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The Better than Other Effect and its Boundaries in Social Networks

By

Andrew L. Choi

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Business Administration

in the

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of the

University of California, Berkeley

Committee in charge:

Professor Cameron Anderson, Chair

Professor Drew Jacoby-Senghor

Professor Oliver P. John

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The Better than Other Effect and its Boundaries in Social Networks

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Abstract

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Much prior research has shown that people tend to view themselves as better than others, referred to here as better-than-other (BTO) effects. Much of that research has asked people to compare themselves to the “average” person. In this dissertation, I provide a more nuanced examination of this BTO effect. First, I measured self and peer perceptions in a field study of nine intact social communities, to test whether people hold more positive views of themselves than they do of each of their fellow community members on average. This examination replicated the general BTO effect, but found it to be weaker than effects typically found in prior work. Second, I tested whether the strength of the BTO effect depends on the target of comparison. Specifically, I assessed the social networks within social communities, and found that BTO effects were weaker in comparisons with close friends, and stronger in comparisons with others distant from the individual in the social network. Third, I measured BTO effects specifically along the Big Five personality dimensions, and found BTO effects were strongest for the most evaluative dimensions (i.e., agreeableness, conscientiousness, and openness), and weakest for the less evaluative dimensions (i.e., extraversion and emotional stability). In further exploratory analyses, I also found that closeness in the network interacted with personality judgment domain such that the effect of social closeness on the BTO effect was stronger for the more evaluative Big Five dimensions.

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Chapter 1: Introduction

People tend to view themselves in overly positive ways, or to engage in what is often called *self-enhancement* (e.g., Alicke et al., 1995; Greenwald, 1980; Kruger, 1999; Paulhus, 1998; Preston & Harris, 1965; Robins & Beer, 2001; Svenson, 1981; Taylor & Brown, 1988). This tendency manifests in multiple forms. For example, people tend to view themselves as better than what objective measures indicate (e.g., Kruger & Dunning, 1999), such as seeing themselves as more knowledgeable than what is reflected in their performance on a general knowledge test (Paulhus et al., 2003). People also tend to view themselves as better than others perceive them, such as believing they perform better in a group exercise than their groupmates believe (John & Robins, 1994; Kwan et al., 2004).

However, perhaps the most documented form of self-enhancement is what I will call the *better-than-others* effect, or *BTO* effect.ⁱ An abundance of evidence has shown that people tend to view themselves as better than others or than the average person (Alicke et al., 1995; Brown, 1986; Kwan et al., 2004; Taylor & Brown, 1988; Zell et al., 2020). For example, 88% of college students think they are better at driving than the average drivers (Svenson, 1981), 94% of college faculty consider themselves as above average teachers (e.g., Cross, 1977). Because under normal circumstances (outside of skewed distributions), only about half of people can legitimately claim to be above average, findings such as these provide evidence of self-enhancement bias. The BTO effect is robust and has been observed across different populations and cultures (Brown, 2010; Brown & Kobayashi, 2002; Sedikides et al., 2003; although, see Heine & Hamamura, 2007), along diverse dimensions of self-perception, and in studies employing a range of measures and operationalizations (for reviews, Alicke & Govorun, 2005; Zell et al., 2020). While there have been boundary conditions documented for the BTO effect (e.g., highly difficult tasks; Kruger, 1999; Moore & Healy, 2008), the tendency for people to think they are better than others is one of robust and replicable effects in social psychology.

In this dissertation, I studied how individuals compared themselves to all other people in an intact social community to which they belonged – specifically, their student professional organization. This study design allowed me to pursue several aims. First, I tested whether the BTO effect would hold up even when peoples’ self-perceptions of themselves were compared to their peer-ratings of both specific subgroups of their social community and also to their entire social community – rather than compared themselves, say, to an abstract “average other.” Second, by measuring the network ties within individuals’ social communities, I was able to test whether individuals’ closeness to others in their social network influenced the degree to which they viewed themselves as better than those others (i.e., do individuals show stronger BTO effects for people farther from them in the social network? Are they especially likely to believe they are better than others distant from them in the network?). Thus, I focused on a possible moderator that has not been examined before, network distance. Third, I asked individuals to rate themselves and all their fellow community members on the Big Five personality dimensions (John & Srivastava, 1999). This is an important extension of the work on BTO effects because the Big Five taxonomy is the most established and widely accepted model of personality; moreover, focusing on those personality dimensions allowed me to test whether BTO effects are stronger for some of the Big Five personality dimensions than they are for others.

BTO Effects in Social Communities

Will people exhibit a BTO effect, on average, when they compare themselves to others in a social community to which they belong? This is an important question in part because people spend much of their lives in the context of communities such as neighborhoods, work organizations, and schools (Hill & Dunbar, 2003). The degree to which people view themselves as better than others shapes their social behavior and the way they interact with others (Anderson et al., 2012). Therefore, BTO effects in the context of a social community likely influence the quality of individuals' interpersonal relationships and their general social standing (Paulhus, 1998).

Moreover, whether people believe themselves to be better than others in their social community on average is an open research question. While there have been numerous studies of the BTO effect, many studies have used single item measures asking participants where they think they lie in comparison to a generalized “average” person (e.g., Klar, 2002; Krizan & Suls, 2008). In studies that have asked people to compare themselves to specific other individuals, those comparisons have been limited to one or a few other people (e.g., Brown & Han, 2012). Therefore, we currently do not know whether people tend to view themselves as better than other members of their social communities, on average.

One possibility is that people do not tend to see themselves as better than the others in their social community on average – namely, the BTO effect would be eliminated in this specific context. Individuals' social community, such as their school, work department, or neighborhood group, could reasonably be construed as constituting an ingroup, and people tend to view their ingroup positively (Tajfel & Turner, 1979). Consequently, if people view members of their social community positively, this could dampen and even eliminate a BTO effect; after all, the more positively the “other” is perceived, the harder it is for the self to be viewed as better. Nonetheless, however, I hypothesized that the BTO effect would hold up even when people are comparing themselves to others in their social community. As discussed in more depth below, the desire for positive self-regard is a pervasive and powerful psychological force (Heine et al., 1999; Maslow, 1943), which drives the BTO effect (Alicke & Govorun, 2005; Alicke & Sedikides, 2009). Furthermore, the possibility that one sees members of their social community positively (because they see them as ingroup members) and the possibility that one sees oneself *even more positively* than they see their ingroup members are not mutually exclusive propositions.

Hypothesis 1: When comparing average peer-ratings of personality to the average self-ratings of personality in an organization network, I predict a better than other effect. The average self-ratings of personality will be higher than the average peer-ratings of personality.

Who is the peer? Examining the BTO effect across social networks

Even if people tend to view themselves as better than others in their social community on average – that is, even if the BTO effect holds up in the context of individuals' social community – an important question is whether the BTO effect will be stronger or weaker for specific other

members of that community. When it comes to believing themselves to be better than others, is this belief stronger when comparing the self to some fellow community members than to others?

In the current research, I not only studied social communities, but also the social networks within them, or the social ties between all community members. This allowed me to examine a novel moderator of the BTO effect: the closeness in the social network between the self and the targets of comparison. In essence, distance in the social network refers to how many individuals (i.e., intermediaries) are needed to connect the individual and the target individual being evaluated (similar to the popular conception of “degrees of separation”; Watts, 2004).ⁱⁱ A target close to the self may be directly connected to the self (i.e., a friend of the self; referred to as “P1” in my data), or two degrees away (i.e., a friend of a friend; referred to as “P2” in my data). On the contrary, targets far to the self may be more than four degrees away (i.e., a friend of a friend-of-friend-of-friend; “P4”). Is the BTO effect stronger or weaker when self-perceptions are compared to perceptions of others who are closer or farther to the self in the social network (e.g., a friend-of-friend, versus a friend of friend-of-friend as targets of comparison)? Although some prior research has considered how the BTO effect changes for varying targets of comparison (e.g., individualized versus non-individualized targets, a real person in the lab versus an “average college student”; Alicke et al., 1995; one’s best friend vs “most other students”, Brown & Kobayashi, 2002), as far as I know, no research has examined how the social closeness of the target of comparison (i.e., the “other”) influences the BTO effect.

I argue that, even though prior research has found that the BTO effect is robust to comparisons with specific individuals rather than a generalized “other” (Alicke et al., 1995), *who the specific individual is* in a social comparison will be a critical moderator of the BTO effect. Specifically, I hypothesize that comparisons to others distant from the self in the social network will be typified by stronger BTO effects, because individuals will perceive those targets more negatively, whereas comparisons to others closer to the self in the social network will show weaker BTO effects, because individuals will perceive those targets more positively.

Why would distance in the social network affect the extent to which people see themselves as better than the target individual? As alluded to above, a core driver of the BTO effect is the desire for positive self-regard (Alicke & Govurun, 2005; Alicke & Sedikides, 2009): Because people have a fundamental desire to see themselves positively (Rogers, 1957), they tend to form more favorable comparisons between themselves and others (Sedikides & Alicke, 2012). Furthermore, these favorable comparisons appear to produce their intended results, in that individuals who view themselves as better than others enjoy higher self-esteem and better mental health (Alicke, 1985; Brown, 1991; Brown & Gallagher, 1992; Dufner et al., 2019; Kunda, 1990; Paulhus, 1998; Taylor & Brown, 1988, 1994).

However, when making comparisons to others, especially others who are closer to the self in the social network, the need for positive self-regard might shape BTO effects differently because it simultaneously boosts perceptions of the self *and* of the other. Prior research suggests that people view close others as being part of their self-identity (e.g., friends as part of the self, Aron et al., 1991, 2004), and treat close others as they would treat themselves (e.g., resource allocation; Aron et al., 1991). Even the brain activity when judging close others has been found to be more similar to the brain activity when judging the self (e.g., judging romantic partners

versus roommates; Hughes & Beer, 2012). If a perceiver views a close other as being included in their self-identity, it is possible that the desire to maintain a positive self-regard generates a desire to maintain a positive regard of the close other. As a result, perceptions of a close other may be similarly positive as, or be closely anchored to, the perceptions of the self. So, while the desire to see oneself positively may predict an overall better-than-other effect across different targets on average, if close others are included in individuals' self-identity, then the BTO effect could be weakened when self-perceptions are compared to perceptions of them, and possibly mitigated entirely vis-à-vis very close friends. Because closeness in a social network is associated with psychological closeness (Roberts & Dunbar, 2011), this suggests network distance would predict BTO effects, such that BTO effects would be stronger for comparisons with others farther in the social network, and weaker for others closer in the social network.

Moreover, in addition to a desire for positive self-regard, another fundamental motive that might play an important role in social comparison is the need to belong (Baumeister & Leary, 1995; Heine et al., 1999). The need to belong is a primary motive that drives people to build and maintain meaningful and positive interpersonal relationships (Baumeister & Leary, 1995). It leads people to idealize targets in close relationships, viewing targets in a more positive light than the targets view themselves (e.g., close friends, Martz et al., 1998; romantic relationships, Murray et al., 1996). The need to belong might thus reduce the extent to which one views oneself more positively than one's close others, because one should be motivated to see close others positively. Similarly to the effect of close friends being included in the self (Aron et al., 2004), the need to belong should influence social comparisons such that it reduces the BTO effect for comparisons to close others (to ensure the satisfaction of belonging needs), but not for comparisons to distant others. Perceptions of others should become increasingly more positive, as social closeness increases, leading to reduced BTO effects.

In summary, while the fundamental desire for positive self-regard (Rogers, 1957) should drive the general tendency for people to see themselves more positively than they see others, this BTO effect is likely mitigated when comparing the self to close others. Close others are included in individuals' self-identity (Aron et al., 1991), and seeing them positively is key to the satisfaction of one's desire for belonging (Murray et al., 1996), which would lessen the gap between individuals' self-perceptions and their perceptions of close others.

Hypothesis 2: The BTO effect will be strongest for those more distant in the network to the self and weaker for those closer in the network to the self.

BTO Effects across the Big Five Personality Dimensions

The Big Five is the most well established and widely used personality taxonomies. While a few studies of the BTO effect have examined specific personality traits (e.g., Alicke et al., 1995; Dunning et al., 1989; Hoorens, 1995), I do not know of a study that examined the BTO effect across the entire Big Five personality profile. Therefore, I assessed individuals' self-perceptions and their perceptions of fellow community members across all Big Five dimensions. In addition to enabling a novel test of the BTO effect across the Big Five dimensions, this also allowed me to test whether the BTO effect varies across different Big Five domains.

Why might people show stronger or weaker BTO effects across the Big Five dimension? The specific dimensions of the Big Five – extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience – vary in their social desirability (e.g., John & Robins, 1993). Specifically, regardless of the particular instrument used to measure the Big Five, agreeableness (“Be kind and compassionate to others!”), conscientiousness (“Work hard and follow the rules!”), and openness (“Be original and come up with new ideas!”) are viewed as highly desirable traits, in that their items describe individual differences that are highly evaluative. In contrast, extraversion is desirable but only modestly so, and emotional stability tend to fall in between, depending on how they are defined on a particular measure (John & Robins, 1993). Because BTO effects tend to be stronger for dimensions that are socially desirable (Alicke, 1985), I expected that traits higher in social desirability (e.g., agreeableness and conscientiousness) would lend stronger BTO effects than traits that are relatively neutral (e.g., extraversion or emotional stability).

Hypothesis 3: Agreeableness, conscientiousness, and openness should show a greater BTO effect than extraversion or emotional stability, which are less extremely desirable, and less evaluative.

Interaction of Evaluativeness and Network Distance

Finally, the theoretical arguments underlying Hypotheses 2 and 3 above suggest the possibility for an interaction, such that the effect of network distance may be stronger for some Big Five dimensions than others – specifically, the three most evaluative dimensions, agreeableness, conscientiousness, and openness. If network distance shapes BTO effects because it moderates the degree to which people are motivated to view others positively, then network distance should shape BTO effect particularly for more evaluative dimensions. For example, seeing close others positively on agreeableness may be particularly important to satisfying their desire for positive self-regard because agreeableness is such a positive dimension. In contrast, for less evaluative traits like extraversion, the effect of network distance on BTO effects may be weaker, because viewing people closer to you as more extraverted does not necessarily mean seeing them in a more positive light. Indeed, Vazire makes a similar argument (2008), positing that judgments of others “will show similar ego-protective biases as the self on high evaluativeness traits (e.g., intelligence) if the others are emotionally invested in their relationship with the target.” (p. 295). However, no research has tested this idea empirically.

I therefore explored the possibility that distance in the social network would interact with Big Five dimension in predicting BTO effects, such that for highly desirable Big Five traits (such as agreeableness, conscientiousness, and openness) the BTO effect might be attenuated (weaker or even reversed) when the other person being rated is closer to the self in the social network. For extraversion or emotional stability, dimensions that are less evaluative, closeness might not impact the strength of the BTO effect as much. Otherwise framed, this interaction would suggest that the BTO effect difference between evaluative and non-evaluative dimension will be greatest for distant others (e.g., agreeableness showing a much stronger effect than extraversion), while the difference may be smaller for close others (i.e., given that the agreeableness BTO effect would be weaker for close others).

Demographic differences in the BTO effect

The following studies sampled from organizations with predominantly Asian-American participants. Prior research finds self-enhancement motives to be cross-cultural and the BTO effect robust across different populations (e.g., Brown & Kobayashi, 2002; though see Heine & Hanamura, 2007 for exceptions). While the fact that the participants were attendees of universities in the United States suggests that the culture of my sample is similar to that of participants often sampled in other BTO effects research (i.e., WEIRD subjects; Henrich et al., 2010), my data may be able to test whether there are differences between different ethnic groups in the United States. For example, if ethnic differences do not mirror cultural differences (i.e., Asian-American participants behave similarly to other non-Asian-American participants from the United States) I would thus expect the hypotheses above to be supported in these samples. I examined for differences across the ethnic subgroups in BTO effects. However, given the low number of non-Asian-American participants, I lacked sufficient power to test for any moderating effect of ethnicity; however, I will report patterns observed across ethnic groups (e.g., Asian-American and non-Asian-American) qualitatively.

Study 1: A Study of Five Organizations

I examined these hypotheses in a study of five distinct social communities (N = 45 to 75 each), in which I assessed each community's social network structure and the self and peer perceptions each member of the community held.

Methods

Participants

Participants were members of five different co-ed undergraduate student organizations in two public universities on the West Coast. Each organization focused on students' planned professional careers: one in medicine, one in engineering, and three in business. The organizations ranged from 45 to 75 members (total N = 321). Participants completed 30-min surveys that assessed all of the members of their organization and were each paid \$15.00. Each organization was also paid \$500.00 for reaching an 80% participation rate. A total of 267 participants (53.2% female, 46.8% male; 83.1% Asian American, 6.4% White, 4.9% Multiracial, 3.4% Other, 1.9% Latino, 0.4% Black) with an average age of 20.54 (SD = 1.23) completed surveys, resulting in an 84.7% response rate. Thirty-two participants failed a pre-registered inclusion criteria (more than two of their round-robin questionnaires out of the five corresponding to each dimension of the Big Five had zero variance), resulting in 235 final participants.

Social Network Assessment

Following prior research (Marsden, 1987; Small et al., 2015), I measured the core discussion network within each organization by asking participants: "From time to time, most people discuss important matters with other people. Looking back over the last six months, who are the people in your fraternity with whom you discussed matters important to you?"

Participants were provided with the complete roster of their organization and allowed to check as many names as they wanted. Because non-reciprocated ties (i.e., when one person nominates another but the other does not nominate him/her) can introduce concerns over the quality of the tie (e.g., Bernard et al., 1979), based on prior research, I only considered *reciprocated ties* in defining the network (Kashy & Kenny, 1990).

Big Five Personality Traits

In a full round-robin design (Kenny, 1994), each participant rated all of their organization members' Big Five personality traits, including their own. Given that participants would rate up to 75 individuals across 5 dimensions, this involved making 385 separate ratings when only one item is used to measure each of the Big Five; using more than one item seemed prohibitive. Therefore, to minimize participant fatigue and encourage participation by close to all members of the organization, I used the Five Item Personality Inventory (FIPI; Gosling et al., 2003), a reliable and well-validated measure that includes a single item for each dimension. Despite the concerns over single-item measures (McCrae, 2015), single-item measures have demonstrated strong test re-test reliability as well as construct validity (Robins et al., 2001).

The FIPI items were rated from 1 ("Disagree strongly") to 7 ("Agree strongly"): "Extraverted, enthusiastic - that is, sociable, assertive, talkative, active, NOT reserved, or shy", "Agreeable, kind - that is, trusting, generous, sympathetic, cooperative, NOT aggressive, or cold", "Dependable, organized - that is, hardworking, responsible, self-disciplined, thorough, NOT careless, or impulsive", "Emotionally stable - that is, relaxed, self-confident, NOT anxious, moody, easily upset, or easily stressed", and "Open to experience, imaginative – that is, curious, reflective, creative, deep, open-minded, NOT conventional".

These five items have been found to be distinct from each other (with absolute mean discriminant or "off-diagonal" correlations of $r = .18$; Gosling et al., 2003). The FIPI also shows considerable convergent construct validity when evaluated in relation to established multi-item measures such as the BFI (John & Srivastava, 1999). Nonetheless, I also checked the degree to which the five items measured five distinct personality constructs in the present data. The inter-item correlations for self-ratings of the FIPI are shown in Table 1. As shown, the five items measured distinct personality constructs, and were far from converging to assess a single general positivity factor; in fact, similar to the Gosling et al. (2003) research, the mean inter-item correlation was only $r = .201$. The mean inter-item correlation for the *peer-rated* FIPI items was $r = .318$ (full inter-item correlations available in the Supplementary Materials), and the pattern of inter-item correlations were similar. The correlation between the two correlation matrices, one for self-ratings and the other for peer ratings, was $r = .542$.

Variables

Social network closeness (path lengths). To measure social network closeness, I calculated *path lengths*, or the distances between perceivers and targets in the network, using the adjacency network matrix (an $n \times n$ matrix denoting whom each participant nominated). Pairs of participants who were directly connected, or those that nominated each other in their core discussion network, had a path length of one. Longer path lengths were measured as the number

of reciprocated ties on the shortest path between the perceiver and target. For example, a path length of 2 denotes two people who are not directly connected to each other (i.e., did not nominate each other), but who are connected to each other through a mutual friend (referred to as “P2” connections). A path length of 3 would denote two people who are only connected by two separate people in between them (i.e., are “friends of a friend of friend” with each other; “P3”). Table 2 presents the distribution of path lengths for all five organizations. Starting from judgments of close friends (path length of 1; “P1”), the number of judgments increased up to path lengths of 3, and then the number of judgments decreased for more distant targets. A very small number of participants were at extremely long distances from each other based on this calculation (e.g., path lengths of 6 or 7). Because the number of judgments made at these extremely long path lengths were so small (e.g., 49 dyads judged each other at path lengths of 6, and just 7 dyads at path lengths of 7; out of 6161 total possible dyads), and because I have little theoretical reason to believe these judgments should differ meaningfully from judgments made at path lengths of 5 (already a very long distance within an organization), I merged judgments made at path lengths of 5 or greater as a “5+” category of judgments (“P5+”).

Results

Hypothesis 1: Did the BTO Effect Replicate in a Full Network Sample/Analysis

To test Hypothesis 1, I computed the average self-rating and average peer rating across all 6161 perceiver-target dyads and all five personality dimensions rated. The mean of the self-rating was $M = 5.41$, $SD = .75$, which was higher than the average peer rating, $M = 5.25$, $SD = .88$, as shown by a Welch’s two sample t -test, $t(247.78) = -3.0823$, $p = .002$, and a small effect size, Cohen’s $d = .176$. This replicates the general BTO effect and indicates participants viewed their overall personality as more positive than they viewed the average other member of their social network.

Hypothesis 2: Did the BTO Effect Vary with Network Distance?

In support of Hypothesis 2, however, the BTO effect was stronger when participants rated others who were more distant from them in the social network than when they rated others closer to them in it. To test this hypothesis, I measured self-positivity (greater BTO) by subtracting peer-ratings from self-ratings for each self-other target dyad and regressed these difference scores on network path length, which varied from 1 (closest) to 5 (most distant). Because the data were nested, in that self-ratings by a given target were considered repeatedly and the same perceiver rated multiple targets, the standard errors for this regression were clustered at the perceiver and target level (two-way clustered). The regression analysis found a positive relationship between path length and BTO scores, $\beta = 0.082$, 95% CI = [.047, .118], $t(10052) = 4.537221$, $p < .001$. As shown in Figure 1, the longer the path length (i.e., the farther away the peer was from the self in the network), the stronger the BTO effect.

To further illustrate, consider Table 3, which shows the means, standard deviations, Cohen’s d , and p -values for a test of the BTO effect at each of the five path lengths. The magnitude of the BTO effect was largest at the path length of 5 (see the column titled “P5” in Table 3; $t(210.64) = 4.4311$, $p < .001$, $d = .40$), decreased at the path length of 4 ($t(285.91) =$

4.2278, $p < .001$, $d = .27$), and again decreased at the path length of 3 ($t(263.66) = 3.6237$, $p < .001$, $d = .21$). For judgments made at the path length of 2, I found no significant differences between self-ratings and peer-ratings and therefore no BTO effect ($t(270.43) = 1.4277$, $p = .1545$, $d = .09$). At the path length of 1, I found a reversal of the BTO effect, in that self-ratings were significantly *lower* than peer-ratings ($t(333.13) = -3.8216$, $p < .001$, $d = -.28$). This indicates participants viewed their closest friends more positively on these personality dimensions than they viewed themselves. Given that the difference between P1 and P2 in the BTO effect appeared larger than the differences between P2 and P3, P3 and P4, I tested for a curvilinear effect of path length. A test of a potential curvilinear effect did not reveal a significant curvilinear effect of path lengths on the BTO effect. A regression analysis including a quadratic term of path lengths (z-scored) resulted in a null effect for the quadratic term ($b = -.007$, $t(10051) = -.6013952$, $p = .548$). More generally, the BTO effect was observed only for the three path lengths that capture people that are, relatively speaking, distant to the self. An effect size above Cohen's d of .40 was observed only for P5 which indicates that the two people are relative strangers to each other in this network.

Hypothesis 3: BTO effect Differences across the Big Five Domains

As expected, the magnitude of the BTO effect differed across the Big Five personality dimensions (see Figure 2 and Table 4). I conducted an ANOVA with Big Five dimension as the within-subjects factor and the BTO effect indexed by the self-minus-other difference score described above as the dependent variable. This analysis revealed a significant main effect of Big Five dimension on BTO effect, $F(4, 50265) = 96.84$, $p < .001$. As shown in Figure 2, the BTO effect for Extraversion ($M = .0381$) was significantly lower than for Agreeableness ($M = .277$; $t(50265) = 10.201$, $p < .001$), Conscientiousness ($M = .209$; $t(50265) = 4.224$, $p < .001$), and Openness ($M = .279$; $t(50265) = 5.909$, $p < .001$). Similarly, the BTO effect for Emotional stability was significantly lower than for Agreeableness ($M = .277$; $t(50265) = 15.704$, $p < .001$), Conscientiousness ($M = .209$; $t(50265) = 12.796$, $p < .001$), and Openness ($M = .279$; $t(50265) = 15.755$, $p < .001$).

Breaking this down by personality dimension, the BTO effect was strongest for Agreeableness ($t(247.49) = 3.9154$, $p < .001$, $d = .23$), Conscientiousness ($t(246.28) = 2.893$, $p = .004$, $d = .17$), and Openness ($t(245.26) = 3.6294$, $p < .001$, $d = .23$), the three most evaluative dimensions of the Big Five. This indicates that participants rated themselves as more agreeable, conscientious, and open than others on average. In contrast, and consistent with expectations, I did not find the BTO effect for Extraversion ($t(243.26) = .45588$, $p = .65$, $d = .03$), or Emotional Stability ($t(242.63) = -.63879$, $p = .52$, $d = .05$). In other words, participants did not view themselves as more extraverted or emotionally stable than others.

Exploratory: interaction between the closeness effect and Big Five dimensions

Along exploratory lines, I tested the possibility that the effect of closeness (Hypothesis 2) may interact with the effect of Big Five dimensions (Hypothesis 3) in predicting the BTO effect. Specifically, I tested whether the effect of closeness (i.e., the BTO effect being strengthened at greater network distances) would be strengthened or attenuated for specific Big Five dimensions.

For example, are extraversion and emotional stability, which show weak to null BTO effects, less affected by closeness?

An ANOVA interacting big five dimension and network distance revealed a significant interaction $F(50260, 4) = 11.19, p < .001$. Post-hoc contrasts adjusted using the Tukey method revealed that the effects of distance on the BTO effect observed for extraversion ($b = .0879$) and emotional stability ($b = .0435$) were significantly weaker than the effect of distance on agreeableness ($b = .1718, ps < .01$) and openness ($b = .1549; ps < .05$). The effect of distance on conscientiousness ($b = .1175$) was significantly stronger than the effect of distance on emotional stability ($p = .0064$), but not on extraversion ($p = .6544$).

Exploratory: BTO effect and Demographic Groups

Along exploratory lines, I tested whether the above pattern of results was similar for Asian-American participants and Non-Asian-American participants; given the sample was predominantly Asian-American, and Non-Asian-Americans only comprised 16.9% of the sample, however, these comparisons will be qualitative in nature and focused on the direction of statistical trends. First, I found that both Asian Americans and non-Asian Americans showed the general BTO effect across the personality dimensions ($ds = .14, .38$, respectively).

Second, I found the same effect of pathlength on the BTO effect across the two groups, with the BTO effect being stronger at longer path lengths and weaker at shorter path lengths. The Cohen's d -scores for BTO effects for Asian-Americans at path lengths 1 through 5, respectively, were $-.29, .06, .17, .22, .34$; the Cohen's d -scores for BTO effects for non-Asian-Americans at path lengths 1 through 5, respectively, were $-.22, .23, .46, .53, .68$.

The only differences I observed across the two ethnic groups involved self-ratings on emotional stability. Non-Asians saw themselves as being significantly more emotionally stable ($t(55.199) = 2.374, p = .012, d = .43$) than Asians saw themselves.

Discussion

Study 1 found support for all three theorized hypotheses. When comparing the average self-ratings to the average-peer-ratings across the entire social communities, participants saw themselves more positively than they saw others (Hypothesis 1). While Study 1 examined this general BTO effect in a novel setting, these findings go in line with much prior work on the BTO effect. However, when considering the effects of social network distance between the self and other, Study 1 found that the BTO effects were strongest for distant others, and weakest, and sometimes mitigated for close others (Hypothesis 2). In fact, for very close others (i.e., targets of path lengths of 1), I even found that participants saw targets at path lengths of 1 more positively than they saw themselves. This provides further support for my theory that, while the desire to maintain positive self-regard (reflected in the support of Hypothesis 1) is indeed pervasive, the desire for belonging and the inclusion of close friends in the self-identity shape the BTO effect in more complex ways, with social closeness moderating the BTO effect. Finally, the BTO effect was strongest for the three most evaluative dimensions of the Big Five (agreeableness, conscientiousness, and openness), and not found for the two least evaluative domains

(extraversion and emotional stability). This supports my theory that the desire to maintain positive self-regard should be most influential for judgments of Big Five domains most relevant to how positively a person is perceived.

Exploratory analyses revealed further nuances of the BTO effect. Analyses examining the interaction of the main effects of Hypothesis 2 and 3 (i.e., network distance and Big Five domain) revealed that the effects of network distance were strongest for the three most evaluative Big Five dimensions (agreeableness, conscientiousness, and openness). While exploratory these findings provide support for my theory that the effects of network distance (i.e., social closeness) on the BTO effect should be strongest for domains that directly impact how positively we see others.

Finally, exploratory analyses of potential demographic differences in the BTO effect did not result in salient differences between Asian-American and non-Asian American participants. Both the Asian-American population and the non-Asian-American population showed the BTO effect, and the effect of network distance on the BTO effect was robust in both demographic groups. In addition, the effect of Big Five domain on the BTO effect was similar in both groups, with the three most evaluative dimensions showing the strongest BTO effect in both groups.

Study 2: Replication and comparison to prior measures of BTO effects

In Study 2, I aimed to replicate our findings in Study 1, and also test how these hypothesized effects found in networks compare to the findings of BTO measured through more traditionally used methods in the literature. I examined these hypotheses again in a study of four distinct social communities ($N = 45$ to 67 each), in which I again assessed each community's social network structure and the self and peer perceptions each member of the community held. In addition, Study 2 also measured the BTO effect in two different ways. The first was identical as Study 1, in which I compared participants' self-ratings to the peer-ratings they made of others. The second asked participants to rate an average other, which served as the benchmark for participants' other ratings. This item is similar to items often used in prior BTO research, which allows Study 2 to test how much stronger or weaker the BTO is when measured in real social networks with individualized targets, versus measured against an abstract average person. The hypotheses and analyses for Study 2 were pre-registered (https://aspredicted.org/GF9_Q7W).

Methods

Participants

Participants were members of four different co-ed undergraduate student organizations in two public universities on the West Coast. Similar to Study 1, each organization focused on students' planned professional careers: one in medicine, one in engineering, and two in business. The organizations ranged from 45 to 67 members (total $N = 214$). Participants completed 30-min surveys that assessed all of the members of their organization and were each paid \$15.00. Each organization was also paid \$750.00 for reaching an 80% participation rate. A total of 182 participants (44.0% female, 54.9% male, 0.01% non-binary; 73.3% Asian American, 9.4% Multiracial, 6.7% Latino, 6.1% White, 2.2% Black, 2.2% Other) with an average age of 19.98

(SD = 1.14) completed surveys, resulting in an 85.0% response rate. Twenty-four participants failed a pre-registered inclusion criteria (more than two of their round-robin questionnaires out of the five corresponding to each dimension of the Big Five had zero variance), resulting in 158 final participants.

Social Network Assessment

Identical to Study 1, I measured the core discussion network within each organization by asking participants: “From time to time, most people discuss important matters with other people. Looking back over the last six months, who are the people in your fraternity with whom you discussed matters important to you?” (Marsden, 1987; Small et al., 2015). Participants were provided with the complete roster of their organization and allowed to check as many names as they wanted. Again, to ensure against potential inaccuracies of non-reciprocated ties, I only considered *reciprocated ties* in defining the network (Kashy & Kenny, 1990).

Big Five Personality Traits

Identical to Study 1, in a full round-robin design (Kenny, 1994), each participant rated all of their organization members’ Big Five personality traits, including their own.

The FIPI items were rated from 1 (“Disagree strongly”) to 7 (“Agree strongly”): “Extraverted, enthusiastic - that is, sociable, assertive, talkative, active, NOT reserved, or shy”, “Agreeable, kind - that is, trusting, generous, sympathetic, cooperative, NOT aggressive, or cold”, “Dependable, organized - that is, hardworking, responsible, self-disciplined, thorough, NOT careless, or impulsive”, “Emotionally stable - that is, relaxed, self-confident, NOT anxious, moody, easily upset, or easily stressed”, and “Open to experience, imaginative – that is, curious, reflective, creative, deep, open-minded, NOT conventional”.

As in Study 1, I again checked the degree to which the five items measured five distinct personality constructs in the present data. The inter-item correlations for self-ratings of the FIPI are shown in Table 5. As shown, the five items measured distinct personality constructs, and were far from converging to assess a single general positivity factor; as in Study 1, similar to the Gosling et al. (2003) research, the mean inter-item correlation was only $r = .254$. The mean inter-item correlation for the *peer-rated* FIPI items was $r = .355$ (full inter-item correlations available in the Supplementary Materials), and the pattern of inter-item correlations were similar. The correlation between the two correlation matrices, one for self-ratings and the other for peer ratings, was $r = .676$.

Perception of Average Other

In addition to rating their self and each of their organization members on the FIPI, participants also rated the average person on the FIPI. For example, for extraversion, participants rated the average person by responding to the following item: “I see the average person as: extraverted, enthusiastic (that is, sociable, assertive, talkative, NOT reserved, or shy).” Participants made these ratings for all five items of the FIPI.

Variables

Social network closeness (path lengths). To measure social network closeness, again I calculated *path lengths*. Table 6 presents the distribution of path lengths for all four organizations. Similar to Study 1, there were very few judgments made at path lengths greater than 5 (101 dyads out of 3655 total). Identical to Study 1, I merged judgments made at path lengths of 5 or greater as a “5+” category of judgments.

Results

Hypothesis 1: Did the BTO Effect Replicate in a Full Network Sample/Analysis

Similarly to Study 1, to test Hypothesis 1, I computed the average self-rating and average peer rating across all 3655 perceiver-target dyads and all five personality dimensions rated. The mean of the self-rating was $M = 5.64$, $SD = .83$, which was higher than the average peer rating, $M = 5.36$, $SD = .97$, as shown by a Welch’s two sample t -test, $t(168.82) = -4.1555$, $p < .001$, and a moderate effect size, Cohen’s $d = .292$. Similar to Study 1, this replicates the general BTO effect and indicates participants viewed their overall personality as more positive than they viewed the average other member of their social network.

In addition, because Study 2 measured the perceptions of abstract “average others”, it was possible to compare the average ratings of all peers to the ratings of abstract “average others” in society. A Welch’s two sample t -test revealed that the average peer-rating ($M = 5.36$, $SD = .97$) was significantly higher than the average rating given for an average person in society ($M = 4.50$, $SD = 1.05$; $t(192.96) = 10.98$, $p < .001$). In other words, ratings of abstract average others in society were lower than the average of all peer-ratings given for the others in this context. Furthermore, the average ratings given for peers at path lengths of five (the longest distance category in the data; $M = 5.26$, $SD = .94$) was also significantly higher than ratings of abstract average others ($t(357.94) = 7.3201$, $p < .001$).

Hypothesis 2: Did the BTO Effect Vary with Network Distance?

Similarly to Study 1 and in support of Hypothesis 2, however, the BTO effect was again stronger when participants rated others who were more distant from them in the social network than when they rated others closer to them in it. To test this hypothesis, I again measured self-positivity (greater BTO) by subtracting peer-ratings from self-ratings for each self-other target dyad and regressed these difference scores on network path length, which varied from 1 (closest) to 5 (most distant). As in Study 1, the standard errors for this regression were clustered at the perceiver and target level (two-way clustered). The regression analysis found a positive relationship between path length and BTO scores, $\beta = 0.018$, 95% CI = [.007, .028], $t(5637) = 3.3071225$, $p = .001$. As shown in Figure 3, the longer the path length (i.e., the farther away the peer was from the self in the network), the stronger the BTO effect. I again tested for the possibility of a curvilinear effect of path lengths on BTO scores. Similar to Study 1, regression analyses including a quadratic term of path lengths revealed a null effect for the quadratic term ($b = -.003$, $t(5707) = -.9801625$, $p = .329$).

Consider Table 7, which, similar to Table 3 in Study 1, shows the mean difference, Cohen's d , and p values for a test of the BTO effect at each of the five path lengths. The magnitude of the BTO effect was largest at the path length of 5 (see the column titled "P5" in Table 3; $t(107.5) = 3.7232, p < .001, d = .52$), decreased at the path length of 4 ($t(198.75) = 5.5783, p < .001, d = .51$), decreased at the path length of 3 ($t(182.68) = 5.6798, p < .001, d = .42$), and again decreased at the path length of 2 ($t(180.74) = 3.1801, p = .002, d = .24$). For judgments made at the path length of 1, I found no significant differences between self-ratings and peer-ratings and therefore no BTO effect ($t(221.7) = -1.5327, p = .063, d = -.14$).

Hypothesis 3: BTO effect differences across the Big Five Domains

As predicted, the magnitude of the BTO effect differed across the Big Five personality dimensions (see Figure 4 and Table 7). I conducted an ANOVA with Big Five dimension as the within-subjects factor and the BTO effect indexed by the self-minus-other difference score described above as the dependent variable. This analysis revealed a significant main effect of Big Five dimension on BTO effect, $F(4, 28190) = 160.9, p < .001$. As shown in Figure 4, the BTO effect for Extraversion ($M = .0016$) was significantly lower than for Agreeableness ($M = .3804$; $t(28190) = 11.308, p < .001$), Conscientiousness ($M = .4281$; $t(28190) = 12.733, p < .001$), and Openness ($M = .6287$; $t(28190) = 18.720, p < .001$). Similarly, the BTO effect for Emotional stability ($M = -.0809$) was significantly lower than for Agreeableness ($t(28190) = 13.770, p < .001$), Conscientiousness ($t(28190) = 15.194, p < .001$), and Openness ($t(28190) = 21.182, p < .001$).

Exploratory: Interaction between the closeness effect and Big Five dimensions

Along exploratory lines, I again examined the possibility that the effect of closeness (Hypothesis 2) may interact with the effect of Big Five dimensions (Hypothesis 3) in predicting the BTO effect.

An ANOVA interacting big five dimension and network distance revealed a significant interaction $F(28185, 4) = 8.472, p < .001$. Post-hoc contrasts adjusted using the Tukey method revealed that the effect of distance on the BTO effect observed for emotional stability ($b = .0420$) was significantly weaker than the effect of distance on the BTO effect observed for agreeableness ($b = .1541$), openness ($b = .1460$), and conscientiousness ($b = .1783$; $ps < .001$). The effect of distance on the BTO effect observed for extraversion ($b = .0943$) was significantly weaker than the effect observed for conscientiousness ($p = .0135$), but not for agreeableness ($p = .1608$) or openness ($p = .2923$).

Exploratory: BTO effect and Demographic Groups

Along exploratory lines, I checked whether the above pattern of results was similar for Asian-American participants and Non-Asian-American participants; given the sample was predominantly Asian-American, and Non-Asian-Americans only comprised 26.7% of the sample, however, these comparisons will be qualitative in nature and focused on the direction of statistical trends. First, I found that both Asian Americans and non-Asian Americans showed the general BTO effect across the personality dimensions ($ds = .26, .37$, respectively).

Second, I found the same effect of pathlength on the BTO effect across the two groups, with the BTO effect being stronger at longer path lengths and weaker at shorter path lengths. The Cohen's *d*-scores for BTO effects for Asian-Americans at path lengths 1 through 5, respectively, were .15, .19, .39, .46, .46; the Cohen's *d*-scores for BTO effect effects for non-Asian-Americans at path lengths 1 through 5, respectively, were .03, .35, .46, .56, 1.01.

Finally, the only differences I observed across the two ethnic groups for self-ratings were on self-ratings of openness. Non-Asians saw themselves as being significantly more open ($t(100.79) = 2.4108, p = .018, d = .38$) than Asians saw themselves.

Study 2 Discussion

Study 2 found support for all three pre-registered hypotheses and replicated the pattern of results found in Study 1. When comparing the average self-ratings to the average-peer-ratings across the entire social communities, participants saw themselves more positively than they saw others (Hypothesis 1). Importantly, the average ratings given for abstract average others in society were significantly lower than the average peer-ratings given across the network. While the general BTO effect replicates regardless of comparing self-ratings to the average peer-ratings in the communities or the ratings of average others in society (as measured in much prior research), the ratings of abstract average others were significantly lower than the average peer-ratings. This suggests that the strength of the BTO effect may be much weaker when the targets of comparison are in real social communities, versus abstract average others as in much of previous BTO effect research.

When considering the effects of social network distance between the self and other, Study 2 again found that the BTO effects were strongest for distant others, and weakest, and sometimes mitigated, for close others (the BTO effect was mitigated for targets at path lengths of 1). This again provides further support for my theory that while the desire to maintain positive self-regard (reflected in the support of Hypothesis 1) is indeed pervasive, the desire for belonging and the inclusion of close friends in the self-identity shape the BTO effect in more complex ways, with social closeness moderating the BTO effect. Finally, as in Study 1, the BTO effect was strongest for the three most evaluative dimensions of the Big Five (agreeableness, conscientiousness, and openness), again suggesting that the desire to maintain positive self-regard is most influential for Big Five domains most relevant to how positively a person is perceived.

Exploratory analyses also replicated the same patterns as in Study 1. Analyses examining the interaction of the main effects of Hypothesis 2 and 3 (i.e., network distance and Big Five domain) revealed that the effects of network distance were strongest for the three most evaluative Big Five dimensions (agreeableness, conscientiousness, and openness). While exploratory, this replicates the pattern of findings in Study 1, and provides further support of the theory that the effects of network distance (i.e., social closeness) on the BTO effect should be most salient for domains that directly impact how positively we see others.

Exploratory analyses of potential demographic differences in the BTO effect also confirmed the exploratory findings of Study 1. Both the Asian-American population and the non-

Asian-American population showed the BTO effect, and the effect of network distance on the BTO effect was robust in both demographic groups. In addition, the effect of Big Five domain on the BTO effect was similar in both groups, with the three most evaluative dimensions showing the strongest BTO effect in both groups.

General Discussion

Summary of Results

Two field studies documented better-than-other (BTO) effects in the context of nine different social communities, and observed novel boundary conditions to those effects. Specifically, both studies replicated the BTO effect found in prior work, but here, the BTO effect held up even when comparing individuals' self-ratings to individuals' ratings of other members of their social community (Hypothesis 1). That is, individuals rated themselves more positively than they rated their fellow community members on average. However, the strength of the BTO effect was also moderated by several factors not examined in prior research.

For example, the strength of the BTO effect depended on where the target of comparison is located in the individual's network (Hypothesis 2). The BTO effect was weakest when the target of comparison was closer to the individual in the social network and became increasingly stronger when targets of comparison were further away from the individual in the network. In fact, both studies found that the BTO effect to be completely mitigated when self-ratings were compared to ratings of very close friends (i.e., people who shared reciprocated network nominations with the individual). That is, individuals did not rate themselves more positively than they rated their close friends.

In addition, both studies found that the strength of the BTO effect depended on the particular domain of comparison, specifically on the specific Big Five dimension being rated (Hypothesis 3). The BTO effect was strongest for agreeableness, conscientiousness, and openness, which are the most evaluative dimensions of the Big Five (John & Robins, 1993). In other words, individuals were most likely to perceive themselves more positively than others on those three personality dimensions. They tended to view themselves as more agreeable, conscientious, and open than others – all three very positive traits. For extraversion, I did not observe consistent BTO effects, indicating individuals did not perceive themselves as more extraverted than others. And across both studies, I did not find a single instance of a BTO effect for emotional stability. Regardless of whether the self and peer-ratings were aggregated across the entire sample, or self and peer-ratings were restricted to a specific path length of judgments, individuals did not see themselves as being more emotionally stable than others.

Exploratory analysis revealed further complexities of the BTO effect and its boundaries. Analyses of the interaction between network distance and the Big Five dimensions found significant differences in the effect of path lengths on the BTO effect across the Big Five dimensions. Across both studies, the effect of path lengths (i.e., social closeness) was strongest for the most evaluative Big Five dimensions – agreeableness, conscientiousness, and openness – and weakest for the least evaluative dimensions, openness and emotional stability. These findings make sense considering my theoretical arguments regarding the psychological motives driving

BTO effects. Namely, people are motivated to view close others in more positive ways (thus reducing BTO effects vis-à-vis close others), and thus have more positive perceptions of close others particularly on more evaluative personality dimensions.

Finally, even though a large proportion of my sample was comprised of Asian-American participants, I nonetheless observed BTO effects similar to those found in WEIRD samples. The low number of non-Asian-American participants precluded testing interaction effects with sufficient statistical power, but on a qualitative level, the BTO effects were consistent across the Asian-American and non-Asian-American subsamples. My analyses did not reveal consistent significant differences in the BTO effect between Asian-Americans versus non-Asian-Americans.

Implications

While my studies replicate the widely known BTO effect in a novel setting (in the context of social communities), perhaps more importantly, they point to important boundary conditions not identified by prior research. My measurement of self and peer-perceptions in real social communities and the social networks within these communities highlight the complexities of the BTO effect, and particularly when the BTO effect is strengthened or weakened. I found multiple instances in which the BTO effect was completely mitigated, such as when the comparison target was a very close friend, or when judgments were being made on less evaluative Big Five dimensions (e.g., emotional stability and extraversion).

These findings help provide clarity to the robustness of the BTO effect, and perhaps better context regarding how previous findings of the BTO effect should be interpreted. That is, the BTO effect measured here, in real social communities with specific comparison targets, was weaker than the BTO effect measured in previous laboratory studies comparing self-perceptions to ratings of an “abstract” average person in society. Furthermore, for certain targets (e.g., close friends), I did not find the BTO effect.

Limitations and Future Directions

While my studies had the strength of being naturalistic studies of the BTO effect in real social communities, they are not without limitations. One of the most notable limitations may come from what I believe is the strength of my dataset: the fact that these perceptions are built upon weeks, months, or even years of acquaintanceship, and thus may be influenced by a myriad of other variables. Because these perceptions are, by nature, embedded in repeated daily interactions and conversations that occur within these networks, it is impossible to rule out other processes that may affect the self and other perceptions I measured (most notably the other perceptions). While I hypothesized that it is the competing nature of the desire for positive self-regard and the need to belong resulting in the increasingly positive judgment of close others, and the increasingly negative judgment of distant others, it is also possible that variables such as the gossip in the social networks is a cause of the changing judgment of close versus distant others. For example, if the gossip being shared in these social networks tend to be increasingly negative at greater network distances, then the perceptions of distant others may become more negative

not because of the desire for positive self-regard, but simply because the information received about a target is predominantly negative.

To address these limitations, future research should empirically demonstrate the role of the hypothesized mechanisms: the desire for positive self-regard and the need to belong. Future studies should verify whether it is indeed the desire for positive self-regard driving the strong BTO effects observed for distant others. For example, studies could test whether individuals with stronger desires for positive self-regard show greater BTO effects for distant others. Similarly, future studies should test whether the satisfaction of the need to belong indeed increases as one perceives close others in their network more positively than they perceive distant others.

Relatedly, it is also possible that the network distance observed between two participants were conflated with other variables such as liking. While I argued that the network distance should reflect social closeness, and that social closeness predicts more positive or negative judgments of the other, it is also possible that the network distance simply captured dislike between the self and the other in the network. If that was the case, the effect of social closeness I observed (the BTO effects becoming stronger for distant others) may have also been influenced by the fact that people who disliked each other were already far away from each other in the network, which would have resulted in more negative ratings of each other.

To address the limitations of cross-sectional networks, future research should verify the casual order of my findings through longitudinal designs. Does being closer to someone in the network lead to diminished BTO effects as I theorized? Or do smaller BTO effects (i.e., more positive perceptions of the other) result in the self and other being closer in the network? Longitudinal tests of my hypotheses, testing for the effects of network distance while controlling for prior BTO effects, should address this limitation.

Future research should also take steps to further verify the generalizability of my findings. The social communities sampled here were exclusive organizations, or organizations with clearly defined membership. While this allowed the precise measurement of the networks within these organizations, this limited the size of the sample. Future studies should aim to replicate this effect with even larger samples (e.g., a company). In addition, my sample had too few non-Asian-Americans to test the statistical differences among ethnic groups (e.g., Asian-Americans vs non-Asian-Americans). Future research should further verify that the pattern of results is similar between Asian-Americans and non-Asian Americans. Relatedly, my studies only sampled from universities within the United States. While much debate already exists on the cross-cultural differences (or similarities) in the BTO effect, it remains to be seen whether the novel moderators highlighted here (e.g., network distance) result in similarities or differences of the BTO effect across cultures. More cross-cultural research should be conducted to explore network effects in non-American social settings.

Finally, my findings are only the first step in exploring how social networks may shape the BTO effect. Building upon the network distance findings in these studies, future research should begin to explore more complex, but pervasive, qualities of networks. For example, while I focused on the shortest path lengths between two people, networks are often organized into distinct clusters or cliques, with people in one cluster being located very close to each other, and

similarly far from people of another cluster. Should the strength of the BTO effects also be predictable by organizing the network into clusters? For example, should BTO effects be weaker when the targets of comparison are within network clusters and stronger when the targets of comparison are outside of the self's cluster? One way to examine this would be to test whether targets at the same distance from the target (e.g., two targets both two-degrees away from the self) result in differing BTO effects based on whether the target is within or outside the self's cluster.

Conclusion

That people see themselves more positively than they see others is one of the most researched findings in social psychology. Much research has vouched for its robustness, and my studies also verify that people do indeed see themselves more positively than they see others, on average. Importantly, my studies replicated this finding in entire social communities, adding to the generalizability of previous findings of the BTO effect. However, I have also found strong evidence suggesting that this effect is bounded by factors that are central and relevant to human social life. Social networks are core to the organization of social communities, and people rely on social networks to gain access to resources, information, and to learn about others in their network (Craik, 2008). My findings suggest social networks also play an important role in shaping BTO effects, with the BTO effects being strengthened as the network distance between the self and other increases. Finally, I find that the personality dimensions being judged in these social networks matter: people do not see themselves more positively on dimensions that are less evaluative such as extraversion or emotional stability. These findings both answer and pose new questions concerning BTO effects, and serve as the first step to better understanding why and when humans may see themselves more positively than they see others.

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Tables

Table 1. Study 1 Inter-item correlations for self-ratings of the FIPI

	Extraversion	Agreeableness	Conscientiousness	Openness	Emotional Stability
Extraversion	1.0	0.155*	0.056	0.265***	0.212**
Agreeableness	0.155*	1.0	0.321***	0.290***	0.136*
Conscientiousness	0.056	0.321***	1.0	0.215***	0.107
Openness	0.265***	0.290***	0.215***	1.0	0.256***
Emotional stability	0.212**	0.136*	0.107	0.256***	1.0

Note. Mean inter-item correlation $r = .201$.

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

Table 2. Study 1 Distribution of Path Length of judgments between Perceivers and Targets

	Network distance of judgments (path lengths)					Mean distance	Group N
	1	2	3	4	5+		
Group 1	111	303	310	91	5	2.48	45
Group 2	112	291	385	159	43	2.74	58
Group 3	127	310	383	305	201	3.15	71
Group 4	128	418	587	299	53	2.82	72
Group 5	143	434	612	295	56	2.80	75
Total	621	1756	2277	1149	358	2.83	321

Note. This table counts the number of *dyads* at different path lengths. For example, 621 dyad pairs were possible at path lengths of 1, equating to about 621 different sets of Big Five judgments at path lengths of 1 (i.e., 3105 judgments at path lengths of 1 when multiplying by five dimensions).

Table 3. Change of BTO effect across path lengths in Study 1

	Network distance of judgments (path lengths)					All N
	1	2	3	4	5+	
Self-ratings	5.43 (.74)	5.43 (.74)	5.43 (.74)	5.42 (.86)	5.40 (.73)	5.41 (.75)
Peer-ratings	5.64 (.76)	5.36 (.83)	5.24 (.87)	5.19 (.74)	5.07 (.84)	5.25 (.88)
BTO effect	-.21	.07	.19	.23	.33	.15
Cohen's <i>d</i>	-.28	.09	.21	.27	.40	.18
<i>p</i> - value	<.001	.16	<.001	<.001	<.001	<.001

Note. BTO effect is calculated by subtracting peer-ratings from self-ratings.

Table 4. Study 1 Self-Peer Means and SDs separated by Big Five

	Big Five Combined			Agreeableness			Conscientiousness			Openness			Extraversion			Emotional Stability		
	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>
All N	5.64	5.36	0.29	6.14	5.75	.29	5.86	5.47	0.29	5.83	5.24	0.44	5.24	5.17	0.04	5.13	5.17	-0.03
	(.83)	(.97)		(.98)	(1.34)		(1.16)	(1.35)		(1.16)	(1.36)		(1.53)	(1.49)		(1.73)	(1.45)	
P1	5.65	5.77	-0.14	6.17	6.34	-0.18	5.89	5.89	0.00	5.87	5.81	0.05	5.23	5.66	-0.30	5.11	5.13	-0.01
	(.82)	(.83)		(.97)	(.98)		(1.15)	(1.30)		(1.15)	(1.20)		(1.54)	(1.40)		(1.74)	(1.69)	
P2	5.64	5.42	0.24	6.16	5.77	0.29	5.89	5.52	0.28	5.85	5.30	0.41	5.21	5.30	-0.06	5.11	5.20	-0.06
	(.82)	(.95)		(.97)	(1.33)		(1.14)	(1.36)		(1.15)	(1.36)		(1.54)	(1.47)		(1.75)	(1.49)	
P3	5.64	5.24	0.42	6.16	5.58	0.42	5.89	5.39	0.38	5.85	5.04	0.60	5.21	5.01	0.14	5.11	5.17	-0.05
	(.82)	(.98)		(.97)	(1.40)		(1.14)	(1.32)		(1.15)	(1.37)		(1.54)	(1.49)		(1.75)	(1.40)	
P4	5.62	5.15	0.51	6.16	5.60	0.42	5.90	5.15	0.58	5.85	5.01	0.67	5.10	4.89	0.14	5.11	5.10	.01
	(.84)	(.96)		(1.01)	(1.38)		(1.18)	(1.32)		(1.19)	(1.27)		(1.54)	(1.48)		(1.70)	(1.31)	
P5	5.73	5.26	0.52	6.30	5.61	0.61	5.93	5.28	0.50	5.93	5.19	0.59	5.34	5.02	0.22	5.16	5.21	-0.03
	(.79)	(.94)		(.78)	(1.23)		(1.25)	(1.31)		(1.17)	(1.27)		(1.48)	(1.46)		(1.67)	(1.23)	

Note. **Bolded means** = significant t-test results ($p < .05$)

Table 5. Study 2 Inter-item correlations for self-ratings of the FIPI

	Extraversion	Agreeableness	Conscientiousness	Openness	Emotional Stability
Extraversion	1.0	0.383***	0.073	0.272***	0.148
Agreeableness	0.383***	1.0	0.321***	0.290***	0.320***
Conscientiousness	0.073	0.321***	1.0	0.215***	0.336***
Openness	0.272***	0.290***	0.215***	1.0	0.167*
Emotional stability	0.148	0.320***	0.336***	0.167*	1.0

Note. Mean inter-item correlation $r = .254$.

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

Table 6. Study 2 distribution of path length of judgments between perceiver and target.

	Network distance of judgments (path lengths)					Mean distance	Group N
	1	2	3	4	5+		
Group 1	54	113	116	81	165	3.65	52
Group 2	110	306	292	70	2	2.42	45
Group 3	167	560	610	145	3	2.50	67
Group 4	112	257	278	166	48	2.76	50
Total	443	1236	1296	462	218	2.71	214

Note. This table counts the number of *dyads* at different path lengths.

Table 7. Change of BTO effect across path lengths in Study 2

	Network distance of judgments (path lengths)					All N
	1	2	3	4	5+	
Self-ratings	5.65	5.64	5.64	5.62	5.73	5.64
	(.82)	(.82)	(.82)	(.84)	(.79)	(.83)
Peer-ratings	5.77	5.42	5.24	5.15	5.26	5.36
	(.83)	(.95)	(.98)	(.96)	(.94)	(.97)
BTO effect	-.12	.22	.40	.47	.47	.28
Cohen's <i>d</i>	-0.14	0.24	0.42	0.51	0.52	0.29
<i>p</i> - value	.127	.002	< .001	< .001	< .001	< .001

Note. BTO effect is calculated by subtracting peer-ratings from self-ratings.

Table 8. Study 2 Self-Peer Means and SDs separated by Big Five

	Big Five Combined			Agreeableness			Conscientiousness			Openness			Extraversion			Emotional Stability		
	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>	Self	Peer	<i>d</i>
All N	5.64 (.83)	5.36 (.97)	0.29	6.14 (.98)	5.75 (1.34)	.29	5.86 (1.16)	5.47 (1.35)	0.29	5.83 (1.16)	5.24 (1.36)	0.44	5.24 (1.53)	5.17 (1.49)	0.04	5.13 (1.73)	5.17 (1.45)	-0.03
P1	5.65 (.82)	5.77 (.83)	-0.14	6.17 (.97)	6.34 (.98)	-0.18	5.89 (1.15)	5.89 (1.30)	0.00	5.87 (1.15)	5.81 (1.20)	0.05	5.23 (1.54)	5.66 (1.40)	-0.30	5.11 (1.74)	5.13 (1.69)	-0.01
P2	5.64 (.82)	5.42 (.95)	0.24	6.16 (.97)	5.77 (1.33)	0.29	5.89 (1.14)	5.52 (1.36)	0.28	5.85 (1.15)	5.30 (1.36)	0.41	5.21 (1.54)	5.30 (1.47)	-0.06	5.11 (1.75)	5.20 (1.49)	-0.06
P3	5.64 (.82)	5.24 (.98)	0.42	6.16 (.97)	5.58 (1.40)	0.42	5.89 (1.14)	5.39 (1.32)	0.38	5.85 (1.15)	5.04 (1.37)	0.60	5.21 (1.54)	5.01 (1.49)	0.14	5.11 (1.75)	5.17 (1.40)	-0.05
P4	5.62 (.84)	5.15 (.96)	0.51	6.16 (1.01)	5.60 (1.38)	0.42	5.90 (1.18)	5.15 (1.32)	0.58	5.85 (1.19)	5.01 (1.27)	0.67	5.10 (1.54)	4.89 (1.48)	0.14	5.11 (1.70)	5.10 (1.31)	.01
P5	5.73 (.79)	5.26 (.94)	0.52	6.30 (.78)	5.61 (1.23)	0.61	5.93 (1.25)	5.28 (1.31)	0.50	5.93 (1.17)	5.19 (1.27)	0.59	5.34 (1.48)	5.02 (1.46)	0.22	5.16 (1.67)	5.21 (1.23)	-0.03

Note. **Bolded means** = significant t-test results ($p < .05$)

Figures

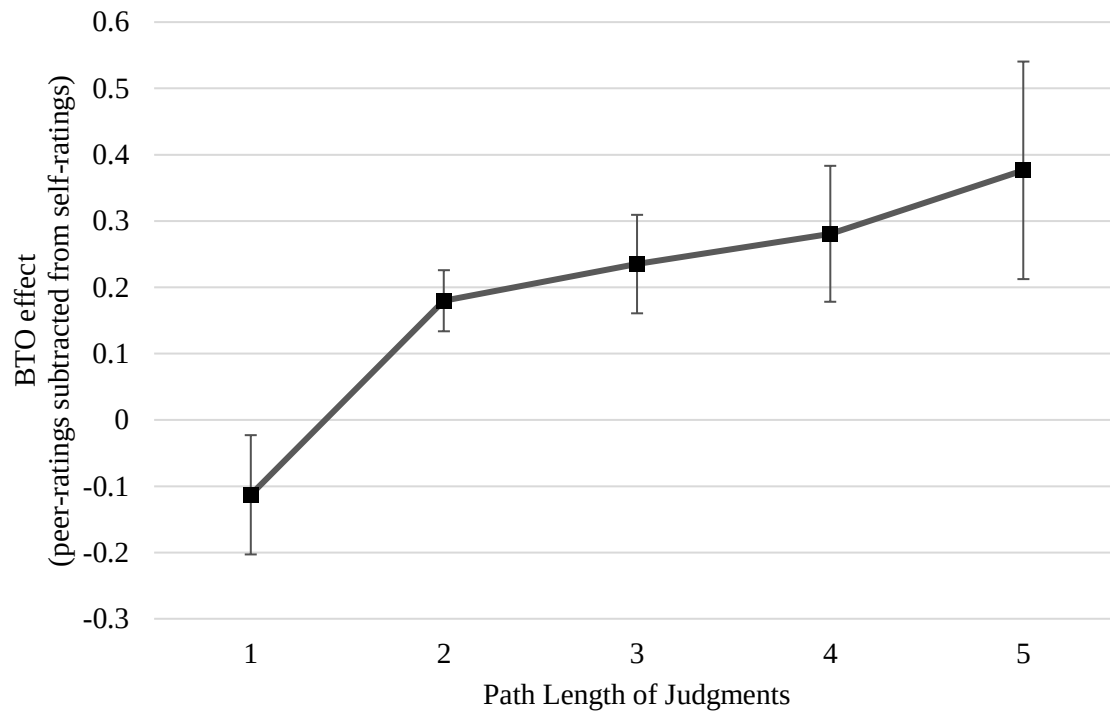


Figure 1. Study 1 BTO effect as a difference score of self-minus-other for each path length
Note. 95% Confidence intervals of BTO effect shown.

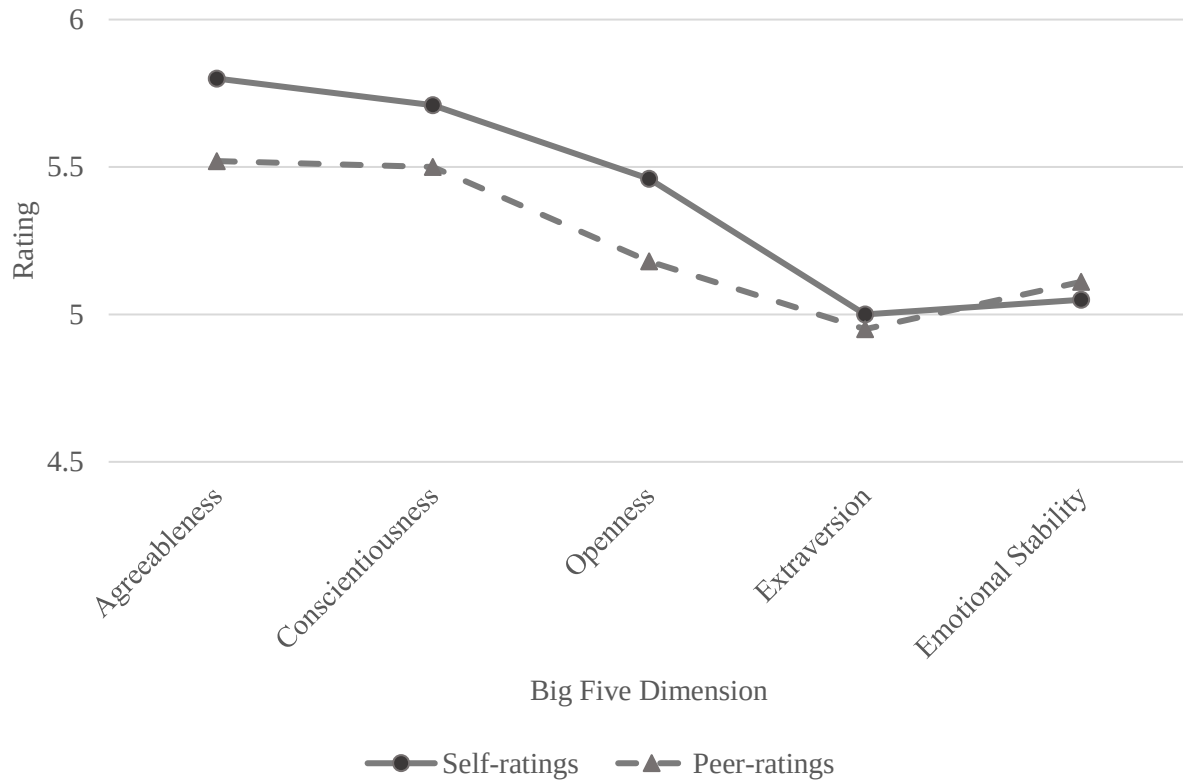


Figure 2. Study 1 mean self and peer ratings across the Big Five

Note. The strongest BTO effect (i.e., the distance between self and peer-ratings) were obtained for Agreeableness, Conscientiousness, and Openness. I did not find support for the BTO effect for Extraversion or Emotional Stability.

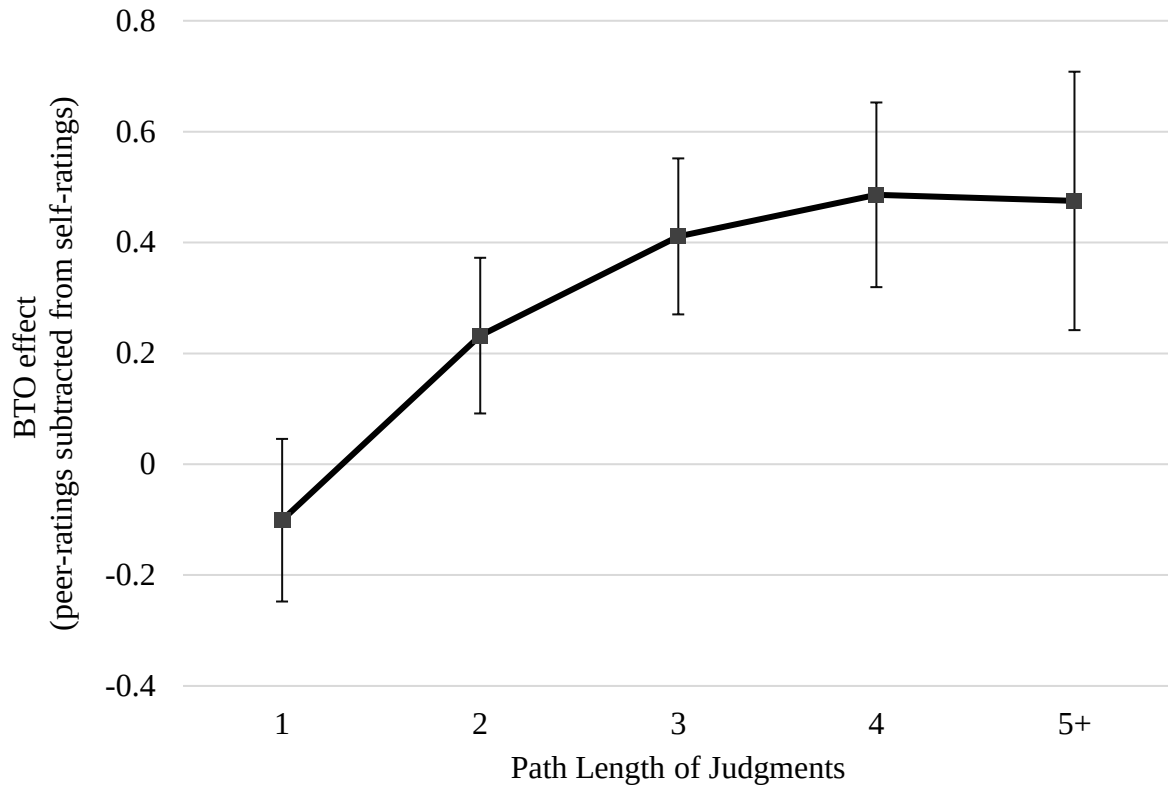


Figure 3. Study 2 BTO effect as a difference score of self-minus-other for each path length
Note. 95% Confidence intervals of BTO effect shown.

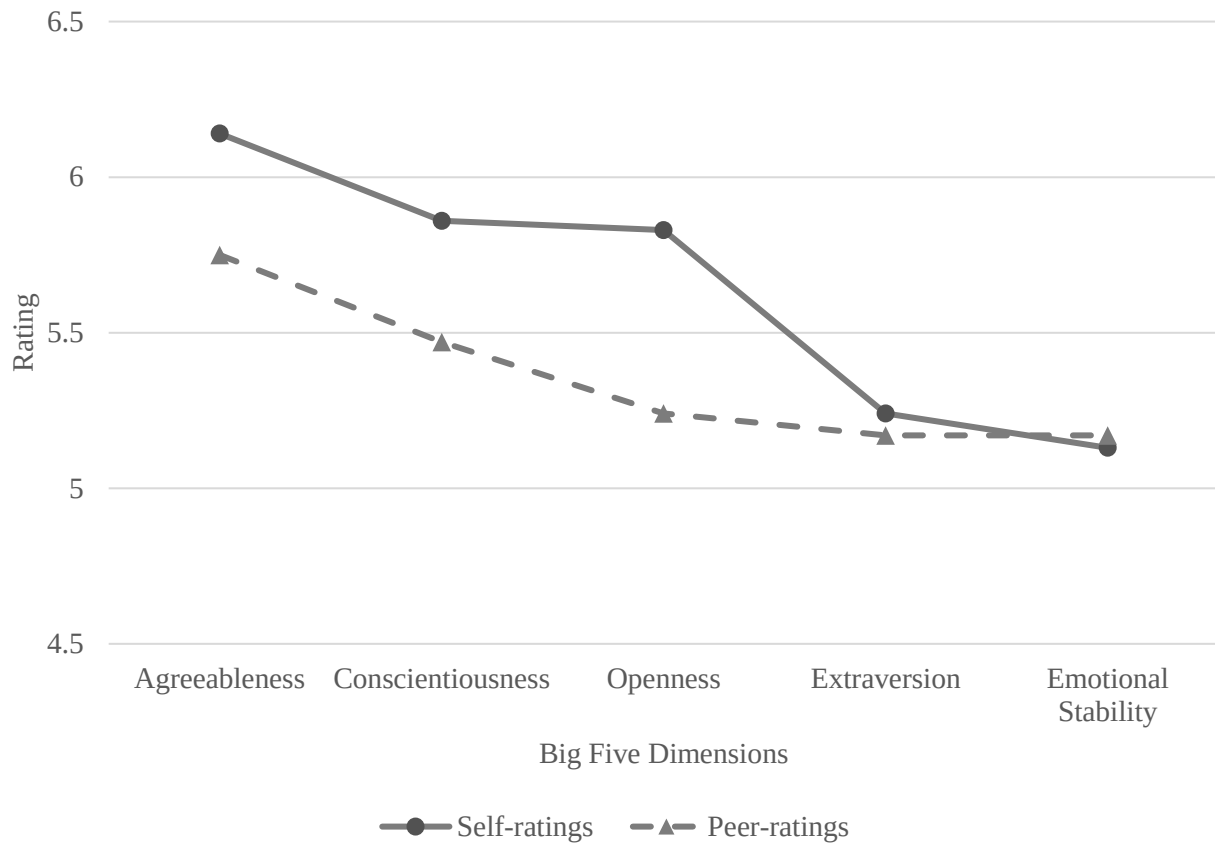


Figure 4. Study 2 mean self and peer ratings across the Big Five.

Note. The strongest BTO effect (i.e., the distance between self and peer-ratings) were obtained for Agreeableness, Conscientiousness, and Openness. I did not find support for the BTO effect for Extraversion or Emotional Stability.

Supplementary Materials
Inter-item correlations for peer-ratings of the FIPI in Study 1

	Extraversion	Agreeableness	Conscientiousness	Openness	Emotional Stability
Extraversion	1.0	0.243***	0.135***	0.301***	0.149***
Agreeableness	0.243***	1.0	0.445***	0.416***	0.373***
Conscientiousness	0.135***	0.445***	1.0	0.351***	0.393***
Openness	0.301***	0.416***	0.351***	1.0	0.371***
Emotional stability	0.149***	0.373***	0.393***	0.371***	1.0

Note. Mean inter-item correlation $r = .318$. As expected, the correlations are higher for peer-ratings, however, the pattern of inter-item correlations are similar. The correlation between the two matrices was $r = .542$, $p = .105$.

*** = $p < .001$

Inter-item correlations for peer-ratings of the FIPI in Study 2

	Extraversion	Agreeableness	Conscientiousness	Openness	Emotional Stability
Extraversion	1.0	0.330***	0.250***	0.359***	0.179***
Agreeableness	0.330***	1.0	0.456***	0.457***	0.384***
Conscientiousness	0.250***	0.456***	1.0	0.388***	0.415***
Openness	0.359***	0.457***	0.388***	1.0	0.332***
Emotional stability	0.179***	0.384***	0.415***	0.332***	1.0

Note. Mean inter-item correlation $r = .355$. As expected, the correlations are higher for peer-ratings, however, the pattern of inter-item correlations are similar. The correlation between the two matrices was $r = .676, p = .03$.

*** = $p < .001$

Footnotes

ⁱ While much of the research in this area has focused on the better than average (BTA) effect, in this paper, I use the phrasing “better than others effect” (BTO effect), because I will focus on how individuals compare themselves to specific others in their social communities.

ⁱⁱ There are often many ways in which two individuals may be connected to each other in the network (i.e., many different social network paths connecting two people). For this dissertation, I focus on the *shortest* network paths when considering the distance between two individuals.