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The structure of self–other overlap and its relationship to perspective taking

MICHAEL W. MYERS[a] AND SARA D. HODGES[b]
[a] *University of Tokyo, Japan and* [b] *University of Oregon*

Abstract

Two studies tested whether "self–other overlap" is a multidimensional construct, with only some dimensions affected by perspective taking. In Study 1, participants ($n = 132$) completed several previously used measures of self–other overlap for their best friend and acquaintance. Factor analyses revealed 2 distinct dimensions of self–other overlap—*perceived closeness* and *overlapping representations*. Perceived closeness but not overlapping representations was generally associated with relationship quality. Study 2 ($n = 118$) manipulated perspective taking of a stranger. Results replicated a factor structure similar to Study 1, and found that perspective taking had different effects on the 2 dimensions of overlap. These results are discussed with regards to the debate over self–other overlap as a mediator of perspective taking's pro-social effects.

Sayings such as the Golden Rule, "walking in another person's moccasins. . .", and "how would *you* feel in that situation?" all share an underlying psychological theme: Taking the perspective of another person often leads to more compassionate perceptions of and pro-social behavior toward that person. Taking the point of view of another person has been associated with the increased use of situational attributions to describe the other person's behavior (Betancourt, 1990; Galper, 1976; Regan & Toten, 1975; Wegner & Finstuen, 1977), feelings of empathic concern (Batson, 1987, 1991; Toi & Batson, 1982), and decreased use of stereotypical judgments (Galinsky & Moskowitz, 2000), to name just a few outcomes.

One promising mediator of perspective taking's pro-social effects has been labeled "self–other overlap." A variety of findings support the idea that perspective taking leads to heightened perceptions of overlap with the other person. Goldstein and Cialdini (2007, Study 1) found that self–other overlap mediated the relationship between perspective taking and changes in self-concept, such that taking someone else's perspective resulted in perceiving the self as more like the person whose perspective was being taken. Cialdini and colleagues (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Goldstein & Cialdini, 2007; Neuberg, Cialdini, Brown, Luce, & Sagarin, 1997) have also suggested that feelings of "oneness" are enhanced during perspective taking and provided evidence that this form of self–other overlap at least partially mediated the relationship between empathy and helping. Furthermore, Galinsky and Moskowitz (2000) found that self–other overlap was the mediator between perspective taking and more positive evaluations of another person, as well as less stereotypical judgments of that person's group.

However, not all the evidence is as supportive of the role of self–other overlap in mediating the effect of perspective taking. Batson (1987, 1991) hypothesized that empathy and perspective taking lead to self–other

Michael W. Myers, Department of Social Psychology, University of Tokyo, Tokyo, Japan; Sara D. Hodges, Department of Psychology, University of Orgeon.

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Correspondence should be addressed to Michael W. Myers, Department of Social Psychology, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan, e-mail: myers636@l.u-tokyo.ac.jp or Sara D. Hodges, Department of Psychology, 1227 University of Oregon, Eugene, OR 97403, e-mail: sdhodges@uoregon.edu.

distinctiveness rather than self–other overlap. Consistent with this belief, Batson and colleagues (1997) found that perspective taking did *not* lead to greater self–other overlap with another person, nor did measures of self–other overlap serve as a mediator between feelings of empathy and helping. Several social-neuroscience studies have also found that taking the perspective of another person leads to increased activation in areas of the parietal cortex (Decety & Sommerville, 2003; Ruby & Decety, 2004), which are associated with self-agency, or a sense that actions of the self are separate from one's surrounding environment. Increased activation in this area of the brain has been interpreted as evidence that perceptions of the self actually become more differentiated from perceptions of the other person during perspective taking, instead of overlapping more with the other person.

One complication in making sense of these contradictory results is that there is variability in how the term *self–other overlap* has been defined and measured. Many ideas about self–other overlap originated in work conducted by Aron and colleagues that examined close relationships (Aron & Aron, 1996, 1997; Aron, Aron, Tudor, & Nelson, 1991; Mashek, Aron, & Boncimino, 2003). They described self–other overlap as "lessened self/other distinction" (Aron et al., 1991, p. 243) that involves the inclusion of resources, perspectives, and characteristics of others into the self. In a similar vein, self–other overlap has been described as a sense of *oneness* or "weness" that involves "shared or interconnected identities with others" (Cialdini et al., 1997, p. 483). To measure self–other overlap, Aron and many others have often relied on the Inclusion of Others in Self scale (IOS; Aron, Aron, & Smollan, 1992) that is composed of pairs of increasingly overlapping circles.

However, other definitions and methodologies show up in the research on self–other overlap and perspective taking. For example, Davis, Conklin, Smith, and Luce (1996) defined self–other overlap as a cognitive phenomenon in which mental representations of the self and others increasingly overlap during perspective taking. To measure self–other overlap, they examined the extent to which terms used to describe the self were also used to describe the other. Batson and colleagues (1997) have interpreted self–other overlap as psychological indistinguishability, suggesting that it leads to people actually *confusing* themselves with others. According to this view of self–other overlap, people begin to see themselves and the other person as "one" and find it increasingly difficult to distinguish how they are different from the other person (Batson, 1997). Batson and colleagues—using methods somewhat similar to those used by Davis and colleagues (1996)—operationalized self–other overlap by measuring the extent that participants used the same traits to describe themselves and the other person.

Despite these apparent conceptual differences in defining and operationalizing self–other overlap, different teams of researchers may have incorrectly assumed that they were dealing with the same construct, in part because they all shared the same label. We believe that contradictory results regarding the relationship between perspective taking and self–other overlap stem in part from researchers (unintentionally) measuring different constructs. As best we know, no prior research has empirically examined whether or not these various measures are measuring the same thing. Thus, in the two studies that follow, we hope to identify whether multiple dimensions of "self–other overlap" exist and, in doing so, also shed light on conflicting results found in the debate about whether self–other overlap mediates the effects of perspective taking on pro-social outcomes.

Study 1: Self–Other Overlap as a Multifaceted Construct

The primary purpose of Study 1 was to test whether different measures of self–other make up a unitary or multidimensional construct. Participants in Study 1 completed measures of self–other overlap for their best friend (a target person for whom self–other overlap should be high) and an acquaintance (for whom self–other overlap should be lower, and thus similar in this regard to

targets that have commonly been used in the perspective-taking studies). Self–other overlap measures in Study 1 were mainly restricted to the IOS and measures that have previously appeared in the debate over the role of self–other overlap in perspective taking, but we also included a recently developed computerized version of the IOS and a measure of relationship closeness used in Aron and colleagues' (1992) original validity study of the IOS—the Relationship Closeness Index (RCI; Berscheid, Snyder, & Omoto, 1989).

On the basis of our review of the literature, we hypothesized that the measures of self–other overlap used in previous perspective-taking studies actually were tapping two separate factors of overlap. We predicted that one factor would consist of direct and conscious perceptions of closeness with the other person (Hypothesis 1a), akin to what Aron and colleagues (1992) called "feeling close." We predicted that measures that explicitly ask people about their relationship with another person, such as Aron and colleagues' IOS scale, the extent to which people use "we" to describe a relationship, and their ratings of similarity to another person (Cialdini et al., 1997) would load on this factor.

We hypothesized a second factor would capture perceived overlap on specific traits and attributes rather than a broad feeling of overlap (Hypothesis 1b). In support of this hypothesis, Batson and colleagues (1997) found that their measure of self–other overlap—one that used difference scores between ratings of attributes for self and attributes of other—was *not* correlated with the IOS or perceived similarity. Instead, Batson and colleagues' measure of self–other overlap and Davis and colleagues' (1996) adjective overlap personality checklist (which was the theoretical basis for Batson et al.'s, 1997, measure) appear to represent a dimension of self–other overlap that is less directly accessible to respondents but assesses the overlap in cognitive representations of the self and other.

We further predicted that the perceptions of the closeness factor would be more strongly related to relationship quality than the overlap in trait representations factor (Hypothesis 1c). In support of this prediction, previous work has found that perceived similarity is associated with greater liking and caring (Davis, 1994; Mehrabian & Epstein, 1972) and the IOS predicts relationship longevity (Aron et al., 1992). In contrast, research using measures of trait overlap (e.g., Batson et al., 1997; Davis et al., 1996) have not reported such associations.

A final and more exploratory goal of Study 1 was to examine whether the two-factor structure of self–other overlap that we were predicting would emerge regardless of whether the target person was a close other or someone less close to the participant. Some researchers have suggested that measures of self–other overlap are interpreted differently depending on the context (Batson et al., 1997). If this is true, then how these different measures of self–other overlap are related to each other may change depending on the relationship context.

It should be noted that other measures of self–other overlap exist, including implicit measures of self–other overlap using memory recall and reaction times. However, we chose to focus primarily on the most prominently used measures of self–other overlap (such as the IOS, for which the original validity paper—Aron et al., 1992—has been cited over 800 times) and those that have been specifically cited in the ongoing debate about the relationship between perspective taking and self–other overlap (e.g., see Batson et al., 1997; Cialdini et al., 1997).

Method

Participants

Participants were 132 undergraduates (73% female) who participated in exchange for course credit. Demographic information was provided by 130 of the participants. Most (80%) identified themselves as Caucasian. Their mean age was 19.80 years (SD_{age} = 2.30, age range = 18 to 33).

Measures of self–other overlap

Participants completed a series of measures to assess self–other overlap between themselves and two targets: their best friend and an acquaintance.

Adjective checklist overlap. Participants completed a personality adjective checklist for themselves and then several days later completed the same checklist for the two targets. The adjective checklist consisted of 114 personality traits (41 positive, 35 negative, and 38 neutral), adapted from Davis and colleagues' (1996) list of 149 adjectives.[1] Replicating Davis and colleagues' methodology, self–other overlap was calculated as the percentage of traits selected for oneself that were later also used to describe the target person. Also following Davis and colleagues, separate overlap scores were created for positive, negative, and neutral traits.

Absolute difference in attribute ratings. Participants rated themselves and the two target people on the same 16 attributes used in Batson and colleagues' (1997) study, using a 9-point scale from 1 (*not at all*) to 9 (*extremely*). The 16 attributes were *friendly, intelligent, spontaneous, honest, open, cooperative, shy, polite, responsible, brave, pressured, appreciative, lonely, overburdened, carefree*, and *fearful.*[2] The mean absolute difference in self-ratings minus the ratings for the target person was multiplied by −1 so that a higher value (i.e., a *less* negative score) indicated *greater* self–other overlap with the target person.

Inclusion of Others in Self scale. The IOS (Aron et al., 1992) consists of seven pairs of circles—one circle representing the self and the other representing another person—that vary in the extent to which they overlap with each other. Participants were instructed to indicate which pair of circles best described their relationship with the target person (best friend or acquaintance). Higher scores corresponded to pairs of circles that increasingly overlapped, and thus represented greater self–other overlap.

Dynamic IOS. A computerized version of the IOS (Hodges, Sharp, Gibson, & Tipsord, 2011) was also used. Participants saw two circles (both 24 mm in diameter) displayed 3 cm apart on a computer screen, one circle representing the self and one circle representing the other person (i.e., best friend or acquaintance). Which circle appeared on the left or right side of the screen was counterbalanced. Participants were then instructed to use two "joysticks" to independently move the two circles, until the location of the two circles best described their relationship with the other person. At this point, the number of pixels (i.e., distance) between the center points of the two circles was recorded and multiplied by −1 so that greater (less negative) values indicated greater self–other overlap.

"We"-ness. Following Cialdini and colleagues (1997), participants were asked to rate the extent to which they would use the term "we" to characterize themselves and the target person. Participants responded to this question on a 7-point scale from 1 (*not at all*) to 7 (*extremely*).

Perceived similarity. Following Batson and colleagues (1997) and Goldstein and Cialdini (2007), participants rated their perceived similarity to the target person on a 9-point scale from 1 (*not at all*) to 9 (*extremely*).

Relationship Closeness Index. The RCI (Berscheid et al., 1989) is a self-report questionnaire that measures three aspects of closeness: amount of time spent together (frequency), variety of activities engaged in with the target person (diversity), and degree of perceived influence of the target person on one's decisions, activities, and plans (strength). The RCI Frequency subscale asked participants to estimate the number of hours they spent with the target person (best friend or acquaintance) over the past week. The RCI Diversity subscale is a checklist of

1. Past research (Myers & Hodges, 2006) has found that using this reduced adjective checklist findings replicates the results reported by Davis and colleagues (1996).
2. Originally, Batson and colleagues (1997) selected these 16 attributes because they considered half of them relevant for the specific target person in their study. Consequently, they created two overlap scores for the relevant and irrelevant attributes. However, this approach did not make sense for the current study. Thus, one overall difference score was calculated across all 16 of the attributes.

38 possible activities done with the target person during the past week. Sample activities involve doing laundry, going to a clothing store, and preparing a meal. The RCI Strength subscale includes 34 Likert scale items about the target person's influence on one's life, such as "this person will influence my future financial security" and "this person influences important things in my life."

Procedure

Several days before the main part of the study, participants completed a series of basic demographic and individual difference measures and Davis and colleagues' (1996) adjective checklist for themselves either as part of a general survey packet administered to subject pool participants at the beginning of the term, or as a separate Part I of the current study that occurred at least 7 days before participants did the main part of the study in the laboratory.[3] In the laboratory, participants first rated themselves on the 16 attributes taken from Batson and colleagues (1997). The experimenter then handed participants a packet that contained the various measures of self–other overlap for both their best friend and an acquaintance. "Acquaintance" was defined in the packet as someone whom the participant would recognize but did not know very well, such as a friend of a friend. Whether participants completed the measures of self–other overlap for their best friend or the acquaintance first was counterbalanced across participants. For both targets, participants first completed the RCI and then they rated the following additional items about the quality of their relationship with the target person on a 9-point Likert scale ranging from 1 (*not at all*) to 9 (*extremely*): (a) the extent to which they cared about the target person, (b) how much they liked the target person, and (c) how much time they wanted to spend with the target person. Participants then completed the remaining self–other overlap measures (i.e., the adjective checklist for the target person, the 16 Batson attributes for the target person, the IOS, the "we"-ness item, and perceived similarity). The order in which these last five measures appeared was randomized across participants. Participants then completed the dynamic IOS for that same target person on the computer. After completing the dynamic IOS for the first target, participants then completed the self–other overlap measures for the other target person, again ending with the dynamic IOS.

Results

Predictive validity of self–other overlap measures

As a validity check of the self–other overlap measures, we first conducted a series of paired-samples t tests comparing scores on each measure for best friend and acquaintance. As expected, all comparisons showed greater overlap with the best friend than the acquaintance (Table 1). Analyses exploring possible gender effects found no significant differences in how men and women rated overlap with their best friend and acquaintance, or in their factor scores based on the factor analysis described below. Consequently, gender will not be discussed further.

Factor structure of self–other overlap measures

To examine the relationships among the various measures of self–other overlap, an exploratory factor analysis using maximum likelihood estimation and an oblique rotation (direct oblimin) was conducted on the 11 measures of self–other overlap with participants' best friend.[4] Four factors were extracted with eigenvalues greater than 1 (initial eigenvalues for all 11 factors were 2.89, 1.65, 1.35, 1.14, 0.98, 0.79, 0.69, 0.53, 0.47, 0.28, and 0.22). However, factor loadings indicated that the fourth factor consisted solely of RCI

3. Twenty-six participants completed the adjective checklist as a Part I of the current study. Analyses found no significant differences on this measure of self–other overlap between these participants and the majority who completed the adjective checklist for the self in the general survey.

4. A computer error resulted in the data from the dynamic IOS being lost for nine participants. As such, pairwise deletion was used for the factor analysis.

Table 1. *Means and standard deviations of self–other overlap measures by target and effect sizes*

Measures	Best friend		Acquaintance			Cohen's
	M	*SD*	*M*	*SD*	*t*	*d*
IOS	5.01	1.61	1.54	0.81	24.6***	2.23
Dynamic IOS (pixels)[a]	−898.8	704.9	−2,227.2	1,690.0	9.72***	0.981
"We"-ness	5.48	1.37	1.89	1.07	25.7***	2.18
Perceived similarity	6.50	1.62	4.09	1.90	11.7***	0.99
RCI Strength	105.2	24.0	48.2	17.1	26.0***	2.24
RCI Diversity	8.48	7.15	1.82	2.61	10.6***	0.99
RCI Frequency	296.4	342.2	55.9	114.4	8.04***	0.79
Adjective overlap, neg traits	30.3	30.4	22.3	27.1	3.00**	0.265
Adjective overlap, neu traits	37.7	23.9	24.9	21.2	5.94***	0.42
Adjective overlap, pos traits	63.3	21.2	47.6	24.3	6.47***	0.579
Absolute difference of attributes[a]	−1.73	0.62	−1.88	0.63	2.94**	0.242

[a]Original values multiplied by −1 so that higher number (i.e., less negative number) indicates GREATER self–other. IOS = Inclusion of Others in Self scale; RCI = Relationship Closeness Index.
** $p < .01$. *** $p < .001$.

Table 2. *Factor loadings on structure matrix of self–other overlap measures for best friend*

Measures	Perceived Closeness	Behaving Close	Overlapping Representations
IOS	**.90**	.35	−.09
"We"-ness	**.61**	.33	−.062
Perceived similarity	**.48**	.098	.026
Dynamic IOS	**.45**	.18	.063
RCI Strength	**.43**	.38	−.079
RCI Diversity	.28	**.99**	.026
RCI Frequency	.32	**.74**	−.036
Adjective overlap, neu traits	.17	.023	**.99**
Adjective overlap, neg traits	−.072	−.009	**.36**
Adjective overlap, pos traits	.14	.012	**.33**
Absolute difference of attributes	−.070	−.036	**.26**

Note. Boldface indicates most important findings in this table. IOS = Inclusion of Others in Self scale; RCI = Relationship Closeness Index.

Strength subscale, which also loaded on the first factor. So, a three-factor solution seemed most parsimonious. The coefficients for this three-factor solution are provided in Table 2.

Consistent with Hypotheses 1a and 1b, the IOS, "we"-ness, perceived similarity, dynamic IOS, and the RCI Strength subscale loaded on one factor, while scores for the three different valences of the adjective overlap scale (positive, negative, and neutral) and the absolute difference score loaded on a different factor. This first factor appeared to be similar to the "feeling close" factor of closeness found in the Aron and colleagues' (1992) study; however, because this factor included "we"-ness, perceived similarity, and the dynamic IOS (items not included in the Aron et al.'s, 1992, study), we chose to call this factor *Perceived Closeness*. For the other factor, we chose a term reflecting Davis and colleagues' (1996) definition of self–other overlap and called it *Overlapping Representations.*

A third, nonhypothesized factor also emerged and consisted of the RCI Diversity and RCI Frequency subscales. This factor

Table 3. *Correlation of perceived closeness, behaving close, and overlapping representations with relationship quality items for best friend*

Self–other overlap	Liking	Caring	Spend time	Time have known
Perceived Closeness factor score	.23*	.33**	.47**	.12
IOS	.19*	.30**	.44**	.12
"We"-ness	.39**	.27**	.41**	−.011
Perceived similarity	.13	.045	.26**	−.075
Dynamic IOS	.15	.29**	.17*	.15
RCI Strength	.20*	.21**	.38**	.089
Behaving Close factor score	.12	.078	.23*	−.24**
RCI Diversity	.14	.13	.26**	−.30**
RCI Frequency	.13	.098	.25**	−.16
Overlapping Representation factor score	.027	.26**	.13	−.15
Adjective overlap, neu traits	.049	.25**	.20*	−.12
Adjective overlap, neg traits	−.17	−.055	−.006	−.031
Adjective overlap, pos traits	.11	.29**	.092	−.042
Absolute difference of attributes	−.093	−.21	−.012	−.063

Note. IOS = Inclusion of Others in Self scale; RCI = Relationship Closeness Index.
*$p < .05$. **$p < .01$.

actually replicates results found by Aron and colleagues (1992), who also found that the RCI Diversity and RCI Frequency subscales loaded separately on a factor that they labeled *behaving close*. Thus, we also labeled this factor *behaving close*. Aron and colleagues (1992) found that the Behaving Close factor was positively correlated with their Feeling Close factor, which is echoed in our finding that our Behaving Close and Perceived Closeness factors were positively correlated ($r = .47$, $p < .001$). The Overlapping Representations factor was unrelated to either of these other two factors; correlations between this factor and Perceived Closeness and Behaving Close were .11 and .13, respectively.

On the basis of the rotated factor loadings, we formally tested the fit of this three-factor solution using structural equation modeling (SEM) with maximum likelihood estimation (via Amos 16.0).[5] Fit indices indicated a moderately good fit of the model, $\chi^2(42, n = 142) = 65.4$, $p = .01$, comparative fit index (CFI) = .93, root mean square error of approximation (RMSEA) = .063, 90% CI [.03, .09]. All items loaded significantly on one and only one factor, and model modification indices did not indicate that adding paths from any of the self–other items to another latent factor would significantly improve the overall model fit.[6] Finally, results of the chi-square difference test indicated that this three-factor solution fit the data significantly better than a single-factor model of these items, $> \chi^2_D(2) = 132.1$, $p < .01$.

Interpersonal implications of self–other overlap factors

Next, we correlated the factor scores from the factor analysis with participants' ratings of their relationship with their best friend (liking, caring, desire to spend time with best friend, and actual amount of time that they had known best friend). As Table 3 indicates, Hypothesis 1c was generally confirmed. The Perceived Closeness factor correlated significantly and positively with three of the four relationship quality measures—liking, caring,

5. Analysis of descriptive statistics indicated that RCI Frequency was positively skewed. As recommended by Berscheid and colleagues (1989), a square root transformation was computed on the RCI Frequency scores.

6. The residual variance for adjective overlap of neutral traits was set to zero because the original model calculated a negative variance for this item.

and how much time participants' wanted to spend with their best friend. Overlapping Representations correlated significantly with caring, but with none of the other three relationship quality measures. We had no hypothesis about how the Behaving Close factor would be related to the relationship ratings, but as it turned out, this factor was significantly correlated with wanting to spend time with the best friend and length of time in the relationship with the best friend—although surprisingly, this latter relationship was negative.

Exploratory factor analysis for acquaintance

Initial inspection of the data revealed that many of the self–other overlap measures for the acquaintance were positively skewed. To correct for this skew, we used several common data transformations (e.g., log, square root, and inverse transformations; see Osborne, 2002) on the following items: "we"-ness, all three subscales of the RCI, the IOS, the dynamic IOS, the absolute difference in attributes, and adjective overlap of negative traits.

Exploratory factor analysis using an oblique rotation on these variables suggested a three-factor solution was the best fitting model (eigenvalues of the 11 principal components were 3.77, 1.30, 1.19, 0.91, 0.82, 0.73, 0.70, 0.51, 0.45, 0.35, and 0.27). As seen in Table 4, the first rotated factor appeared to combine the Perceived Closeness and Behaving Close factors extracted for the best friend. All three subscales from the RCI (Diversity, Strength, and Frequency), IOS, and "we"-ness all loaded highest on this first factor. However, perceived similarity did not load on this factor with the other Perceived Closeness items as it did for the best friend. Also, "we"-ness loaded highest on this first factor, but also loaded highly on the third factor. Adjective overlap of negative and neutral traits loaded on a second factor that, as found in the best friend analyses, was not highly correlated with the other factors (interfactor correlations less than .18). Finally, adjective overlap of positive traits and absolute difference of attributes loaded on the third factor, along with perceived similarity (and quite a bit of "we"-ness). The third factor was moderately correlated with the first factor (interfactor correlation of .34).

Discussion

A primary goal in Study 1 was to examine whether or not previous measures of self–other overlap—especially those used in past studies exploring the link between perspective taking and self–other overlap—were all measuring the same construct. Rather than showing a unitary factor structure, for overlap with best friend, we found three factors that we labeled *perceived closeness, behaving close*, and *overlapping representations*. Items

Table 4. *Factor loadings on structure matrix of self–other overlap measures for acquaintance*

Measures	Factor 1	Factor 2	Factor 3
IOS	**.70**	.36	.44
Dynamic IOS	**.56**	.34	.30
"We"-ness	**.62**	.21	.59
Perceived similarity	.29	−.011	**.76**
RCI Strength	**.64**	.079	.40
RCI Diversity	**.85**	.11	.046
RCI Frequency	**.72**	.093	.24
Adjective overlap, neg traits	.13	**.85**	−.086
Adjective overlap, neu traits	.30	**.73**	.42
Adjective overlap, pos traits	.39	.012	**.70**
Absolute difference of attributes	.15	.33	**.65**

Note. Boldface indicates most important findings in this table. IOS = Inclusion of Others in Self scale; RCI = Relationship Closeness Index.

that loaded on the Perceived Closeness and Behaving Close factors resembled previous findings by Aron and colleagues (1992). Furthermore, findings for the Perceived Closeness factor were consistent with past results showing positive and significant correlations among the IOS, perceived similarity, and "we"-ness (Cialdini et al., 1997). A third factor, Overlapping Representations, was not correlated with these other two factors and included items that assessed self–other overlap at the level of descriptions, such as personality traits and attributes. Even for the acquaintance (a person with whom self–other overlap should be low), the results supported a multidimensional structure of self–other overlap. While the factor structures for the two different target people differed somewhat (discussed in more detail below), items measuring direct and conscious perception of feelings of closeness with the other person generally appeared to be separable from overlap of traits and attributes.

Interpersonal implications of different facets of self–other overlap

As predicted, *perceived closeness* was significantly correlated with most of our relationship quality items. This is consistent with other research that found that the measures that loaded on this factor (such as the IOS) are associated with positive and long-lasting relationships (Aron & Aron, 1986; Aron et al., 1991; Aron et al., 1992; Aron & Fraley, 1999). Overlapping Representations was not as consistently associated with positive markers of the relationship quality items, although it did correlate with caring for the best friend. Generally speaking, self–other overlap is important in promoting rewarding and long-lasting relationships, and increased caring for the other person is clearly a key component of such relationships. However, relationship quality seems to be particularly robustly connected with the type of overlap related to Perceived Closeness.

Alternative hypotheses

One alternative interpretation of these results is that the correlation between Perceived Closeness and the relationship quality items could simply be due to socially desirable responding (i.e., participants responded in accordance to the belief that people should feel close to their best friend and say good things about them). Because participants in this study completed a measure of social desirability (the BIDR; Paulhus, 1984) as part of the basic demographic and individual difference measures that were administered prior to coming to the lab, we were able to explore this alternative hypothesis. After statistically controlling for social desirability, the correlations between Perceived Closeness and liking, caring, and wanting to spend time with the best friend still remained positive and significant. Fisher r-to-z score transformations confirmed that none of these correlations significantly differed from each other when social desirability was partialed out.

Structure of self–other overlap with nonclose others

Some have cautioned against adapting measures of self–other overlap from the close relationship literature for use with nonclose others, as participants may interpret the measures differently for different targets (Batson et al., 1997). Thus, another goal of Study 1 was to compare the factor structure of self–other overlap measures completed for one's best friend with those completed for an acquaintance. The Perceived Closeness factor was generally replicated for both target people, although there were some differences where "we"-ness and perceived similarity loaded for the acquaintance data. Furthermore, a multidimensional factor structure of self–other overlap was clearly found for both target people, and it appeared that participants made distinction between overlap on personality traits and attributes versus overlap related to perceptions and feelings of closeness.

However, the single Overlapping Representations factor found in the best friend analyses appeared to split into two factors for the acquaintance, based in part on the valence of the attributes. One possibility is that perceptions of trait overlap with another person are influenced by the type of trait (particularly,

its valence) when that person is not known well. As we come to know a person better and become closer that person, however, the valence of overlapping traits may matter less ("I love him, warts and all"). Closeness and amount of information are often confounded in relationships, so it is difficult to ascertain which factor best explains the differences in perceptions of overlap that were found between the two targets in our study. In real life, these two factors probably work synergistically.

Interpretation of these results should be tempered at this point, as the data for the acquaintance were highly skewed and had little variability. This is not surprising, as both less overlap and less variability would be expected with these individuals, compared to best friends. However, it does highlight the fact that as the nature of the relationship changes, so does the distribution of those scores. Another possible limitation of this study is that participants completed measures of self–other overlap for best friend and acquaintance during the same session. Furthermore, we defined an acquaintance as someone they ". . . did not know well." Either or both of these factors may have heightened the contrast in answering the same measures of self–other overlap for two very different people and may have led participants to answer these items for the acquaintance differently than if they had only rated the acquaintance. However, if a contrast effect was operating, then it is possible that the factor structure for the acquaintance would have been *more* similar to that found for the best friend if participants had completed the measures of self–other overlap for only one target or the other.

In summary, using a target person ripe for self–other overlap (i.e., one's best friend) as well as a target person less known by the participant (i.e., an acquaintance), Study 1 demonstrated that measures of self–other overlap separate onto different factors. The self–other measures used in this study were in large part selected because they had been previously used in studies of perspective taking, thus providing initial evidence that previous studies debating the role of perspective taking in self–other overlap may have been measuring different aspects of self–other overlap. We examined this idea more explicitly in Study 2.

Study 2: The Structure of Self–Other Overlap and Perspective Taking

As mentioned in the Introduction, several previous studies have found that perspective taking leads to perceptions of greater overlap with the other person. Impressively, many of these studies found greater overlap in spite of the fact that the participants were taking the perspective of a stranger. However, other studies failed to find this connection between perspective taking and self–other overlap, and instead concluded that perspective taking leads to greater self–other distinction. Given the results of Study 1, we hypothesized that these contradictory results could be explained by the fact that perspective taking differentially affects different facets of self–other overlap. For example, four of the five self–other overlap measures that loaded on the Perceived Closeness factor for best friends in Study 1—IOS, dynamic IOS, "we"-ness, and perceived similarity—have been shown to be affected by perspective taking (Batson et al., 1997; Cialdini et al., 1997; Goldstein & Cialdini, 2007; Myers & Hodges, 2006, 2009). In contrast, of the four items that loaded on the Overlapping Representations factor in Study 1 for best friends, only one has shown an increase after perspective taking—Davis and colleagues (1996) found that perspective taking increased self–other overlap for positive traits.

In Study 2, we manipulated perspective taking to see how it affected participants' self–other overlap with a stranger using many of the measures found in Study 1. We predicted that we would once again find a factor that resembled Perceived Closeness from the best friend data in Study 1 that consisted of the IOS, dynamic IOS, "we"-ness, and perceived similarity (Hypothesis 2a). We also predicted a second factor consisting of the self–other overlap items that assess overlap more indirectly at the personality and trait level—that is, Overlapping Representations (Hypothesis 2b). In many ways, the target

person used in Study 2 (a female, freshman college student whom the participants did not know) was similar to the "acquaintances" selected by many of the participants in Study 1. Based on the factor structure for the acquaintance in Study 1, we might expect that the Overlapping Representations factor in Study 2 would also split into two factors based on valence. Thus, in Study 2 we examined whether the two-factor model found for the best friend or the three-factor model found for the acquaintance fit the data better. The RCI was not included in Study 2 because it specifically measures closeness in ongoing relationships, and the items would not make sense with the target person used in Study 2 whom none of the participants knew; thus, no Behaving Close factor was predicted. Finally, we predicted that perspective taking would increase Perceived Closeness but have less impact on Overlapping Representations (Hypothesis 2c).

Method

Participants

Participants were 118 undergraduates (80% female) from the University of Oregon who participated in exchange for course credit. Demographic makeup was similar to Study 1, with primarily Caucasian participants.

Procedure

The procedures in this study were similar to Study 1, but instead of thinking about a known person, participants were told that they would watch a short video of a student named Lisa talking about her social and academic experiences since starting college.[7] This video was the same female stimulus target used in Davis and colleagues' (1996) study. The target described herself as a 1st-year university student who was performing about average (making mostly C's) who had done better in high school but was having some trouble doing well scholastically because of several factors (e.g., being on the volleyball team and social activities).

Participants were randomly assigned to one of two conditions before watching this video. Those in the perspective-taking condition read instructions that asked them to imagine how Lisa was feeling by picturing how she felt in the situation, "... imagining how she is feeling about what is happening." In contrast, participants in the control condition received instructions to make careful observations of Lisa's behavior during the video and to remain objective: "Concentrate your observations on Lisa's mannerisms, posture, movements, facial expressions, speech characteristics, tone of voice, etc." The experimenter was unaware of participants' condition and left participants alone to watch the video. Participants then completed measures of self–other overlap with Lisa (the IOS, dynamic IOS, "we"-ness, perceived similarity, adjective overlap for positive, negative, and neutral adjectives, and absolute difference of attributes) in a random order, except the dynamic IOS always came last.

Results

Replication of factor structure of self–other overlap measures

To see if the structure of self–other overlap was similar to that found in Study 1, we first ran an exploratory factor analysis using maximum likelihood estimation and an oblique rotation. This analysis clearly suggested a three-factor model fit the data the best (initial eigenvalues for eight factors were 2.92, 1.46, 1.05, 0.68, 0.60, 0.54, 0.43, and 0.32, respectively).[8] Importantly, as Table 5 indicates, the IOS, dynamic IOS, "we"-ness, and perceived similarity continued to load together on the same factor in this study, as they had on the Perceived Closeness factor in Study 1

7. One hundred five participants completed the adjective checklist in the general survey while 13 completed it during Part I of the study. There were no significant differences on measures of self–other overlap between the two methodologies.

8. Owing to a computer error, 16 participants lacked adjective checklist for Lisa, 8 participants were missing the Batson attribute ratings for Lisa, and 4 were missing scores on the dynamic IOS. Again, the majority of these participants with missing data were missing it for just one measure of self–other overlap, so we used pairwise deletion for the factor analysis.

Table 5. *Factor loadings on structure matrix of self–other overlap measures for Study 2*

Measures	Perceived Closeness	Negative/Neutral Overlapping Representations	Positive Overlapping Representations
IOS	**.81**	.18	−.27
Dynamic IOS	**.74**	−.35	−.16
"We"-ness	**.83**	.14	−.43
Perceived similarity	**.78**	.022	−.36
Adjective overlap, neg traits	−.17	**.83**	.065
Adjective overlap, neu traits	.19	**.76**	−.11
Adjective overlap, pos traits	−.32	.096	**.81**
Absolute difference of attributes	−.26	−.12	**.84**

Note. Boldface indicates most important findings in this table. IOS = Inclusion of Others in Self scale.

for the best friend. However, in line with the factor structure suggested by the acquaintance data in Study 1, positive adjective overlap and absolute difference of attributes loaded on the second factor, while negative- and neutral-adjective overlap loaded on the third factor.

Next, we specifically tested Hypotheses 2a and 2b by comparing the fit of several factor structure models using SEM via Amos 16.0. First, SEM with maximum likelihood estimation indicated that a single-factor structure of these measures of self–other overlap fit the data poorly, χ^2 (20, $n = 118$) = 42.77, $p = .02$, CFI = .88, AIC = 90.77, RMSEA = .10, 90% CI [.06, .14]. Next, we tested the fit of a two-factor model with the IOS, dynamic IOS, "we"-ness, and perceived similarity on one factor (i.e., Perceived Closeness factor), and Davis and colleagues' (1996) adjective overlap items (separated by valence) and Batson and colleagues' (1997) difference scores on the other (the Overlapping Representations factor from the best friend data in Study 1) against a three-factor solution similar to that found for the acquaintance in Study 1 (i.e., the same Perceived Closeness factor from the two-factor solution described above, but separating Davis et al.'s, 1996, negative and neutral adjective overlap from Davis et al.'s positive adjective overlap and Batson et al.'s, 1997, difference score). Condition was included in both models in order to control for the possible effect of the perspective-taking manipulation on the factor structure of these self–other overlap measures. Of the two models, the three-factor model fit significantly better than the two-factor solution, $\chi^2_D(1) = 11.8$, $p < .05$. This three-factor model also fit the data well, $\chi^2(23, n = 118) = 25.582$, $p = .195$, CFI˜= .97, Akaike information criterion (AIC) = 90.582, RMSEA = .046, 90% CI [.00, .093]. All items loaded significantly on one and only one factor, and model modification indices indicate that adding multiple paths from any item to more than one latent factor would not significantly improve the overall model fit.[9]

As shown in Figure 1, we called the factor with negative and neutral adjective overlap Negative/Neutral Overlapping Representations in this study, and called the factor containing positive adjective overlap and absolute difference of attributes Positive Overlapping Representations. Although all three factors were allowed to correlate in the structure model, only Positive Overlapping Representations and Perceived Closeness were significantly correlated with each other ($r = .48$, $p < .05$). Negative/Neutral Overlapping Representations was not significantly correlated with either factor (rs = .15 and .08 with Perceived Closeness and Positive Overlapping Representations, respectively).

Effect of perspective-taking on self–other overlap factors

Regarding Hypothesis 2c, Figure 1 also shows that the perspective-taking manipulation only

9. Again, the residual variance for adjective overlap of neutral traits was set at zero because the original model calculated a negative variance for this item.

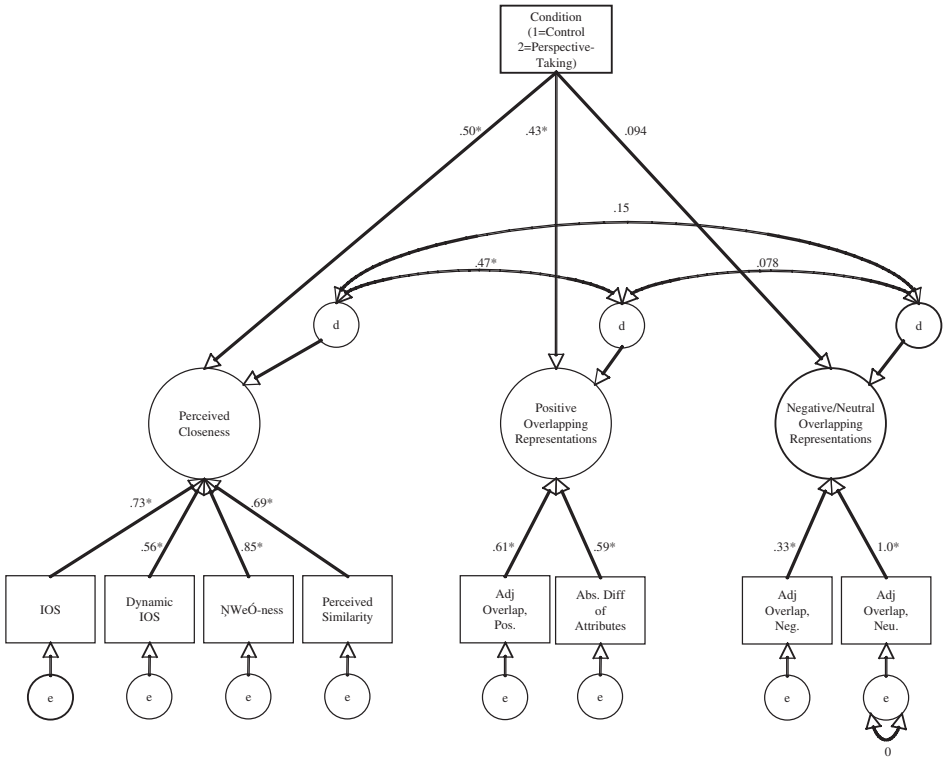

Figure 1. Three-factor structure of self–other overlap measures in Study 2.
Note. Standard path weights reported.
$^{*}p < .05$.

significantly affected Perceived Closeness ($\beta = .50$, $p < .001$) and Positive Overlapping Representations ($\beta = .43$, $p < .01$); the path from condition to Negative/Neutral Overlapping Representations was not significant in the model ($\beta = .09$). Of these two factors affected by perspective taking, the standardized path weights indicated a larger effect on Perceived Closeness than Positive Overlapping Representation.

A 2 (perspective-taking condition) × 2 (gender) × 3 (self–other overlap factor) repeated measures multivariate analysis of variance (MANOVA) using the three-factor scores as the within-subjects factor yielded similar results. The main effect of perspective taking was significant, $F(1, 88) = 4.68$, $p < .05$, $\eta^2 = .05$, but the interaction of Condition × Self–Other Overlap Factor was also significant, Wilks's $\lambda = .92$, $F(2, 87) = 3.86$, $p < .05$, $\eta^2 = .081$. None of the other main or interaction effects (particular, those including gender) were significant. Perspective taking had a significant effect on Perceived Closeness, $F(1, 88) = 16.92$, $p < .001$, $\eta^2 = .16$, and Positive Overlapping Representations, $F(1, 88) = 8.37$, $p < .01$, $\eta^2 = .087$ but not on Negative/Neutral Overlapping Representations, $F(1, 88) = .90$, $p = .35$, $\eta^2 = .009$.

Discussion

In Study 2, we expected to find a factor structure for self–other overlap similar to that found in Study 1 and to find that perspective taking would have the greatest effect on enhancing Perceived Closeness, and less of an effect on Overlapping Representations. Study 2 clearly replicated the Perceived Closeness factor found in Study 1 for the best friend, thus supporting Hypothesis 2a. The initial exploratory factor analysis showed that the IOS, dynamic IOS, "we"-ness, and perceived similarity all continued

to load together. Similarly, in the SEM models, these variables all had significant paths to the Perceived Closeness factor, and there was no indication that adding multiple paths to other factors would have improved the fit of the models. Interestingly, a comparison of different factor structures for Overlapping Representations indicated that the split along the lines of valence found in the acquaintance data in Study 1 fit these data better than the structure that was found for the best friend data, suggesting that the structure overlap may depend somewhat on how well the target person is known.

Consistent with Hypothesis 2c, comparison of the standardized regression weights indicated that perspective taking most strongly affected the more directly accessible factor of Perceived Closeness. The fact that Positive Overlapping Representations—and not Negative/Neutral Overlapping Representations—was also significantly associated with perspective taking, is consistent with previous findings. Davis and colleagues (1996) found that perspective taking significantly increased overlap for positive traits on their adjective checklist but not for negative or neutral traits. Similarly, when we individually examined the two measures that consisted of the Positive Overlapping Representations factor, perspective taking only had a significant effect on adjective overlap of positive traits and not on the absolute difference of attributes (although the means were in the hypothesized direction). Thus, this split along the lines of valence in the Overlapping Representations factor may be a meaningful finding when strangers—and not close others, like best friends or romantic partners—are the potential target of overlap (although it must be noted that the current Study 2 used the same target as Davis et al.'s, 1996, study, and thus it cannot be ruled out that the pattern may be specific to this target).

General Discussion

The body of research examining self–other overlap reveals variations in how this construct is defined and measured. Although there were some differences across the two studies, we found one construct that we have called Perceived Closeness, and one or two factors that constituted Overlapping Representations. The similarities between the findings in the two studies are particularly striking when one considers that they used different targets (best friend and acquaintance; an unknown college student) and different manipulations (a within-subjects comparison of close vs. nonclose others, and a between-subjects perspective-taking manipulation).

Furthermore, these different types of overlap were related to different interpersonal and perceptual outcomes. First, Perceived Closeness was significantly correlated with caring, liking, and a desire to spend more time with one's best friend in Study 1, while Overlapping Representations was only significantly correlated with caring. As such, Perceived Closeness in particular may serve as a stronger gauge of the quality of the relationship between two people than other forms of overlap. Potentially related to this idea, perspective taking also had a stronger effect on Perceived Closeness than Positive Overlapping Representations or Negative/Neutral Overlapping Representations, where it had no significant effect. These finding are consistent with other research that has hinted that different factors of self–other overlap may be related to different interpersonal outcomes. For example, Bell and Hodges (2010) examined women at a domestic violence shelter and their self–other overlap with the abusive male partners they had just left. Greater IOS scores (a measure of Perceived Closeness) predicted the women's intentions to return to these men, whereas overlap on an adjective checklist (a measure of Overlapping Representations) predicted their self-esteem.

The fact that the overlap factors showed different patterns of relationship with these interpersonal outcomes provides one argument against the claim that the different factors only capture method variance (i.e., adjective descriptors versus continuous rating scales of overlap). We believe two other factors point to more meaningful differences. First, if method variance was the sole basis for these different factors (i.e., if these measures of self–other overlap were actually tapping the same unitary construct), then we would

expect the factors to be correlated with each other. Instead, Overlapping Representations was not correlated with either Perceived Closeness or Behaving Close for the best friend in Study 1. When Overlapping Representations split into two factors based on valence (as it did for the acquaintance in Study 1 and in Study 2), Negative/Neutral Overlapping Representations remained uncorrelated with Perceived Closeness.

Second, while the Overlapping Representations factor does consist of measures of self–other overlap at the trait- and attribute-level, the methods for collecting these two overlap measures were quite different. Davis and colleagues' (1996) approach for measuring self–other overlap involved administering adjective checklists (with dichotomous *yes* or *no* response options) for the self and a target person at separate time points (with several days or even weeks between the two administrations) and then calculating the percentage of traits selected that were shared for both. In contrast, Batson and colleagues' (1997) measure of self–other overlap included a preselected list of personality traits for which participants used continuous Likert scales to rate themselves and the target, and from which we created absolute difference scores.

Thus, we think it is unlikely that the different factors are solely attributable to simple method variance. However, we do acknowledge that people may be accessing different information when they think about themselves and their partner *together*, as is the case with our Perceived Closeness measures such as the IOS or "we"-ness, but is not the case when they think about themselves and the other person separately, as when making trait ratings of the self and the other. For an interesting parallel in the domain of attitude ratings, Olson, Goffin, and Haynes (2007) have shown that relative measures of attitudes (i.e., asking participants to rate their attitudes in comparison to the attitudes of others) were more strongly associated with attitude-related behaviors than absolute measures of attitudes that asked people just to rate their own attitudes. However, Olson and colleagues' results differ from our own in two key ways: First, the different forms of measuring self–other overlap in our studies are *not* simply the same measures worded differently, as was the case for the Olson and colleagues' relative and absolute ratings. Second, our measures that loaded on the Perceived Closeness factor (such as the IOS and "we"-ness) do *not* ask participants to make a *comparison* between themselves and the other person, whereas making comparisons between the self and others was the core component of the relative attitude measures in the Olson and colleagues' studies—and it was this comparison of the average person that Olson and colleagues concluded to be the reason why the relative measures were a better predictor of behavior. These two differences, in combination with the other reasons we provide above, lead us to conclude that self–other overlap is not a unitary construct.

The concept of "self–other overlap" has figured prominently in recent explanations of a number of social psychological phenomena, not the least of which is an explanation of the link between perspective taking and various pro-social outcomes (such as altruistic helping and decreased stereotyping). A series of articles in the *Journal of Personality and Social Psychology* in 1997 hotly debated whether or not self–other overlap was the mediator of perspective taking's pro-social effects, with the dueling sides offering several explanations why their conclusions differed. We suggest that one reason why Cialdini and colleagues (1997) *did* find that self–other overlap mediated this relationship and the reason why Batson and colleagues (1997) did *not* was because they chose different measures of self–other overlap that measured different things. Cialdini and colleagues' chosen measures of self–other overlap (IOS, "we"-ness, and perceived similarity) all load on our Perceived Closeness factor, while Batson and colleagues' attribute measure was part of our Overlapping Representations factor. Thus, previous researchers making claims about the relationship between perspective taking and self–other overlap have assumed that their different measures of self–other overlap were interchangeable, while our results suggest they are not. Even if the factors we found *were* simply due to method variance, it is clear that just as Olson and colleagues (2007) concluded

that one way of measuring attitudes was more sensitive when it came to predicting behavior, we could conclude that one way of measuring self–other overlap is more sensitive in capturing the effects of perspective taking.

In conclusion, we found that different facets of overlap are tied to distinct psychological and social outcomes and specifically, only certain facets of self–other overlap are related to perspective taking. Thus, we believe Batson and colleagues (1997) and Cialdini and colleagues (1997) could both be seen as being partially correct in their debate, in that self–other overlap measures that tap Perceived Closeness, but not those that tap Overlapping Representations, appear to be largely responsible for mediating the relationship between empathy and helping. We hope our findings will alert researchers—those who study perspective taking, as well as other topics—to be aware of self–other overlap's multidimensional nature and to tailor their hypotheses and methods for measuring this construct accordingly.

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