 4b within Hypotheses and all other questions). We also tested whether social desirability bias in self-presentation might explain our previous results by controlling for individual differences in Impression Management (Paulhus, 1991) in the multiple predictor model. Note that these data were collected during the summer school sessions at UC Berkeley, which tend to enroll more Asian students from higher-income backgrounds. Thus, the sample is likely to have more Asian participants than our prior samples from UC Berkeley, so overall rates of different-race network members should be lower than in previous samples.

Method

Participants. We pre-registered to collect data from at least 180 students enrolled in introductory psychology classes during late Spring and throughout the Summer. Of 692 initial responses, 96 opened the survey but opted not to take it and were removed from all analyses. From the remaining responses, we removed duplicated participant IDs both within and between subsamples, as participants could have responded to multiple surveys. All exclusions and analyses were pre-registered (https://osf.io/fu6bq/). After all exclusions, the final sample size was 540 participants: 67% were women, and Asian students were again the majority group (60%, which is larger than in Studies 1 and 3), with White students the next largest (19%). See Table 2 (Sample F) for further details.

Personality. We used the same items and rating scale to measure O2 as in Studies 2–3. To represent Agreeableness and Openness, we used those BFI-2 facets that were most highly correlated with O2 in previous research (see Chapter 1), namely Compassion for Agreeableness and Intellectual Curiosity for Openness. These more narrowly focused constructs would provide the strongest test of alternative explanations regarding the Big Five. As in Studies 1–3, all personality measures showed expected levels of reliability; alphas were .63 for the 4-item Compassion facet of Agreeableness ($M=4.84$, $SD=0.99$), .73 for the 4-item Intellectual Curiosity facet of Openness ($M=5.22$, $SD=1.21$), and .84 for O2 ($M=5.44$, $SD=0.90$).

Impression Management was assessed using the best-validated measure of intentionally positive self-presentation, Paulhus' (1991) BIDR 12-item Impression Management scale, which we included for a subset of the sample ($N_{subset}=257$). Subjects rated each item on a 7-point scale. Alpha was .68. The mean of 3.75 ($SD=0.78$) was below the scale mid-point of 4, indicating that, on average, participants did not present themselves in an unrealistically positive light.

Social Networks. We used the same task as in Study 3 and followed the same procedures to separate personality from network assessments, thus protecting against demand and carry-over effects.

Results

Replicating results for network structure and personality traits. As in Studies 1–3, about two-thirds of networks members were the same race as participants ($M=70\%$; see Table 8), and new acquaintances were more likely to be of a different race ($M=40\%$) than stable friends ($M=32\%$), B=0.69, $z=5.33$, $p<.001$. Replicating Study 3, friends from before UC Berkeley were even less likely to be of a different race ($M=25\%$) than network members at UC Berkeley ($M=36\%$), B=1.17, $z=8.83$, $p<.001$. The right panel of Figure 6 depicts this difference in the form of counts of different-race network members. Before coming to UC Berkeley, almost half of the participants (49%) had 0 different-race network members, whereas at UC Berkeley only 31% did, a substantial reduction.

Network members had been known, on average, for 3.81 years ($SD=4.27$). Participants followed instructions when listing networks members: Acquaintances at UC Berkeley had been known for less time ($M=0.84$ years, $SD=1.48$) than friends at UC Berkeley ($M=1.68$ years, $SD=2.15$), B=0.79, $t(2710)=10.12$, $p<.001$; network members at UC Berkeley had been known for less time ($M=1.34$

years, *SD*=1.94) than friends from before UC Berkeley (*M*=6.04 years, *SD*=4.56), B=-4.72, *t*(6381)=-36.77, *p*<.001.

As in Studies 1 and 3, different-race individuals had been known, on average, for less time (*M*=3.38 years, *SD*=4.09) than same-race individuals (*M*=4.04 years, *SD*=4.33), B=-1.18, *t*(6255)=-8.13, *p*<.001. This difference was not explained by different-race individuals' higher likelihood of having been met at UC Berkeley or of being an acquaintance. When entered simultaneously in the multi-level model, all three variables predicted being known for less time: different-race status, B=-0.39, *t*(6175)=-4.08, *p*<.001; having been met at UC Berkeley, B=-4.41, *t*(6175)=-33.40, *p*<.001; and being an acquaintance, B=-0.77, *t*(6175)=-7.37, *p*<.001.

At the bivariate level, Openness to Other and Openness, but not Agreeableness, significantly predicted having more racially heterophilous social networks (all *p*'s<.01; see Table 9), adding further support to the importance of intergroup over interpersonal concerns for cross-race relationships. As in most previous studies, when entered simultaneously into a multiple predictor multi-level model, O2 again was the only significant predictor (*p*<.001; see Table 9).[5]

As a single predictor, Impression Management was unrelated to racial heterophily, *OR*=1.00, 95% CI [0.74,1.36]. Critically, Impression Management did not explain O2's effect in a multiple predictor model. Impression Management did not significantly predict racial heterophily (*OR*=1.08, 95% CI [0.79,1.47]), whereas O2 did (*OR*=1.82, 95% CI [1.30,2.55]; neither Agreeableness nor Openness was significant in the multiple predictor model (all *p*'s>.05).

Panel C of Figure 4 closely replicates the pattern found in Studies 1–3: High-O2 participants had nearly even amounts of—1.31 times as many—same- as different-race network members, whereas low-O2 participants had substantially more—5.88 times as many—same- than different-race network members.

Finally, Asian participants were again the largest group, and so had fewer different-race network members (*M*=.19, *SD*=.40) than non-Asian participants (*M*=.46, *SD*=.50), B=-1.78, *z*=-11.50, *p*<.001. They also scored lower on O2 (*M*=5.19, *SD*=0.86) than non-Asian participants (*M*=5.82, *SD*=0.82), B=-0.63, *t*(538)=-8.56, *p*<.001. Nonetheless, when base rates were controlled, O2 remained a significant predictor, B=0.45, *z*=5.04, *p*<.001, *OR*=1.56, 95% CI [1.31,1.86], as did being Asian, B=-1.88, *z*=-18.54, *p*<.001, *OR*=0.15, 95% CI [0.12,0.19].

The results for the racial majority vs. minority membership (Asian vs. non-Asian) analyses are shown in Panel C of Figure 5. Consistent with all prior studies, O2 was positively related to racial heterophily, *OR*=1.54, 95% CI [1.30,1.83], and majority group membership, negatively related, *OR*=0.21, 95% CI [0.15,0.28]. Unlike our previous three studies, the interaction (*OR*=1.55, 95% CI [1.10,2.19], *p*=.012) was significant and indicated that the O2 effect was slightly stronger for majority group members than for minority group members.

Racial heterophily in acquaintances vs. long-term friends: Consistency across networks before and at Berkeley and O2 effects. Within the UC Berkeley network, friend and acquaintance nominations provided relatively consistent estimates of the racial heterophily of participants' social lives, as indicated by a moderately high correlation between the two, *r*=.57, 95% CI [.51,.62]. Remarkably, network racial heterophily showed consistency across environments, too, as heterophily of pre-Berkeley friends positively correlated .55 with heterophily of Berkeley friends, 95% CI [.49,.61], and .39 with heterophily of Berkeley acquaintances, 95% CI [.32,.46].

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5 Replicating Studies 1 and 2, none of the remaining Big Five correlated with racial heterophily (N=160, who had completes measures of the remaining three Big Five): for Conscientiousness, B=0.29, *z*=1.54, *p*=.123, *OR*=1.33; for Extraversion, B=0.17, *z*=1.11, *p*=.269, *OR*=1.19; and for Neuroticism, B=0.01, *z*=0.09, *p*=.930, *OR*=1.01.

How was O2 related to heterophily in these three relationship contexts? As in Study 3, O2 predicted heterophily for each: for pre-Berkeley friends, *OR*=2.36, 95% CI [1.79,3.11]; for friends at Berkeley, *OR*=2.78, 95% CI [2.10,3.68]; and for acquaintances at Berkeley, *OR*=2.13, 95% CI [1.64,2.77]. O2 did not predict racial heterophily differently for networks before and at Berkeley (*p*=.695) or for friends and acquaintances at Berkeley (*p*=.080).

Finally, we examined how individuals constructed their new networks in Berkeley's more diverse environment, compared to their networks from before Berkeley. We again found that participants higher on O2, compared to their lower O2 peers, had more different-race friends (ß=.22, *p*<.001) and acquaintances (ß=.18, *p*<.001) at Berkeley than would be predicted on the basis of their pre-Berkeley friends alone. These findings are shown in Panel B of Figure 7 and closely replicated those from Study 3.

Discussion

We again found that O2 was associated with having more different-race network members. Critically, this could not be attributed to the networks of Berkeley being especially diverse, as the relationship held in networks from before participants moved to Berkeley. As in Studies 1–3, the relationship was robust to a variety of alternative explanations, including the superordinate personality traits Openness and Agreeableness, as well as base rates of racial group membership and majority–minority status. Critically, O2 was not redundant with prior network heterophily when controlling for pre-Berkeley network heterophily.

General Discussion

Chapter 1

The primary aim of Chapter 1 was to examine whether we could identify and characterize a personality trait that captured differences in valuing social difference and diversity (vs. seeing these as a threat), viewing such a trait as an adaptation to intergroup relations and oppression. Beginning with two candidate traits from the existing trait space (i.e., the Big Five), we argued that neither Agreeableness (general interpersonal kindness) nor Openness (general curiosity and imagination) were sufficient to capture this trait. Thus, we introduced Openness to Other (O2)—people's appreciation, embrace of, and preference for social difference in one's environment, where social difference is defined in terms of outgroups relative to an individual's specific constellation of ingroups. Over five studies we then demonstrated that O2 could be measured as a unidimensional construct (see Table 3b) and characterized its affective, behavioral, and cognitive content across general patterns of emotion, behavior, and thought; end states desired in general and across situations (values); specific emotions, acts, and thoughts in intergroup interactions; and attitudes toward a central outgroup in the U.S. (Muslims), a contentious topic in the U.S. (immigration), and voting in a presidential election between a xenophobic candidate (Donald J. Trump) and a moderate one (Hillary R. Clinton).

Characterizing the Person Who Sees Social Difference as Good, Not Threatening

We first asked how people high and low on O2 differed in their general patterns of thinking, feeling, and acting via examining links between O2 and the Big Five. Across both self- and peer-reports, we found that people high on O2, compared to those low, were more open and agreeable, and within these broad traits they were specifically more curious and compassionate. O2 was generally unrelated to Conscientiousness, Extraversion, and Neuroticism. Furthermore, O2 could be accurately perceived by knowledgeable peers, and this shared self–peer variance was unique to O2, and not explained by Agreeableness, Openness, or their facets. Thus, O2 fit into the Big Five within Agreeableness and Openness but functioned as its own autonomous trait.

We then examined how people high and low on O2 differed in the end states they desired in general and across situations (i.e., their values). At the level of 10 broad values common across cultures (Schwartz, 1992), high-O2 people resembled more open people insofar as valuing Universalism and

Self-Direction and devaluing Tradition, Conformity, and Power. Both high-O2 and more open people differed from more agreeable people, who valued Benevolence but were indifferent to Tradition and Conformity. O2 and Openness were more clearly distinct at the level of the individual, specific values subsumed by the 10 broader values. Specifically, high-O2 people valued equality and correcting injustice; more open people valued curiosity and creativity (i.e., personal expression and growth).

The distinctions between O2 from Agreeableness and Openness grew as we examined patterns of thoughts, feelings, and actions in the context of intergroup interactions. People high on O2 were described by knowledgeable peers as less anxious in intergroup interactions, and as working to ensure that such interactions go well, seeking out such interactions, and taking time to learn about different cultural and social groups. All of these relationships were unique from Agreeableness and Openness, with the exception of seeking out intergroup interactions (though see Chapter 2, for strong evidence that O2, not Openness, predicts having more different-race friends and acquaintances).

Finally, on decisions about who gets to belong in and who gets to lead society, O2 clearly functioned autonomously from Agreeableness and Openness. First examining attitudes toward Muslims, who have become a more central and targeted outgroup in the U.S. post-9/11 (Federal Bureau of Investigations, 2012; Hanes & Machin, 2014), we found that high-O2 people rejected claims that Muslims were getting too pushy in their requests for equal treatment; that high-O2 people were more willing to enter various social relationships with Muslims (e.g., colleague, friend, spouse); and that high-O2 people wanted more, not less, immigration to the U.S. by Muslims. As well, high-O2 people viewed immigration not as a threat to the U.S., but a strength. Finally, in the 2016 U.S. Presidential election, which contrasted an openly racist, xenophobic candidate (Donald J. Trump) against a moderate candidate (Hillary R. Clinton), high-O2 people rejected Donald J. Trump, preferring Hillary R. Clinton. Critically, all of these relationships held independently of Agreeableness and Openness; O2, in fact, accounted for the zero-order relationships between these outcomes and Agreeableness and Openness.

Importantly, in all studies we reported results from multiple samples, and results held across these multiple samples. Moreover, all samples were well-powered, and we sampled both college students and working adults aged 30–60 from across the U.S. Finally, we used multiple conceptually relevant measures (attitudes toward Muslims) and data sources (peer reports) where relevant. These results make several contributions to psychology, which we review next.

Addressing Intergroup Relations within Trait Psychology

Current approaches to describing personality traits poorly capture adaptations to intergroup relations and oppression. For instance, Saucier and Iurino (2020) found that the adjectives *bigoted* and *prejudiced* fit poorly into the Big Five and HEXACO frameworks. Similarly, Stürmer et al. (2013) found that various pro- and anti-immigrant, and pro- and anti-minority, attitudes fit poorly into the Big Five and HEXACO frameworks. O2 helps rectify this issue by demonstrating that traits capturing these phenomena do exist, are scalable, and do fit within dominant trait frameworks, but at the level of facets and lower-order constructs. We hope (and anticipate) that other traits may be found at this level.

Complementing Existing Work on Intergroup Relations

A second contribution of the present work is that it complements the existing intergroup relations literature in three ways. First, O2 complements the emerging literature on perceptions of diversity with an individual differences construct. With the exceptions of multiracialism and colorblindness (which do not capture perceiving diversity as good; Rosenthal & Levy, 2010), this literature has been largely experimental and focused on group-based effects, demonstrating, for instance, that White Americans prefer diversity rationales that they anticipate to benefit White students more than Black students (Starck et al., 2021) and that White Americans are more likely to reject affirmative action policies that benefit White people as much as they benefit people of color when the

policies are described as diversity-enhancing (Brown & Jacoby-Senghor, 2021). O2 allows for the exploration of individual differences within these group effects.

Second, O2 provides a group-general construct to complement the rich tradition of group-specific constructs (e.g., Fiske et al., 2002; Sibley & Duckitt, 2008). Psychologists have studied gender oppression specifically (e.g., Gruber et al., 2021), race oppression specifically (e.g., Richeson & Trawalter, 2005), and many other grouping factors specifically (e.g., disability, religion, and age; Paluck et al., 2018; Pettigrew & Tropp, 2006). This approach is useful for a variety of reasons. For one, it produces myriad constructs for understanding the subtleties of each group's oppression (see, e.g., Axt, 2018, and Hester et al., 2022, for lists of various anti-Black attitudes). The benefit of a group-general construct is that it can help explain why so many of these group-specific constructs correlate so highly across groups (Ekehammar & Akrami, 2007). As well, O2's focus on social difference broadly considered, rather than individual groups, may be useful for predicting actions toward a variety of outgroups, as well as toward novel outgroups, which attitudes toward individual, existing outgroups may predict less well (Ajzen, 2001) or at least provide less satisfactory accounts for (e.g., why should being anti-Muslim predict being anti-gay?).

Third, O2 provides an alternative point of intervention to "purging the bad" strategies focused on reducing prejudice, which psychologists have tended to focus on in seeking to end intergroup oppression (Paluck et al., 2021). Although perfectly valid as a kind of harm reduction, this approach does not seem to work well (Legault et al., 2011; Legault et al., 2022; Paluck et al., 2021). A recent review found that such interventions reduce prejudice by only about .3 SD (Paluck et al., 2021). Indeed, prior work has found that encouraging the development of pro-diversity and pro-inclusion values appears to more effectively reduce prejudice and increase anti-racist behavioral intentions compared to urging people to combat and control their prejudice (i.e., "purge the bad"; Legault et al., 2011; Legault et al., 2022). As O2 spans all the way from active disregard and disinterest to active regard and interest in social difference, it may provide a useful target for intervention by giving participants a positive goal to work toward.

Limitations and Future Directions

Although the present work contains many strengths, we think there are four key areas for future work to develop. First, we collected data from only samples within the U.S. Our Berkeley students were all currently in college and living in a liberal city on the West Coast. Although living in a wider array of places with varying political norms, participants in our MTurk sample were also mostly college-educated. Future work should expand samples to include more targeted samples, like individuals from Southern states, more conservative individuals, or less educated individuals. Nationally representative samples would also aid generalization to the U.S. at large. Finally, given the tradition in personality of studying traits across cultural contexts (e.g., McCrae & Terracciano, 2005; Thalmayer et al., 2020) and the fact that intergroup relations exist in all cultures, future work should examine whether individual differences in O2 arise outside the U.S. and how O2 operates in other cultures and countries (e.g., China, India, Brazil, Germany).

Second, our assessments of current and typical thoughts, feelings, and actions in intergroup interactions need to be supplemented with research on how people high and low on O2 think, feel, and act in specific intergroup episodes. For instance, past work on single-episode cross-race interactions between strangers has found that these interactions can be quite stressful for both Black and White people, particularly when racism is the topic of discussion (e.g., Trawalter et al., 2009). Similarly, even between long-term different-race friends, discussions of racism represent a "threatening opportunity" for Black individuals (Sanchez et al., 2022). Do people experience such interactions differently depending on their own level of O2? How might majority-group members' O2 alleviate some of the stress experienced by minority-group members? Although we expect such interactions to go better

when a high-O2 person is involved (on the basis of Study 4's results; see also Chapter 2), such studies would provide valuable information on how people high and low on O2 shape their environments in everyday life.

Third, given the wealth of experimental research on intergroup relations, a natural next step would be to integrate those experimental approaches with our individual differences approach. These experimental approaches span all the way from classic, decontextualized/ahistorical approaches (e.g., minimal groups paradigm; Tajfel et al., 1971) to more recent, contextualized approaches (e.g., status threat for White Americans, Craig & Richeson, 2014; defending vs. challenging the gender/sex binary, Morgenroth et al., 2021). Do higher-O2 people's values of equality and social justice extend to novel, decontextualized groups, or do they apply to only culturally meaningful groups? Moreover, how are the general patterns identified in these experiments challenged by individuals—do the normative patterns hold for everyone? Such person-by-situation designs would be informative for both our individual differences approach and the traditional experimental approach.

Fourth and finally, we did not assess development of O2 in the present set of studies. Three key areas for future research are 1.) observation of normative and individual development with age, 2.) how specific sources influence development of O2 (e.g., neighborhood diversity during childhood), and 3.) how targeted interventions change O2 (e.g., having a roommate from a different group, volitional change). Predicting the normative development of O2 comes with interesting tensions. Past work suggests broad Openness does not change much across the lifespan, with the exception of a modest decrease later in life (Srivastava et al., 2003), although more recent work suggests that some facets of Openness (i.e., Ideas, Aesthetics, and Values in the NEO-PI-R framework) do increase over the lifespan (Schwaba et al., 2022). Given its relation to Curiosity (Ideas), we might expect that O2 will also increase across the lifespan. Equally important will be understanding how different environments (e.g., racial, cultural, and economic diversity) promote or inhibit development of O2. Finally, the prospect of intervening on O2 presents an exciting opportunity for future work (e.g., with randomly assigned roommates from outgroups, Shook & Fazio, 2008; using volitional personality change, Stieger et al., 2021). In sum an exciting era of research activity lies ahead that will sharpen our understanding of the ways in which personality traits maintain, disrupt, and change in response to intergroup relations and oppression. A taste of this research was previewed in Chapter 2 of this dissertation.

Chapter 2

The primary aims of Chapter 2 were to examine whether systematic individual differences in racial homophily exist and whether they can be predicted from personality traits. Across four studies we found consistent evidence for both points. First, racial homophily was a common phenomenon but did not characterize everybody's networks; some individuals had exclusively same-race friends whereas many did not. Second, personality traits predicted how likely people were to have different-race relationships, and the overall pattern of findings was consistent across all four studies, for both self-reports and peer ratings of personality. Below, we review our results and their implications (a) for understanding interpersonal vs. intergroup phenomena, (b) for conceptualizing personality at the level of broad domains vs. more narrow facets, and (c) for understanding how personality and contextual factors are jointly shaping friendships. We also consider the limitations of the present studies, as well as directions for future research.

What Predicts Racial Homophily? Interpersonal vs. Intergroup Concerns and their Representation in the Big Five

Although racial homophily in people's networks is an interpersonal phenomenon, it critically involves intergroup processes, as individuals must cross the ingroup–outgroup boundary to engage in cross-race contact and relationships. Thus, it was an open question whether interpersonal traits, such as compassion, trust, and respect (i.e., Agreeableness), would be sufficient (or even necessary) to account

for individual differences in racial homophily. Alternatively, forming relationships across racial boundaries will likely bring about many new experiences and, thus, require traits like curiosity and exploration that are represented in the Big Five taxonomy by Openness. We tested these competing predictions in four studies, and the results were clear. In all but one study, Agreeableness was not significantly related to participants' likelihood of having different-race ties, and effect sizes were close to null, signified by an odds ratio of 1. In fact, the *mean* odds ratio across all studies was 1.14, with a range from 1.02 to 1.27 (see Table 9).

In contrast, Openness to Experience was always positively related to participants' likelihood of having more different-race ties and significantly so in three of our four studies (see Table 9), with effect sizes ranging from 1.12–1.40 (*mean OR*=1.29), which are generally considered small (Chen et al., 2010). This pattern of findings suggests that intergroup concerns, but not interpersonal concerns, were important for the development of cross-race relationships.

We had hypothesized that Agreeableness would be important here because it has previously been linked with lower prejudice toward many outgroups (Crawford & Brandt, 2018; Sibley & Duckitt, 2008). A revised explanation may be that Agreeableness tracks a generally positive, warm attitude toward others that is indiscriminate and may not yield selective interaction with different-race individuals because (a) agreeable people care about others in their immediate surroundings—their families, neighborhoods, schools, and workplaces—and (b) these places tend to be populated by others of the same race as them. These findings extend Laakasuo et al.'s (2017) initial results from family-and-friends networks in the U.K. to larger, non-familial networks in the U.S. Important to note is that all the Big Five findings are based on the BFI-2 scales, and future research should extend these results to other personality measures, such as the Big Five Aspects Scale (DeYoung et al., 2007) or the NEO-PI-R (Costa & McCrae, 1992).

Improving Representation of Intergroup Concerns in the Big Five: Openness to Other

Although intergroup concerns better accounted for racial heterophily than interpersonal concerns, the effect size for Openness was always small, a finding that is consistent with the poor representation of intergroup concerns in the Big Five noted by Stürmer et al. (2013). Hence, we also included in our studies Openness to Other—a novel, social facet of Openness introduced to better represent social and intergroup concerns within the Big Five (see Chapter 1). We found that Openness to Other was significantly related to participants' likelihood of having different-race ties across all four studies, with effect sizes in the medium range (Chen et al., 2010). As shown in Table 9, the *mean OR* was 1.66, and *OR*'s ranged from 1.25–2.15; as Cohen's *d*'s, these effects corresponded to values ranging from 0.20–0.47 standard deviations. Importantly, even when both Openness to Experience and Agreeableness were controlled, O2 always remained significantly related to racial homophily, with little reduction in effect size (*mean OR*=1.58; Table 9).

In contrast, in these multivariate analyses, neither Openness to Experience nor Agreeableness were related to racial homophily, with average effect sizes across all studies near null (for Agreeableness, *mean OR*=0.90; for Openness, *mean OR*=1.12; Table 9). These results suggest that O2 is a valuable facet-level addition to the Big Five, contributing a facet that can predict individual differences in a feature prevalent throughout human societies, namely how individuals interact with members of outgroups. In addition, O2 was not redundant with structural features related to racial homophily. Even when controlling for base rates of racial group membership, the O2 effect remained significant in all studies (*mean OR*=1.44).

Important to note is that the average odds ratio for O2 of 1.66 indicates that, on average across studies, a one-unit increase in Openness to Other was associated with a 66% increase in the odds that a given network member would come from a race different from the self. Combined with 35% of network members being of a different race, on average, across studies, the odds ratio of O2 means that

a person scoring one SD above the mean on O2 would have about equal numbers of same- and different-race networks members, whereas a person one SD below the mean would have roughly four times as many same- as different-race ties. In a network of 8 people, then, low-O2 individuals would have 2 different-race members, whereas high-O2 individuals would have twice that number, namely 4. Thus, while O2's effect on a single network member might appear medium by conventional standards, it amounts to rather substantial individual differences in the racial composition of people's networks.

Together, these results suggest that Openness to Other, although still a novel facet in the Big Five, is important to the formation of different-race ties, and especially so when compared to traditional predictors like Agreeableness and Openness to Experience. More generally, these findings are important because they demonstrate that observed levels of racial homophily have a basis in fundamental psychological attributes, such as personality traits, and that these personality effects could be observed above and beyond structural aspects (Anderson et al., 2014; Currarini et al., 2010).

Shared Self-Report Method Variance Does Not Explain Personality Results

The personality results reviewed above cannot be explained by shared method variance, as we took careful steps to guard against such effects. First, we used an unobtrusive measure of racial homophily in order to avoid demand and social desirability effects. This measure first asked participants to name friends and acquaintances in their networks, and we asked participants to report the races of their network members only after they moved onto a subsequent page and could no longer change the individuals they had nominated. Only Study 1 did not use this separated design; instead, the social network assessment was given at least one week after the personality measures. Second, we took a number of steps to avoid priming participants to the subject of our research question. Study 1 separated assessments by at least one week and embedded the key measures within larger surveys. Studies 2–4 began with personality measures, then had several sections of content unrelated to our research question (e.g., where people would choose to sit at a meeting), and ended with the social network assessment. It is important to note that we found the (replicated) personality results even with these strong precautions in place. Importantly, we tested this argument directly by using peer-reported personality traits in Study 1 and by controlling for Impression Management in Study 4. Peer-rated Openness and O2 both correlated with racial homophily, replicating results for the self-reports. Likewise, Impression Management did not account for the effect of O2 in Study 4.

Together, these results suggest that the present results are not driven by shared method variance or self-image maintenance concerns. In addition, if reports of network members' races were insincere, we might expect the effect to occur for only friends (strong ties), who are more important to and reflective of the self than new acquaintances (weak ties). Yet, O2 predicted racial homophily for both groups, consistent with a lack of image maintenance concerns in reporting.

Mapping the Interplay Between Person and Context in Predicting Racial Homophily

Another important goal of this work was to map how personality and contextual factors jointly predict who engages in racial homophily. Below, we summarize three areas in which we observed such joint effects.

Racial homophily is the rule but varies by context and across persons. In all four samples, same-race ties were considerably more common than different-race ties. As shown in Table 8, racial homophily was the norm, whether we looked at adults from across the U.S. or undergraduates studying at UC Berkeley. Across all network periods and samples, same-race ties comprised, on average, 65% of all ties. In other words, only one-third of social network members were of a different race.

This overall trend, however, obscures interesting contextual and relational variation. In particular, as we compared undergraduates' networks from their less diverse pre-Berkeley environments to the more diverse environment at Berkeley (Studies 3 and 4), we found that their proportion of different-race ties increased. Notably, the percentage of participants with no different-race

network members at all decreased from 41% pre-Berkeley to 28% at Berkeley (see Figure 6). In addition, within the Berkeley environment, participants' new acquaintances were considerably more likely to be of a different race than participants' long-term friends. Across studies, new acquaintances met at Berkeley were the most likely group to be of a different race (41% of all ties). Current friends met at Berkeley were the second most likely to be of a different race (34% of all ties). And friends met before Berkeley were the least likely to be of a different race (29% of all ties).

In contrast, the 30–60 year-old adults in Study 2 did not show the same difference between friends and acquaintances. Acquaintances were slightly, but non-significantly, more likely to be of a different race (35% of all ties) than friends (33% of all ties). This difference in network structure between samples may result from the fact that these adults were living across the U.S., in places less diverse than Berkeley, CA, with fewer opportunities to meet new people of a different race.

One statistic was surprisingly similar in the undergraduate and middle-aged adult samples: In both types of samples, about one-third of their current friends were of a different race. However, they differed in their rates of different-race acquaintances: 43% for Berkeley vs. 35% for the middle-aged adults. This difference in acquaintances, combined with the similarity for long-term friends, suggests that the Berkeley undergraduates, despite meeting more different-race acquaintances in their daily lives than the adults sampled from MTurk, were not especially likely to retain these different-race acquaintances as friends. One reason for this pattern to occur is that same-race acquaintances are more likely to share friends-of-friends with participants, easing conversion of the acquaintanceship into a friendship by increasing the likelihood of incidental contact (Heider, 1958; Newcomb, 1961). By the same logic, different-race acquaintances may be unlikely to occupy such a network position. Hence, the same-race acquaintances are more likely than the different-race acquaintances to be encountered in the future (e.g., at parties and other social events) and, thus, are easier to convert into friends. Relatedly, we found a difference in relationship length: Participants had known their different-race network members for a much shorter time than their same-race network members. Again, the implication is that cross-race relationships are less long-lasting and potentially more fragile.

In addition to these main effects of context, we also examined how consistent individual differences in racial homophily were across these contexts. We found surprisingly high levels of consistency in all four studies. Across relationship type (e.g., friends vs. acquaintances) and environment (high school before Berkeley vs. at Berkeley), the consistency correlations were always significant and all exceeded .30. Correlationss between the two relationship types ranged from .41 to .57 across our studies, and between the two environments, from .36 to .55. Given all of our findings, one plausible explanation for this high level of consistency is that O2 and other personality traits and psychological attributes are stable causes of racial homophily, inducing positive correlations between individual differences across relationship type and context. Another explanation is that members of smaller (larger) groups in the U.S. population might persistently be members of smaller (larger) groups in the specific contexts they inhabit (e.g., work, school), leading to greater ease (difficulty) having outgroup ties. Thus, these consistency correlations may reflect a consistency in the experience of being a minority (majority) group member in the U.S. Future research should further examine these intriguing possibilities.

One implication of these consistency correlations is that it appears that consistent individual differences in racial homophily can be measured using as few as three non-family network members. Of course, information based on a larger sampling of network members (e.g., the total of 14 in Studies 3 and 4) will be more accurate, but it is useful to know that consistent individual differences can be measured with so few observations.

In Studies 1, 3, and 4, we found that different-race individuals had been known for less time, were more likely to be acquaintances than friends, and were more likely to have been met at Berkeley.

Given that both acquaintances and people met at Berkeley were, by definition, known for less time than friends or people met before Berkeley, we questioned whether different-race ties had been known for less time simply due to their higher likelihood of being acquaintances and of being met at Berkeley. However, when simultaneously predicting time known from different-race status, relationship type, and environment (pre- versus at-Berkeley), different-race status still predicted length of time known. Thus, regardless of relationship type (friend vs. acquaintance) and regardless of environment (before vs. at Berkeley) different-race individuals had been known for less time than same-race individuals.

What might explain this result? One possibility is that pre-existing racial segregation in society makes it so that different-race individuals are met later in life compared to same-race individuals. Given that U.S. neighborhoods remain segregated by race (Williams & Emamdjomeh, 2018), if people tend to live in and be active in their own neighborhoods rather than in distant neighborhoods, then people should tend to meet same-race individuals at a faster rate than different-race individuals. Within the university setting, segregation within universities could slow the rate at which students meet peers of different races. Alternatively, if base rates make majority race members more likely to meet other people of their own race, then different-race individuals should be met later, pulling the population means for time known toward same-race individuals being known longer than different-race individuals. Future research could test these ideas using computational modeling (Guest & Martin, 2020; Smaldino, 2020) and longitudinal studies of organization-wide network development (Kossinets & Watts, 2006, 2009).

Personality results hold across relationship type and context. Although O2 predicted racial homophily across the whole network, it was an open question whether the relationship would hold for strong and weak ties (friends and new acquaintances) and across more and less diverse environments (before and at Berkeley). In all four studies, relationship type (friend vs. acquaintance) did not significantly moderate O2's relationship with racial homophily. Instead, O2 predicted racial homophily for both strong and weak ties. In Studies 3 and 4, we asked participants about their networks before and at Berkeley, under the premise that the unusually high diversity of UC Berkeley might facilitate the expression of personality in friendship choices. Again, O2's relationship with racial homophily was consistent across environment, predicting lower rates of racial homophily (higher rates of racial heterophily) in both pre-Berkeley and at-Berkeley networks.

We also examined whether O2 would predict racial homophily at Berkeley even after controlling for racial homophily before Berkeley. This was a severe test because past behavior is usually the best predictor of future behavior (Ouellette & Wood, 1998). In Studies 3 and 4, O2 remained a significant predictor of racial homophily at Berkeley, conditional on racial homophily before Berkeley (see Figure 7). This finding indicates that O2 was not redundant with prior behavior, Importantly, it suggests that higher-O2 individuals may "take advantage" of environmental affordances that suit their psychological needs and build a more diverse personal network when a more diverse environment affords such an opportunity.

Personality results hold for majority and minority participants and in less diverse contexts. Another important direction for future research is to examine how the nature of the environment (e.g., base rates, legal strictures) might change how personality traits relate to racial homophily. Sociologists have emphasized structural features, like segregation (e.g., anti-miscegenation laws and redlining; Faber, 2020; Wolff, 2018) and base rates of group membership (Blau, 1977), as causes of racial hompohily. It seems plausible that these structural features could interact with personality traits to "turn on (or off)" when personality traits predict individual differences in racial homophily. For instance, if marriages between people of different races are made illegal, as anti-miscegenation laws enforced, the probability of two people of different races forming a romantic relationship should become less likely, making it harder to express one's preference for such a relationship. Since the expression of personality

traits depends on the availability of different options, personality traits may matter less for the formation of different-race ties in more segregated areas. Alternatively, when environments are more diverse, personality may be readily expressed by members of different groups, as seen in the directional consistency of O2's effect for majority and minority groups in both Asian-majority (Studies 1, 3, and 4) and White-majority (Study 2) populations. Of course, this consistency across different majority populations still needs to be tested in other contexts (e.g., majority Black or Latinx populations).

Despite the aforementioned consistency, we may have seen some evidence for this personality by environment prediction in the data presented in this article. In particular, the effect sizes for Openness and O2 varied across the four studies in a way that tracks participants' living in more versus less diverse places. Study 2, conducted on MTurk with participants living across the U.S., found the smallest effect sizes for both O and O2 (*OR*=1.12 and *OR*=1.25, respectively). Studies 1, 3, and 4, conducted in more diverse Berkeley, CA (Olson, 2014), found consistently larger effect sizes for O and O2 (*OR*'s from 1.29–1.40 and from 1.57–2.15, respectively). If our personality by environment prediction is correct, this variation may result from the wider availability of potential different-race ties afforded by the more racially diverse environment that is Berkeley, CA, compared to other cities and counties in the U.S. If this prediction bears out, it would highlight the general utility of incorporating both psychological and sociological perspectives into the study of individual differences.

In line with our personality by environment prediction, recent work has found that personality traits, in particular Openness to Experience, interacted with government shelter-in-place orders to predict individual-level sheltering-in-place during the ongoing COVID-19 pandemic (Götz et al., 2020). In particular, in countries with stricter shelter-in-place laws, Openness was less predictive of individual sheltering-in-place. Future research should examine the extent to which broader contextual factors, like laws and public policy, affect the relationship between personality traits and individual differences in racial homophily.

Identifying Processes Linking Personality and Racial Homophily

Although this set of studies has many strengths, its primary limitation is that it cannot distinguish between selection and evocation effects that may have given rise to the correlations we observed. Moreover, this set of studies was not designed to help us distinguish between person-driven effects, such as selection and evocation, and socialization effects (i.e., learning traits from the environment). Regarding the former, both selection and evocation processes seem plausible and necessary for tie formation. Both parties must agree to the social relationship for it to form and be maintained. Thus, we do not view our inability to distinguish them as a major issue. Future research could test the plausibility of a selection process by studying (e.g., experimentally) whether O2 relates to selection of different-race ties when opportunity for same- and different-race ties is equalized across groups. Similarly, future research could test the plausibility of evocation processes by testing whether different-race strangers choose higher-O2 individuals as ties more often than lower-O2 individuals (e.g., based on brief personality descriptions). Such studies could also look at the perceptions, feelings, and behaviors that drive each process.

Longitudinal studies of friendship and network development are needed to address these questions, as they would permit the study of tie nomination by each party to the relationship. More specifically, a longitudinal study would permit examination of whether higher O2 individuals are more likely to nominate different-race peers as friends or acquaintances (selection process) and whether different-race peers are more likely to nominate higher-O2 individuals as friends or acquaintances (evocation process).

Although we cannot rule out socialization as an explanation of our results (i.e., having more different-race friends makes people higher on O2), we do not think that it is the only or most likely explanation. First, current evidence suggests that socialization effects on personality traits are rare and

certainly less frequent than selection effects, which seem to occur somewhat often (Denissen et al., 2019; Lüdtke et al., 2011; Luhmann et al., 2020). In addition, evidence for intergroup contact theory, a kind of socialization particularly relevant to our results, has recently faced severe criticism. First, a meta-analysis of (quasi-)experimental longitudinal studies found a null to very small reduction in prejudice (Paluck et al., 2018). Second, a recent pre-registered longitudinal experiment in Iraq found no changes in self-reported intergroup attitudes and only behavioral changes within the context in which the intergroup contact occurred, suggesting that the effects of intergroup contact may not generalize to everyday interactions (Mousa, 2020). Hence, it seems more likely that O2 and racial homophily should correlate because of selection (or evocation) effects, rather than socialization effects. Future research is needed to test these explanations by observing network changes following an intervention on O2 (e.g., using a recall-a-time manipulation, as in Hotchin & West, 2020) and by observing changes in O2 following an intervention on networks (e.g., using a natural experiment with a randomly assigned college dorm roommate, as in Shook & Fazio, 2008).

Conclusion

In describing the questions addressed in Chapter 2, we reported recent estimates that racial homophily is prevalent in the United States: White Americans have mostly White friends, Black Americans have mostly Black friends, and Hispanic Americans have mostly Hispanic friends (Cox et al., 2016). We presented evidence that this trend is generally true, but *not* for everyone. Across four studies, we found that racial homophily was indeed common but also that individual differences in racial homophily were both substantial and consistent. Moreover, we found that these individual differences were associated with Openness to Experience and Openness to Other, but not with Agreeableness. Importantly, Openness to Other best accounted for the individual differences in racial homophily that we observed. For predicting individual differences in racial homophily, Openness to Other was not redundant with Agreeableness, with Openness to Experience, with base rates of racial group membership, or with prior engagement in racial homophily. Moreover, O2 predicted adding different-race ties to one's network after transitioning to a more racially diverse environment. These results expand our knowledge of how personality traits relate to the construction of individuals' social environments (e.g., Danckert et al., 2017; Gosling et al., 2002; McCrae, 1996; Rentfrow et al., 2008). Moreover, they highlight that psychological attributes are important for understanding how individuals form friendships and social networks (e.g., Anderson et al., 2014; Currarini et al., 2010). Increasing our understanding of how personality traits and other psychological attributes guide the selection of cross-race contacts and the construction of diverse social networks will be important as psychologists increasingly try to combat networked phenomena (e.g., the Black–White wealth gap, access to information and opportunity, and the development of youths' attitudes toward intergroup contact) that critically depend on individuals choosing to be with people from different racial backgrounds.

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