

**Does Being Empathic Pay Off?—Associations Between Performance-Based
Measures of Empathy and Social Adjustment in Younger and Older Women**

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Abstract

Cognitive empathy (the ability to infer another person's thoughts and feelings) and emotional empathy (the ability to emotionally resonate with another person's feelings) have been associated with social adjustment. Traditionally, these skills are assessed with self-report measures. However, these may not adequately reflect people's actual empathic abilities. There is only little and inconsistent empirical evidence on associations between performance-based empathy and positive social adjustment. In the study presented here, we gathered further evidence for such an association. Using a realistic interaction task in which unfamiliar women were paired into dyads and talked about positive and negative events in their lives, we assessed empathic accuracy (an indicator of cognitive empathy) and emotional congruence (an indicator of emotional empathy). Additionally, we obtained two indicators of social adjustment: participants' self-rated satisfaction regarding the communication with their partner in the interaction task, and their self-rated satisfaction with social relationships in general. We furthermore explored the role of potential moderators, which may help to explain discrepant past findings. To test for contextual and inter-individual differences, we distinguished between positive and negative emotional valence in the empathy task and investigated two adult age groups (102 younger women: 20–31 years; 106 older: 69–80 years). For almost all analyses, only empathic skills for positive (not for negative) affect were predictive of social adjustment, and the associations were comparable for younger and older women. These results underline the role of valence in associations between empathic skills and social adjustment across the lifespan.

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Does Being Empathic Pay Off?—Associations Between Performance-Based Measures of Empathy and Social Adjustment in Younger and Older Women

If you can learn a simple trick, Scout, you'll get along a lot better with all kinds of folks. You never really understand a person until you consider things from his point of view [...]—until you climb into his skin and walk around in it.

Harper Lee, To Kill a Mockingbird (p. 39)

Atticus Finch's advice to his daughter Scout in Harper Lee's novel suggests that empathy—being able to emotionally resonate with other people and to cognitively infer their thoughts and feelings (e.g., Walter, 2012)—is positively related to interpersonal adjustment (which includes the formation and maintenance of social relationships; e.g., Kwan, John, Kenny, Bond, & Robins, 2004). In line with this advice, early research has shown that self-report measures of empathy are associated with measures of interpersonal functioning (e.g., Davis, 1983) and prosocial behavior (e.g., Eisenberg & Miller, 1987). There is, however, reason to question the validity of such self-reported measures because people's insight into their own empathy skills tends to be limited (e.g., Ickes, Stinson, Bissonnette, & Garcia, 1990). Therefore, performance-based tasks that measure empathy or related abilities (e.g., the ability to recognize emotions from facial expressions) have become more popular.

However, studies on associations between performance-based measures of empathy and social adjustment are still rare, and the evidence is inconclusive to date. It appears that empathy is helpful in some situations, but not in others (e.g., Elfenbein & Ambady, 2002; Ickes & Simpson, 2007). One possible reason for this inconsistency lies in the measures: Many performance-based empathy measures lack ecological validity (e.g., Dziobek, 2012). This can bias the estimation of inter-individual differences in empathic skills (e.g., adult age differences; Isaacowitz & Stanley, 2011; Rauers, Blanke, & Riediger, 2013). The inconsistent findings to date may also be due to

other, moderating variables that affect associations between empathic skills and social adjustment. In the present study, we considered both possibilities. Our goals were to (1) provide further evidence for associations between performance-based measures of empathy with social adjustment, while (2) enhancing ecological validity through the use of an interaction paradigm. The aim (3) was to explore the role of selected contextual and inter-individual differences as potential moderators of the investigated effects. Here, we focus on two aspects that past research has highlighted as potentially important: (a) the valence of to-be-inferred thoughts and feelings of an interaction partner and (b) the age of the empathizer. Specifically, we assessed empathy during interactions between younger and older women talking about positive and negative events in their lives. In the following, we introduce the performance-based indicators of empathy that we used and highlight previous research linking these indicators to social adjustment. We then discuss the role of valence and adult age in the associations between empathy and social adjustment.

Empathy: Challenges for assessment

Most researchers agree that empathy consists of a cognitive and an emotional (or affective) facet (e.g., Walter, 2012): Cognitive empathy describes the inference of others' thoughts and/or feelings, whereas emotional empathy is usually conceived of as an affective response towards another person. More precise definitions of emotional empathy, however, vary. Some have defined emotional empathy in terms of specific affective responses, such as empathic concern for the other person (e.g., Mehrabian & Epstein, 1972). Here, we conceptualize emotional empathy as emotional congruence (i.e., similarity between the perceiver's and the other person's affective state) which can result in a variety of vicarious responses, among them compassion (feelings of warmth, concern, and care), sympathy (i.e., feelings of sorrow and concern, or, in the case of high emotional arousal, distress; Eisenberg, 2000; Singer & Klimecki, 2014).

Both emotional and cognitive empathy have traditionally been assessed with self-report measures (e.g., Davis, 1983; Mehrabian, & Epstein, 1972). Self-report items measuring empathy, however, are often formulated in terms of empathic motivation rather than actual skill.¹ As an additional limitation, self-report measures for cognitive empathy tend to evince no or low correlations with performance-based measures that require the correct inference of others' thoughts and feelings (e.g., Davis & Kraus, 1997; Ickes et al., 1990). This sheds doubt on people's ability to evaluate their own empathic skills. Compared to self-evaluations, performance-based measures provide enhanced objectivity. However, many of these tasks have been criticized because they involve still pictures of posed emotional expressions, vignettes, or cartoons that were presented without any context. This may imply limitations to ecological validity (e.g., Dziobek, 2012; Isaacowitz & Stanley, 2011; Raters et al., 2013). In the present study, we take a more realistic approach to measuring cognitive empathy, namely by assessing people's empathic accuracy in an actual interaction with another person, which is defined as the correct inference of others' thoughts and feelings (Ickes, 1997). In this type of assessment, individuals are filmed during an interaction, and are afterwards asked to describe their own thoughts and feelings during that interaction, and to infer their interaction partner's thoughts and feelings (Rollings, Cuperman, & Ickes, 2011). To measure emotional congruence, the emotional experience of one person is compared to the experience of another (e.g., Richter & Kunzmann, 2011), and this is also how we assessed emotional congruence here.

Empathic accuracy, emotional congruence, and social adjustment

Empirical evidence suggests that empathic accuracy is positively associated with social adjustment. However, most studies investigating associations between empathic accuracy and social adjustment have focused either on empathic accuracy in romantic partners/couples or on accuracy in populations that are characterized by social-adjustment problems (for an overview,

see Rollings et al., 2011). Concerning romantic relationships, it is often assumed—and has in some cases also been shown empirically—that both partners can profit from one partner’s empathic accuracy (e.g., Cohen, Schulz, Weiss, & Waldinger, 2012; Kilpatrick, Bissonnette, & Rusbult, 2002). For example, the more accurately an empathizer understands the partner’s thoughts and feelings, the better he or she can react to the partner’s needs by providing more effective support (Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008). Only very little is known about benefits of empathic accuracy for social interactions outside the romantic domain (for exceptions, see a study about athletes and their coaches by Lorimer & Jowett, 2009; or a study about therapists and their clients, Kwon & Jo, 2012), but it has been hypothesized that empathic accuracy facilitates adaptive behavior and therefore social adjustment in general (e.g., Zaki & Ochsner, 2011). Associations in line with this account have also been observed in clinical populations, although evidence supporting a causal interpretation is still pending. For example, low levels of empathic accuracy have been found in depressed women (Gadassi, Mor, & Rafaeli, 2011), in abusive men (Schweinle, Ickes, & Bernstein, 2002), or in patients with psychiatric illnesses such as schizotypal personality disorder (Ripoll et al., 2013).

In addition to empathic accuracy, emotional congruence (sometimes also referred to as *experience sharing*) has been proposed to be a mechanism through which people can connect with each other, and which might therefore help to achieve adaptive interpersonal outcomes (e.g., Zaki & Ochsner, 2011). However, there is very little research on measures of emotional congruence (as conceptualized in the previous section) and social adjustment in adults. Most studies on social adjustment rely on self-report measures of emotional empathy that usually encompass other components than congruence, often empathic concern (e.g., in the romantic domain, Davis & Oathout, 1987; or aggression in adolescents, Batanova & Loukas, 2011). Anderson, Keltner, and John (2003) directly investigated emotional congruence in dating

partners, showing that partners who displayed similar positive emotional responses in a discussion setting were more satisfied with their relationship six months later. Couples who were more similar in their positive and negative emotional experiences were furthermore less likely to have broken up six months later. In a study by Anderson et al. (2003), emotional congruence was assessed in roommates who participated in an emotion-inducing “creativity task” at the beginning and the end of the academic year. The authors showed that roommates who responded in an emotionally congruent fashion became closer friends than those who did not. In a slightly different approach, Barsade (2002) could show that students participating in a leaderless group discussion reported higher levels of cooperativeness the more their positive emotions matched the positive emotional display of a confederate. In sum, most of the available evidence points to positive associations between emotional congruence and a variety of desirable social outcomes. Indirect support for such associations also comes from research on clinical populations. Low levels of emotional congruence have, for example, been found in people with a narcissistic personality disorder (Ritter et al., 2011) and cocaine users (Preller et al., 2013) who also suffer from social adjustment problems.

The role of valence

Although most studies suggest that empathy promotes desirable relationship outcomes, this may not always be the case. Empathic accuracy, for example, can also have negative social consequences (Ickes & Simpson, 2007): In dating partners, for example, high empathic accuracy for the partner during potentially “relationship-threatening” situations (i.e., when the partner was evaluating a physically attractive interaction partner) predicted lower relationship stability (Simpson, Ickes, & Blackstone, 1995). Outside the romantic domain, a study by Elfenbein and Ambady (2002) showed that employees who were better able to pick up on negative feelings from less controllable channels, such as the body or voice, were evaluated less positively by their

co-workers, whereas high accuracy for positive emotions was associated with more positive evaluations. In both situations, an empathizer infers content that an interaction partner does not necessarily want to reveal; in both situations, this content is negatively valenced. In a similar fashion, benefits of emotional congruence for social relationships may depend on valence. In contrast to empathic concern, sympathy, or compassion, which are usually conceptualized as promoting social adjustment (e.g., Singer & Klimecki, 2014), emotional congruence per se may not always be beneficial. In a study by Saxbe and Repetti (2002), congruence with their wives' negative affective states has been shown to be associated with lower marital satisfaction in husbands. In negative situations, congruence might therefore lead to personal distress rather than to compassion (Singer & Klimecki, 2014)—possibly because the level of emotional arousal overtaxes a person's capacity to cope (Eisenberg, 2000). One may therefore speculate that empathy for positive affect may usually be beneficial, whereas empathy for negative affect may come at a cost. In the present study, we therefore differentiated between empathy for positive and negative emotional content.

The role of adult age

Individuals differ in their capacity for empathy. An important individual-difference characteristic in this regard is adult age: Older adults tend to describe themselves as less empathic than younger adults in self-reports (e.g., Grühn, Rebucal, Diehl, Lumley, & Labouvie-Vief, 2008) and younger adults often outperform older adults in some aspects of empathic-accuracy tasks (Rauers et al., 2013; Richter, Dietzel, & Kunzmann, 2011; Richter & Kunzmann, 2011; for an exception see Sze, Goodkind, Gyurak, & Levenson, 2012). Furthermore, younger adults usually outperform older adults in empathy-related tasks that measure Theory of Mind (the ability to infer others' mental states; meta-analysis by Henry, Phillips, Ruffman, & Bailey, 2013) or emotion recognition (the ability to judge others' emotions from facial expressions, bodily

postures, or auditory stimuli; Ruffman, Henry, Livingstone, & Phillips, 2008). Interestingly, older adults (as compared to younger adults) sometimes only display difficulties in the inference of negative, but not positive, affective content (Blanke, Raters, & Riediger, 2015; Richter et al., 2011). Such age differences may stem from motivational differences, rather than differences in the level of skill (e.g., Isaacowitz & Stanley, 2011; Blanke et al., 2015; Richter et al., 2011), as older adults tend to prefer positively valenced over negatively valenced material (as compared to younger adults; Scheibe & Carstensen, 2010) and may hence be less motivated to attend to and deal with their interaction partners' negatively valenced thoughts and feelings.

In contrast to cognitive empathy, emotional empathy seems to remain stable or may even increase with age (e.g., Richter & Kunzmann, 2011; Sze, Gyurak, Goodkind, & Levenson, 2012). Furthermore, older adults usually report high levels of social adjustment (Luong, Charles, & Fingerman, 2011). Nonetheless, it has been claimed that older adults' lower performance in cognitive empathy tasks may lead to social impairments (e.g., Bailey, Henry, & Von Hippel, 2008; Khanjani et al., 2015; Ruffman, Murray, Halberstadt, & Taumoepeau, 2010). To date, it is an open question how these factors of assumed age-related change and stability contribute to social adjustment in different life phases. In the present study, we therefore explored whether social implications of empathic skills are similar or differ in younger and older women.

The present study

In this study, we addressed a research gap by investigating the association between performance-based measures of empathy and social adjustment in younger and older women. We used a dyadic interaction task, in which the women were paired in dyads and talked about positive and negative events in their lives. Afterwards, they rated their own thoughts and feelings during the interaction as well as their partner's thoughts and feelings, and reported on their satisfaction with the communication. The interaction task was designed to meet two ends: first, to

assess empathy behaviorally in a relatively natural but still standardized interaction situation, and second, to relate empathy as displayed in this situation with a situation-specific outcome. We chose communication satisfaction as such an immediate, or proximal, indicator of social adjustment. In addition, participants' satisfaction with their existing real-life social network was measured as a more distal and general indicator of social adjustment. We hypothesized that both partners' empathic skills would contribute to both partners' communication satisfaction. We assumed that such mutual associations, which have been documented before (e.g., Cohen et al., 2012), derive from dyadic feedback loops (e.g., Zaki & Ochsner, 2011). More accurate and congruent empathizers may, for example, be able to offer their conversation partner consolation when negative events are shared, or they may rejoice in their partner's positive event disclosures. The partner may act in a friendlier manner towards the empathizer in return, which could lead to mutual satisfaction with the conversation. In an exploratory approach, we followed up on previous research suggesting that emotional valence may play a role in the association between empathic skills and social outcomes by analyzing empathic skills for positive and negative affect separately. Additionally, we followed up on the idea that reduced cognitive empathy may impact older adults' social lives, and further explored the role of the participants' age for associations between empathy and social adjustment.

Method

Participants

Our sample consisted of 208 women from two age groups: $n = 102$ younger adults (age range = 20–31 years, $M = 25.95$, $SD = 3.06$) and $n = 106$ older adults (age range = 69–80 years, $M = 72.94$, $SD = 2.52$), all residents of the Berlin area, Germany. Participants attended two sessions, but one older woman dropped out after the first session. We investigated only women to keep the complexity of the design, which is described in the next section, within a manageable

range (otherwise, we would have had to consider gender composition of dyads as an additional factor). Participants were recruited from the participant pool of the Max Planck Institute for Human Development, Berlin, as well as via online advertisement. All participants were fluent in German and the sample was approximately stratified by education (59% of the younger and 50% of the older women held a German university entrance qualification).

Procedure

The study involved two sessions. In the first session, participants were paired in dyads and engaged in a videotaped conversation. Participants were informed about the video recording during recruitment and gave their informed consent prior to the first session. The dyads had five minutes to get acquainted with each other in an unstructured conversation and to get used to the camera filming them. This was followed by a pre-structured conversation, in which participants talked about positive and negative events in their lives. Participants were told that the aim of this conversation was to get to know each other. Prior to the conversation, participants were given a few minutes to think about one positive and one negative event that they wanted to tell their conversation partner about. The content of these events varied. For example, the negative events participants talked about concerned social problems, illnesses, or even the death of a loved one. Examples of positive events participants talked about were personal achievements or vacations. To control for potential influences of the age of the interaction partner on the reported events, the level of empathic skills, and the association with social adjustment, participants were either paired with a partner from their own or from the other age group (52 age-heterogeneous dyads, 52 age-homogeneous dyads: 25 younger, 27 older).

During the conversation, each participant had three minutes to talk about each event (resulting in a total of twelve minutes for the entire conversation). The experimenter left the room for the duration of the recordings. Adherence to the prescribed timing of the conversation was

ensured through an audiotaped instruction. Participants took turns in talking and listening, and were informed that they could ask each other questions or make comments if they liked. All participants started with their negative events and finished with the positive events, so that the conversation ended on a positive note.² In the mixed-age group, we ensured that the younger and older women started the conversation equally often. In the age-homogenous groups, we randomly determined who started the conversation. Directly following the conversation, participants answered several questions on their own, including a measure of communication satisfaction that we describe in more detail below. After a short break, participants worked on the empathy task. For this task, the experimenter used a time-contingent criterion to define eight time points (“tape stops”) in the video-recorded conversation. Each tape stop was set at approximately 1 min and at 2 min within each 3 min segment of the conversation, with a tolerance margin of about 15 s before and after this mark. This procedure was applied to preserve the meaning of participants’ sentences. Participants viewed the video and reported their own thoughts and feelings at each of these tape stops. They then watched the video a second time and reported their partner’s assumed thoughts and feelings (“judgment”) at each of these same time points. Participants watched the video twice: The first time, they provided self-reports, and the second time, judgments of the other partner.

The second assessment consisted of group sessions with up to eight persons. Each participant completed a set of instruments on her own. These included a measure of satisfaction with social relationships, which we describe in the *Measures* section. Prior to data collection, the ethics committee of the Max Planck Institute for Human Development had approved of the study.

Measures

Self-reported and judged feelings. Participants reported their own feelings at each tape stop when first watching the video and judged their partner’s feelings at each tape stop when

watching the video the second time (i.e., each time the film was stopped, they judged the feelings they or their partner had had at that moment of the interaction). They rated five items for positive affect (PA: happy, excited, content, comfortable, and balanced) and four items for negative affect (NA: nervous, sad, uncomfortable, and tense) on a 7-point scale ranging from 0 (*not at all*) to 6 (*very much*). The positive and negative affect items were averaged at each tape stop for self-reported affect (average PA of personal means for younger women: $M = 3.30$, $SD = 1.00$; for older women: $M = 3.21$, $SD = 0.93$; average NA of personal means for younger women: $M = 1.38$, $SD = 0.99$; for older women: $M = 1.40$, $SD = 0.79$), as well as for the judgment of the partner's affect (average PA of personal means for younger raters: $M = 3.29$, $SD = 0.89$; for older raters: $M = 3.25$, $SD = 0.95$; average NA of personal means for younger raters: $M = 1.15$, $SD = 0.76$; for older raters: $M = 1.24$, $SD = 0.71$). The internal consistency for the self-reported affect measures was good at each tape stop, ranging from $\alpha = .86$ to $\alpha = .92$ for positive, and $\alpha = .70$ to $\alpha = .82$ for negative affect. The internal consistency for the judgment of partner's positive feelings was also good (ranging from $\alpha = .87$ to $\alpha = .91$) and that for the judgment of partner's negative feelings was acceptable (ranging from $\alpha = .68$ to $\alpha = .79$).

Empathy. We assessed empathic accuracy and emotional congruence as indicators of cognitive and emotional empathy, respectively. Empathic accuracy was operationalized as the similarity of the interaction partner's self-reported thoughts and feelings with the empathizer's judgment of the interaction partner's thoughts and feelings. It is important to note that both interaction partners provided data both as empathizers (i.e., they inferred their partner's thoughts and feelings) and as partners (i.e., their own thoughts and feelings were inferred by their interaction partner). In the statistical models, information on these respective roles is provided ("empathizer" and "partner"). Traditionally, empathic accuracy for thoughts and feelings has been assessed using one measure by comparing verbal accounts of a person's thoughts and

feelings with an empathizer's inference (Ickes, 1997). However, other researchers have also assessed empathic accuracy for feelings separately by comparing emotion ratings of one person with an empathizer's inferred ratings (e.g., Barone et al., 2005; Zaki & Ochsner, 2011). In the current research, we separately assessed two indicators of cognitive empathy – one pertaining to thoughts and one pertaining to feelings – to obtain a more thorough perspective. In line with Ickes (2011), we refer to the traditional measure introduced by Ickes et al. (1990) as empathic accuracy for thoughts, and to the accuracy measure concerning emotions as empathic accuracy for feelings. Emotional congruence was operationalized as affect covariation within the dyad. This score was identical for both partners in a dyad.

Empathic accuracy for feelings. This score was calculated as the Pearson correlation between the judgment of the empathizer and the self-report of the partner across the eight tape stops. As correlations do not follow a normal distribution, we used Fisher's z-transformed scores, yielding a theoretical range of approximately +/- 3 (equal to $r \approx +/- 1$), with higher positive scores representing higher accuracy (positive feelings, younger empathizers: $M = 0.90$, $SD = 0.57$; older empathizers: $M = 0.82$, $SD = 0.60$; negative feelings, younger empathizers: $M = 0.86$, $SD = 0.53$; older empathizers: $M = 0.69$, $SD = 0.62$).³ Younger women only outperformed older women in the inference of negative, but not positive feelings (see Blanke et al., 2015). Four participants (three older women and one younger woman) from three dyads did not display any variation in their judgment of their partner's negative affect ratings and were excluded from the analysis of empathic accuracy for negative feelings. One younger woman had low scores in empathic accuracy for positive feelings (as compared to the other younger women). Similarly, one younger and one older woman had low scores in empathic accuracy for negative feelings. These outliers were adjusted to a score equal to three standard deviations below the subsample mean (Field, 2009).⁴

Empathic accuracy for thoughts. Participants reported their own and their partner's thoughts at each tape stop using an open-answer format. Participants were asked to only report the most important thought that they (and their partner) had had at that particular moment in the interaction. The similarity between the partner's self-report and the empathizer's judgment was coded by two trained coders for each of the eight tape stops per person. The coders used a three-point coding system (Ickes et al., 1990): Partner's self-report and the empathizer's judgment refer (a) to essentially different content (coded 0); (b) to somewhat similar, but not the same, content (coded 1); and (c) to essentially the same content (coded 2). The first author held extensive meetings regularly with the coders, in which disagreement between the coders was discussed until a consensus was reached. As Category 2 (essentially the same content) was only coded 14 times out of 1648 observations, Categories 1 and 2 were collapsed into one category. We interpreted this category as indicating that the empathizer had correctly inferred the partner's thoughts at that tape stop. The codings made before reaching consensus were used to obtain the inter-rater reliability ($\kappa = .69$). As the coding was rather complex, this reliability can be considered good (Wirtz & Caspar, 2002).

A proxy for the valence of the thoughts was obtained on the basis of the self-reported feelings: The partner's thoughts that were accompanied by high self-reported positive affect (equal to or higher than her personal average in the task) were regarded as positive. The partner's thoughts that were accompanied by high self-reported negative affect (equal to or higher than her personal average in the task) were regarded as negative.⁵ On average, according to this categorization, about half of the thoughts were positive (older women: $M = 51\%$, $SD = 11$; younger women: $M = 54\%$, $SD = 12$) and slightly fewer thoughts were negative (older women: $M = 41\%$, $SD = 13$; younger women: $M = 42\%$, $SD = 13$). The final empathic accuracy measure for thoughts was the averaged coding across all tape stops for a given valence. The measure ranged

from 0 (no accuracy) to 1 (perfect accuracy). As reported in Blanke et al. (2015), younger women only outperformed older women in empathic accuracy for negative thoughts, but not for positive thoughts (mean accuracy for positive thoughts, younger women: $M = 0.25$, $SD = 0.21$; older women: $M = 0.24$, $SD = 0.22$; mean accuracy for negative thoughts, younger women: $M = 0.21$, $SD = 0.22$; older women: $M = 0.15$, $SD = 0.21$). The measures were severely positively skewed, and we used an inverse transformation of the variables in the analyses to approach normality (Tabachnick & Fidell, 2007). Three participants (two older women and one younger woman) from two dyads were unwilling or not able to report any thoughts and were excluded from the analyses of empathic accuracy for thoughts.

Emotional congruence. Emotional congruence was operationalized as the Pearson correlation between both partners' emotion ratings for positive and for negative affect across the tape stops. This implied one score per dyad for each valence. That is, there was no individual score for each dyad member, only a dyadic score. Like empathic accuracy for feelings, the measure was Fisher's z-transformed, with higher values representing higher congruence (PA: younger dyads: $M = 0.50$, $SD = 0.58$, older dyads: $M = 0.69$, $SD = 0.53$, mixed-age dyads: $M = 0.73$, $SD = 0.58$; NA: younger dyads: $M = 0.23$, $SD = 0.54$, older dyads: $M = 0.47$, $SD = 0.53$, mixed-age dyads: $M = 0.43$, $SD = 0.55$).⁶ One older dyad had a low score on emotional congruence in negative affect as compared to the other older dyads, which was therefore adjusted to three standard deviations below the mean. Dyadic emotional congruence did not differ in relation to the different age compositions as indicated by ANOVAs for positive and negative affect (PA: $F[2, 101] = 1.35$, $p = .263$; NA: $F[2, 101] = 1.47$, $p = .235$).

Social adjustment. We obtained two measures of social adjustment: As a proximal indicator of social adjustment, we assessed communication satisfaction directly after the interaction in the first session. In a second session, we additionally assessed a more distal, global

indicator of social adjustment by asking participants how satisfied they were with their social relationships in everyday life.

Communication satisfaction. Communication satisfaction was assessed using a shortened measure of interpersonal communication satisfaction (Hecht, 1978), as previously used by VanLear (1991). The scale includes eight items (e.g., “I enjoyed our conversation,” “We each got to say what we wanted,” and “I feel the other person valued what I had to say”), which were assessed on a 7-point scale ranging from 0 (*agree not at all*) to 6 (*agree very much*). The first author translated the scale into German and slightly adjusted the wording to match the context of the study (e.g., replacing “the other person” with “my interaction partner”). The German version displayed a good internal consistency in our sample ($\alpha = .84$). The assessment directly followed the interaction task (together with other measures that are not relevant for the current purposes). On average, participants were very satisfied with the conversation (younger women: $M = 4.98$, $SD = 0.64$; older women: $M = 5.18$, $SD = 0.75$). Communication satisfaction was substantially negatively skewed, and we used a reflected, logarithmized score for the analyses (Tabachnick & Fidell, 2007). There were age differences in communication satisfaction: As indicated by a multilevel model controlling for dyadic interdependencies, older adults reported being more satisfied with the conversation (estimate = -0.027 , $SE = 0.010$, $p = .009$) and this was independent of their interaction partner’s age.⁷

Satisfaction with social relationships. To obtain a measure of participants’ satisfaction with their existing social relationships, we first asked participants to list all their important social partners. As an aid to memory, participants filled out a modified version of the circle diagram by Antonucci (1986). The diagram showed the word “I,” surrounded by three concentric, empty circles. In these circles, participants put down the initials of all social partners who were important in their lives. Participants were instructed that the proximity of the circles to the “I”-

circle represents the closeness to the social partners; that is, people in the inner circle were described as people very close to the self, people in the second circle as less close, but also very important, and people in the outer circle as least close, but still important.

Participants strongly varied in the number of persons that they listed in all of the three circles, ranging from 3 to 64 people (younger women: $M = 19.88$, $SD = 10.68$; older women: $M = 17.93$, $SD = 10.66$). The scores were skewed, and were logarithmized before we performed a t -test, which resulted in no significant age differences between younger and older women in the mean number of persons reported ($t[204] = 1.90$, $p = .059$). Participants rated the social partners they had named on a number of dimensions, including their satisfaction with the relationship. The measure ranged from 0 (*not satisfied at all*) to 6 (*very satisfied*). To measure satisfaction with social relationships, we calculated each participant's mean satisfaction across all reported relationships in all three circles (younger women: $M = 4.54$, $SD = 0.65$; older women: $M = 4.75$, $SD = 0.79$). We tested the internal consistency of this measure by calculating Cronbach's alpha for the mean scores of the three different circles ($\alpha = .64$), which may be considered satisfactory given the small number of items (i.e., three circle means). We further conducted a confirmatory factor analysis to test the dimensionality of the measure. As a model with one factor and three indicators is always saturated, we restricted the loadings of the first circle and the third circle to equality (as they were similar in the saturated model) to obtain fit indices. These were satisfactory given that we only had one degree of freedom: $\chi^2(1) = 2.761$, $p = .097$; CFI = .980; RMSEA = .092, 90% CI [0.000, 0.230]; SRMR = 0.066.

In comparison to the rest of the older subsample, two older women reported very low satisfaction with their social relationships. These scores were adjusted to a score equal to three standard deviations below the subsample mean of older women (Field, 2009).⁸ One older woman

did not report on her social relationships. Older women rated their social relationships as being significantly more satisfying than younger women did ($t[204] = -2.24, p = .026$).

Analytic strategies

We analyzed the predictive value of empathy for the two indicators of social adjustment, separately for the different empathy facets. In a second step, we examined the role of age as a moderating variable. To test associations between empathy and communication satisfaction, we applied the actor–partner interdependence model (APIM; Kenny, Kashy, & Cook, 2006). The APIM allows for correlated dependent variables within the dyads and thereby statistically accounts for the interdependency of the dyad members. We used multilevel modeling to implement the APIM, with dyad members modeled as repeated measurements within the dyad. As reported in Blanke et al. (2015), we treated the dyads as indistinguishable. We used the MIXED procedure of the SAS/ STAT ® software, Version 9.2 of the SAS System for Windows (SAS Institute, 2011), and estimated the models using restricted maximum likelihood (REML) and the Satterthwaite approximation of degrees of freedom (Kenny et al., 2006). As the dyad members had not known each other before the first session, we did not assume any interdependencies between the dyad members concerning their satisfaction with their real-life social relationships. We thus used multiple regression analyses (REG procedure of SAS) to investigate the association between empathy and satisfaction with social relationships.

Results

We had expected to find associations between empathy (empathic accuracy and emotional congruence) and social adjustment (communication satisfaction and satisfaction with social relationships) in both age groups. Analyses for positive and negative affect were conducted separately, and we tested for the moderating role of the participants' age. Empathic accuracy and emotional congruence for partner's feelings were operationalized as correlations, whereas

empathic accuracy for thoughts was based on a coding procedure. In essence, a relatively consistent pattern of results emerged across the indicators of empathic skills and social adjustment, as we describe next in more detail.

Communication satisfaction

In the APIM prediction of partners' communication satisfaction, both partners' (grand-mean centered) empathic skill scores served as predictors. In a second step, both partners' age groups (coded -1 for younger adults and 1 for older adults), as well as the interactions between the empathy scores and own age group were entered into the analysis. The results for the prediction of communication satisfaction are listed in Table 1 (empathic accuracy as predictor) and Table 2 (emotional congruence as predictor). Please note that communication satisfaction scores were reflected and logarithmized; furthermore, empathic accuracy for thoughts was additionally inversely transformed. Therefore, in the analyses reported in Table 1, lower parameter estimates for empathic accuracy for feelings, but higher parameter estimates for empathic accuracy for thoughts are indicative of associations with higher communication satisfaction, respectively.

Empathic accuracy. For positive feelings as well as for thoughts accompanied by positive feelings above the personal average (positive thoughts), there were significant effects of the empathizer's empathic accuracy on communication satisfaction. The more accurately the empathizer inferred her interaction partner's positive thoughts and feelings, the more satisfied she was with the conversation. For negative thoughts and feelings, this was not the case. There were no significant partner effects; that is, the partner's empathic accuracy was associated with neither facet nor valence of the empathizer's communication satisfaction. When we tested for a moderating effect of participants' age in step 2, there was no evidence for an interaction between the empathizer's empathic accuracy and her own age group, nor was there an interaction between

the partner's empathic accuracy and her own age group. In an additional analysis, we ruled out that the association between empathic accuracy and communication satisfaction varied in relation to the age composition of the dyad.⁹ These results suggest that associations of empathic accuracy for positive feelings and communication satisfaction were comparable for younger and older women. To determine the predictive value of empathic accuracy for positive feelings and thoughts for communication satisfaction, we removed all predictors except for the empathizer's empathic accuracy from the model (positive feelings: estimate = -0.039 , $SE = 0.018$, $p = .035$; positive thoughts: estimate = 0.218 , $SE = 0.077$, $p = .005$) and calculated the pseudo R^2 according to Kenny et al. (2006). Empathic accuracy for positive feelings explained 1.71 % of the variance, and empathic accuracy for positive thoughts explained 3.22% of the variance in communication satisfaction.

Emotional congruence. In line with the results for empathic accuracy, emotional congruence with positive emotions was significantly associated with communication satisfaction. The more congruent the two members of the dyads were in their positive emotions, the more satisfied they were with the communication. This was not the case for negative emotions. The second step of analysis showed that neither the age of the empathizer nor the age of the partner moderated this relationship for positive emotions; there was also no effect of the dyad composition. Emotional congruence for positive emotions explained 3.05% of the variance of communication satisfaction when the other predictors were removed. For negative emotions, there was an interaction between congruence and partner's age. We followed up on this interaction by omitting partner's age group from the model and predicting communication satisfaction only by emotional congruence for negative emotions, separately for empathizers with a younger and an older partner. Only when empathizers were paired with younger partners, not with older, did they rate the communication as more satisfying the more emotionally congruent

the partners were in their negative emotions (younger partners: estimate = -0.068 , $SE = 0.027$, $p = .016$, older partners: estimate = 0.031 , $SE = 0.031$, $p = .315$). Emotional congruence for negative emotions explained 5.27% of the variance in dyads with a younger partner. As the threefold interaction between congruence and both partners' age groups in the first model (see Table 2) was non-significant, there was no indication that the empathizer's age-group membership moderated this association.

Satisfaction with social relationships. In a first step, we predicted the empathizer's satisfaction with her real-life social relationships with her own grand-mean-centered empathy score. In a second step, her age group (again coded -1 for younger women and 1 for older women), as well as the interaction between her empathy score and her own age group were entered into the multiple regression analyses.

Empathic accuracy. The results for the prediction of communication satisfaction with the different facets of empathic accuracy are shown in Table 3. In contrast to the results for communication satisfaction, neither empathic accuracy for positive feelings nor empathic accuracy for negative feelings predicted satisfaction with social relationships. Only the empathizer's empathic accuracy for positive thoughts (not negative thoughts) predicted her own general satisfaction with her social relationships.

This indicates that the more accurately empathizers could recognize their interaction partner's positive thoughts in the first session, the more positively they evaluated their own social relationships in real life. The empathizer's empathic accuracy for positive thoughts explained 2.54% of satisfaction with social relationships. In Step 2, we introduced interaction terms between the empathic accuracy scores and age. All interactions were non-significant, thus giving no indication that the results differed by age.

Emotional congruence. There was no significant effect of emotional congruence on satisfaction with social relationships, neither for positive emotions ($b = 0.116$, $SE = 0.087$, $p = .185$) nor for negative emotions ($b = -0.042$, $SE = 0.091$, $p = .645$). Age group remained significantly predictive in both models (for positive emotions: $b = 0.105$, $SE = 0.050$, $p = .035$; for negative emotions: $b = 0.113$, $SE = 0.050$, $p = .024$). There was furthermore no significant interaction between emotional congruence and age group (positive: $b = -0.027$, $SE = 0.087$, $p = .758$; negative: $b = 0.141$, $SE = 0.091$, $p = .123$).

Discussion

In this study, we investigated the association between performance-based empathy and social adjustment in younger and older women. We chose various indicators of empathic skills, two for cognitive empathy (empathic accuracy for thoughts and for feelings) and one for emotional empathy (emotional congruence), and investigated two indicators of social adjustment, namely, communication satisfaction and satisfaction with social relationships in general. To explore the role of valence in these associations, we differentiated between positive and negative affect. We furthermore tested for age differences in the associations.

Across the multiple constructs and across both age groups, a relatively consistent pattern of results emerged: The higher participants' empathic skills for positive information—that is, for positive feelings and for thoughts that were accompanied by positive feelings (positive thoughts)—the higher was their social adjustment. With only one exception, this was not the case for negative affect, as will be discussed in the next section, in which we evaluate these findings in more detail.

Empathic skills and social adjustment: Keeping things positive?

In line with previous research (Ickes & Simpson, 2007) and as hypothesized, the empathizer's ability to pick up on positive information implied benefits: Her empathic accuracy

for positive thoughts and for positive feelings was associated with her own communication satisfaction. Furthermore, the more closely the participants covaried in their positive emotions, the more satisfied they were with the conversation. In contrast, empathic skills for negative affect were not predictive of the social outcomes, except for a positive association between emotional congruence and communication satisfaction, which was, however, only evident in participants who were paired with a younger woman as an interaction partner (irrespective of their own age). Satisfaction with social relationships was only predicted by empathic accuracy for positive thoughts, but not by the other empathic skills.

Why should valence play a role for the association between empathic skills and social adjustment? We consider it possible that picking up on a social partner's positive thoughts and feelings, and feeling as positive as an interaction partner, may elevate the empathizer's own emotional well-being by enabling her to feel pleasure in the other's positive experiences, which may contribute to satisfying interactions and fulfilled social relationships overall. Similar mechanisms do not seem plausible for negative affect, suggesting that valence-differential mechanisms may link empathic skills to social adjustment.

On the basis of previous research, we had assumed that empathic accuracy could facilitate positive interpersonal behavior (e.g., social support; Verhofstadt et al., 2008), which, in turn, would benefit both partners' communication satisfaction. In the study presented here, however, the empathizer's communication satisfaction profited only from her own empathic accuracy for positive content, not from her partner's. This means that the more the empathizer was able to understand her interaction partner's thoughts and feelings, the better the *empathizer* liked the conversation (whereas the partner's evaluation of the conversation was unrelated to the empathizer's empathic accuracy). One reason for our failure to find associations between one partner's accuracy and the other's communication satisfaction may be that there was not enough

time to express positive interpersonal behavior in the course of the short conversation. Therefore, even adequate appraisals of the partner and the situation may not have implied notable behavioral adjustments. Whether the assumed mutual effects do indeed exist in real-life social interactions thus remains an open question.

The valence-specific pattern of the results for satisfaction with social relationships in daily life may also imply that it is more difficult to react to a social partner's negative thoughts and feelings (than to her positive thoughts and feelings) in a way that the partner will appreciate. In line with this notion, Gable, Gosnell, Maisel, and Strachman (2012) concluded that enacted social support in response to the disclosure of negative events has been linked to mixed outcomes, whereas enacted social support upon the disclosure of positive events has consistently been found to be associated with positive outcomes. In a study investigating healthy and elderly couples with one disabled partner, healthy participants' satisfaction with life was predicted by their partners' ability to recognize positive emotions (not negative); the opposite was true for the couples with a disabled partner (Petrican, Moscovitch, & Grady, 2014). In line with previous research (Gable, Gonzaga, & Strachman, 2006), the authors suggested that in the healthy couples, the partner's response to the disclosure of positive information might be especially important for relationship well-being. These findings further underline the role of the valence of the inferred emotions for associations between empathic abilities and adjustment. Hence, empathic skills concerning positively valenced information are typically linked to positive social outcomes in healthy adults, whereas this may not be the case for negative information. However, as the study by Petrician et al. (2014) further illustrates, there are situations in which the inference of negative information is vital as well: In the couples with a disabled partner, the ability to pick up on negative emotional information might be particularly important for the caregiver to provide

effective support and for the disabled partner to recognize limits to the caregiver's ability to carry this burden.

In the present study, only empathic accuracy for thoughts, but not for feelings, was associated with the measure of satisfaction with social relationships. Therefore, our data further support the claim that empathic accuracy for thoughts and for feelings should be differentiated, as emphasized by Ickes (2011). It is, however, important to note that we used the partner's self-reported feelings both as a proxy to categorize the thoughts *and* as the criterion for the empathizer's accuracy for feelings; the measure of empathic accuracy for thoughts was therefore not independent of the measure of empathic accuracy for feelings. It is possible that judgments of general emotional valence precede the inference of specific thoughts. Being able to identify an interaction partner's mood may therefore serve as a necessary, but not sufficient prerequisite for the achievement of social adjustment.

It should also be noted that judging by the effect sizes, the contribution of empathic skills to social adjustment was small. Obviously, there are factors other than empathic skills (and age) that account for interpersonal differences in social adjustment, such as personality (Lopes, Salovey, & Straus, 2003). Furthermore, it may be the case that not empathy itself, but rather other vicarious responses such as compassion are more important for social adjustment (e.g., Singer & Klimecki, 2014).

What has age got to do with it?

In line with previous research on social relationships in old age (Luong et al., 2011), older women evaluated their communication with the unfamiliar partner in the first testing session more positively than younger women did. This effect was independent of the interaction partner's age and the age composition of the dyad. Older women also rated their social relationships in daily life as more satisfying than younger women did. As reported elsewhere (Blanke et al.,

2015), older adults showed deficits in empathic accuracy only in the abilities to infer negative thoughts and feelings (not positive). In the present study, there were furthermore no differences between younger, older, or mixed-age female dyads regarding the dyad members' emotional congruence. These results do not provide strong evidence for age-related losses in empathy. In general, there were hardly any age-related differences in the association between empathic skills and social adjustment. We only found that participants with a younger interaction partner were more satisfied with the conversation the more emotionally congruent the dyad was concerning negative affect. We can only speculate that resonating with the negative emotions of a younger as compared to an older adult may be less distressing and therefore more helpful in the achievement of a satisfying conversation.

Interestingly, support for the assumption that empathic skills are associated with social adjustment was confined to the domain of positive affect in both age groups—the domain that did not evince age differences in empathic accuracy. This implies that even if the skill to read negative thoughts and feelings declines with age, it may be less predictive of social outcomes than the skill to read positive thoughts and feelings—and the latter ability might indeed remain relatively stable with age. In essence, the current findings suggest that age differences in empathic skills may be small and that these differences may not be as detrimental to social adjustment as previously expected.

Limitations and outlook

To our knowledge, this study is the first to examine the association between empathic accuracy for thoughts and feelings, emotional congruence, and social adjustment in younger and older women. Its strengths include the relatively ecologically valid and age-fair interaction task that provided behavioral measures of empathic skills, as well as the inclusion of both a proximal and a distal indicator of social adjustment. In addition to the role of age as an individual-

differences factor, we explored the role of valence (as a contextual variation), which proved to play an important role in disentangling the complex association between empathy and social adjustment in adulthood. There are, however, limits to the generalizability of our findings. As we focused on women, our data do not allow any conclusions regarding interactions between men or interactions between persons of different genders. Furthermore, the results rely on a cross-sectional design that contrasted only two age groups. Longitudinal research is needed to understand how empathic skills change across the lifespan and how associations with social outcomes may change as well. Our data are correlational and can thus not tackle questions of causality. For example, it is also possible that persons with highly satisfactory social relationships are more likely to decode positive thoughts and feelings of an unfamiliar interaction partner accurately (Flury & Ickes, 2001, 2006). Furthermore, this study did not aim to investigate the underlying mechanisms of the association between empathic skills and social outcomes, which have been described as a “black box” (Elfenbein, Foo, White, Tan, & Aik, 2007). Zaki and Ochsner (2011) have pointed out that these mechanisms are still subject to future research, which may involve the identification of highly complex feedback-loops between interaction partners.

In contrast to the empathic accuracy measure, emotional congruence was a dyadic measure. It is therefore not possible to determine each partner’s individual level of emotional empathy, which may be a stronger predictor of own social adjustment. Furthermore, we used measures of empathic skills that were obtained in an interaction with a stranger in the laboratory as an approximation of participants’ empathic skills. While this design decision allowed us to control for various potentially confounding factors, such as relationship duration, it also meant that the investigated interaction differed from the participants’ typical everyday social interactions in various ways (e.g., the participants disclosed personal events to a stranger, there were time constraints, the camera was recording them, etc.). Empathic skills may vary depending

on the relationship between interaction partners (e.g., Stinson & Ickes, 1992) and depending on the situation (e.g., Raters et al., 2013). It is therefore possible that the pattern of results observed in the present study is restricted to the interaction between strangers. In the context of the study, it could have been more adaptive to focus on the interaction partner's positive thoughts and feelings, and to neglect negative information. In another context, this could be entirely different, for example when looking at empathy in caregivers and their disabled partners (Petrican et al., 2014), as we outlined previously. A composite measure of empathic skills across different persons and situations may be more predictive of satisfaction with social relationships in daily life.

To measure communication satisfaction, we obtained reports from both interaction partners and were thus able to test for possible interpersonal effects, which was not possible for the measure of satisfaction with social relationships in daily life. The self-reports might have been positively biased for older adults, who may tend to evaluate interpersonal interactions more positively than younger adults do (e.g., Ruffman, 2011). Furthermore, the indicators for social adjustment only cover social satisfaction measures (communication satisfaction and satisfaction with social relationships). Empathic accuracy has, for example, also been shown to be associated with social power (e.g., Schmid Mast, Jonas, & Hall, 2009). One could thus imagine that, for an employer, it is important to know when and why employees are dissatisfied. Future research is therefore needed to identify specific social situations in which performance-based empathy for negative information might relate to positive social outcomes.

Conclusion

In conclusion, we found support for the idea that empathic skills—as measured during a conversation with an unfamiliar interaction partner—“pay off” for younger as well as for older women with regard to accurate inference of positive (but not negative) affect. As only empathy

for positive affect was predictive of social adjustment in this study, these results emphasize the importance of taking into account contextual variations, and especially the valence of the inferred information, when investigating social implications of empathy. There was little evidence for age-related differences in empathic skills, or in the associations between empathic skills and social adjustment. As older women only displayed problems in the inference of negative affect, we conclude that older adults' empathic skills may decline primarily in those abilities that have limited implications for social adjustment. Overall, our findings contribute to the growing body of evidence that empathic skills are related to social adjustment. Importantly, our results also exemplify that these rather small effects depend on moderating variables. This opens up an intriguing new angle for the investigation of effects of empathy. The present study converges with other recent studies in suggesting that under some circumstances, high levels of social satisfaction can be achieved without particularly high levels of empathy. Describing these individual and situational constellations, and understanding exactly why empathy seems expendable in these cases, may be as important as identifying circumstances in which empathy is crucial for social functioning.

Footnotes

¹ An example for such an item would be Item 8 of the Interpersonal Reactivity Index (IRI, Davis, 1983): “I try to look at everybody's side of a disagreement before I make a decision.”

² Two age-homogeneous dyads (one younger and one older) did not adhere to the time structure of the conversation. Two other participants from two different dyads (one younger woman from a younger dyad and one older woman from an older dyad) also deviated from the instructions for the conversation in that they were not able or did not want to report a negative event. Instead, they talked about the reasons why there was nothing negative in their lives. Excluding all four dyads whose members did not completely adhere to the task neither changed the pattern of results nor the levels of significance with the following exceptions: When predicting communication satisfaction with emotional congruence for negative affect, the interaction between emotional congruence and partner's age group was only marginally significant (estimate = 0.038, $SE = 0.0203$, $p = 0.060$). In some of the analyses, the main effect of age on the measures of social adjustment was furthermore only marginally significant ($p < .10$) after exclusion of these four dyads.

³ The untransformed descriptives of empathic accuracy for feelings are as follows: PA: younger women: $M = 0.62$, $SD = 0.32$, older women: $M = 0.57$, $SD = 0.35$; NA: younger women: $M = 0.62$, $SD = 0.30$, older women: $M = 0.49$, $SD = 0.38$.

⁴ Both the pattern of results and the levels of significance remained unaltered when we did not adjust for these outliers.

⁵ There was a partial overlap between thoughts categorized as positive and negative (average within-person occurrence of overlapping episodes for younger women: $M = 7\%$, $SD = 10$; for older women: $M = 7\%$, $SD = 12$). We therefore repeated our analyses while excluding tape stops that had been categorized as both positive and as negative (e.g., tape stops at which the

participant experienced mixed affect). This neither changed the pattern of results nor the significance levels, and we therefore decided not to exclude these stops from our reported analyses.

⁶The untransformed descriptives for emotional congruence are as follows: PA: younger dyads: $M = 0.38$, $SD = 0.43$, older dyads: $M = 0.52$, $SD = 0.28$, mixed-age dyads: $M = 0.51$, $SD = 0.35$; NA: younger dyads: $M = 0.18$, $SD = 0.43$, older dyads: $M = 0.38$, $SD = 0.39$, mixed-age dyads: $M = 0.33$, $SD = 0.42$.

⁷To test age differences in communication satisfaction, the dyadic structure of the conversation needed to be accounted for. We therefore used the actor–partner interdependence model (APIM) that was also used for the main analyses and is described in more detail in the *Methods* section. Communication satisfaction was predicted by the empathizer’s age group (coded -1 for younger and 1 for older women). Older women were more satisfied with the conversation than younger women were (estimate = -0.027 , $SE = 0.010$, $p = .009$; intercept = 0.257 , $SE = 0.011$, $p < .001$). When additionally testing for influences of the partner’s age (coded -1 for younger and 1 for older women) or the age composition of the dyad, the empathizer’s age group remained significant (estimate = -0.028 , $SE = 0.011$, $p = .008$), whereas the partner’s age group (estimate = -0.008 , $SE = 0.011$, $p = .436$) and dyadic age composition (estimate = -0.005 , $SE = 0.011$, $p = .632$) did not predict communication satisfaction.

⁸The pattern of results and the significance levels stayed the same when we did not adjust for these outliers.

⁹For these analyses, we incorporated the three-way interaction between the empathizer’s empathic accuracy, the empathizer’s age group, and the partner’s age group. We further added the three-way interaction between the partner’s empathic accuracy, the empathizer’s age group, and the partner’s age group (as well as all lower-level interactions). The effect of the

empathizer's empathic accuracy for positive feelings remained significant (estimate = -0.039 , $SE = 0.019$, $p = .039$), and the effect of empathizer's empathic accuracy for negative feelings remained non-significant (estimate = -0.025 , $SE = 0.019$, $p = .193$). The effect of the empathizer's empathic accuracy for positive thoughts remained significant (estimate = 0.220 , $SE = 0.078$, $p = .005$), and the effect of empathizer's empathic accuracy for negative thoughts remained non-significant (estimate = 0.018 , $SE = 0.079$, $p = .821$). The main effect of the empathizer's age group remained significant in all analyses (positive feelings: estimate = -0.028 , $SE = 0.010$, $p = .007$; negative feelings: estimate = -0.028 , $SE = 0.011$, $p = .012$; positive thoughts: estimate = -0.027 , $SE = 0.011$, $p = .012$; negative thoughts: estimate = -0.029 , $SE = 0.011$, $p = .009$). The three-way interactions were non-significant for empathic accuracy for positive feelings (Empathizer's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = -0.015 , $SE = 0.019$, $p = .433$; Partner's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = 0.030 , $SE = 0.019$, $p = .117$). This was also the case for negative feelings (Empathizer's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = -0.004 , $SE = 0.019$, $p = .834$; Partner's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = 0.011 , $SE = 0.019$, $p = .561$). These three-way interactions also proved to be non-significant for positive thoughts (Empathizer's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = 0.096 , $SE = 0.078$, $p = .221$; Partner's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = -0.016 , $SE = 0.078$, $p = .842$) and for negative thoughts (Empathizer's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = 0.007 , $SE = 0.079$, $p = .924$; Partner's Empathic Accuracy x Empathizer's Age Group x Partner's Age Group: estimate = 0.096 , $SE = 0.079$, $p = .225$).

Table 1

Empathic Accuracy: Actor–Partner Interdependence Model Predicting the Empathizer’s Communication Satisfaction.

Predictors	Feelings						Thoughts					
	Positive (N = 208)			Negative (N = 202)			Positive (N = 204)			Negative (N = 204)		
	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>
Step 1												
Constant	0.256**	0.011	[0.234, 0.279]	0.260**	0.012	[0.237, 0.282]	0.258**	0.011	[0.236, 0.280]	0.258**	0.011	[0.235, 0.281]
Empathizer’s accuracy	-0.039*	0.019	[-0.077, -0.002]	-0.019	0.019	[-0.056, 0.018]	0.230**	0.077	[0.078, 0.382]	-0.006	0.077	[-0.157, 0.146]
Partner’s accuracy	-0.001	0.019	[-0.037, 0.038]	0.024	0.019	[-0.013, 0.061]	-0.047	0.077	[-0.199, 0.105]	0.020	0.077	[-0.131, 0.172]
Step 2												
Constant	0.257**	0.011	[0.235, 0.280]	0.262**	0.012	[0.239, 0.285]	0.258**	0.011	[0.236, 0.280]	0.259**	0.012	[0.236, 0.282]
Empathizer’s accuracy	-0.039*	0.019	[-0.076, -0.002]	-0.026	0.019	[-0.064, 0.011]	0.238**	0.077	[0.086, 0.390]	0.023	0.078	[-0.130, 0.176]
Partner’s accuracy	-0.002	0.019	[-0.039, 0.035]	0.017	0.019	[-0.020, 0.055]	-0.079	0.077	[-0.231, 0.073]	0.016	0.078	[-0.137, 0.169]
Empathizer’s age group	-0.029**	0.011	[-0.050, -0.009]	-0.029**	0.011	[-0.050, -0.007]	-0.029**	0.011	[-0.050, -0.008]	-0.027*	0.011	[-0.049, -0.006]
Partner’s age group	-0.008	0.011	[-0.029, 0.012]	-0.006	0.011	[-0.028, 0.015]	-0.001	0.011	[-0.022, 0.020]	-0.006	0.011	[-0.028, 0.015]
Empathizer’s Accuracy x Own Age Group	-0.016	0.018	[-0.052, 0.020]	-0.002	0.019	[-0.040, 0.036]	0.071	0.076	[-0.079, 0.222]	-0.034	0.077	[-0.186, 0.118]
Partner’s Accuracy x Own Age Group	0.027	0.018	[-0.009, 0.063]	0.022	0.019	[-0.016, 0.060]	-0.013	0.076	[-0.163, 0.137]	0.018	0.077	[-0.134, 0.170]

Note. CI = confidence interval. We report all effects as unstandardized multilevel regression coefficients. Positive thoughts denote instances in which the partner's thoughts were accompanied by positive affect that was equal to or higher than her own personal average. Negative thoughts denote instances in which the partner's thoughts were accompanied by negative affect that was equal to or higher than her personal average. Note that communication satisfaction scores were reflected and logarithmized. Empathic accuracy for thoughts was additionally inversely transformed. Only for estimates regarding empathic accuracy for feelings, is the direction of the interpretation therefore reversed.

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

Table 2

Emotional Congruence: Actor–Partner Interdependence Model Predicting the Empathizer’s Communication Satisfaction.

Predictors	Positive (N = 208)			Negative (N = 208)		
	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>
Step 1						
Constant	0.256**	0.011	[0.234, 0.278]	0.256**	0.011	[0.234, 0.279]
Emotional congruence	-0.051*	0.019	[-0.090, -0.012]	-0.020	0.021	[-0.062, 0.022]
Step 2						
Constant	0.259**	0.011	[0.237, 0.281]	0.256**	0.012	[0.233, 0.279]
Emotional congruence	-0.046*	0.019	[-0.085, -0.008]	-0.014	0.021	[-0.056, 0.028]
Empathizer’s age group	-0.027*	0.011	[-0.048, -0.007]	-0.026*	0.011	[-0.047, -0.005]
Partner’s age group	-0.008	0.011	[-0.029, 0.013]	-0.008	0.011	[-0.029, 0.013]
Emotional Congruence x Empathizer’s Age Group	-0.009	0.019	[-0.045, 0.028]	-0.030	0.020	[-0.069, 0.009]
Emotional Congruence x Partner’s Age Group	0.005	0.019	[-0.032, 0.042]	0.044*	0.020	[0.005, 0.083]
Empathizer’s Age Group x Partner’s Age Group	-0.008	0.011	[-0.030, 0.014]	-0.007	0.012	[-0.030, 0.016]
Emotional Congruence x Empathizer’s Age Group x Partner’s Age Group	0.032	0.019	[-0.007, 0.070]	-0.006	0.021	[-0.048, 0.036]

Note. CI = confidence interval. We report all effects as unstandardized multilevel regression coefficients. Note that communication satisfaction scores were reflected and logarithmized. The direction of the interpretation is therefore reversed for all estimates.

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

Table 3

Empathic Accuracy: Multiple Regression Predicting the Empathizer's Satisfaction with Social Relationships.

Predictors	Feelings						Thoughts					
	Positive (N = 206)			Negative (N = 202)			Positive (N = 204)			Negative (N = 204)		
	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>	<i>estimate</i>	<i>SE</i>	<i>95% CI</i>
Step 1												
Constant	4.647**	0.050	[4.549, 4.746]	4.632**	0.050	[4.533, 4.731]	4.651**	0.049	[4.554, 4.749]	4.652**	0.050	[4.553, 4.751]
Empathizer's accuracy	-0.078	0.086	[-0.247, 0.091]	0.098	0.087	[-0.073, 0.268]	-0.820*	0.358	[-1.525, -0.115]	0.001	0.353	[-0.695, 0.697]
Step 2												
Constant	4.643**	0.049	[4.545, 4.740]	4.638**	0.050	[4.539, 4.737]	4.653**	0.049	[4.557, 4.749]	4.646**	0.050	[4.547, 4.745]
Empathizer's accuracy	-0.060	0.085	[-0.228, 0.109]	0.116	0.088	[-0.057, 0.290]	-0.822*	0.353	[-1.519, -0.126]	-0.103	0.355	[-0.803, 0.597]
Empathizer's age group	0.109*	0.049	[0.011, 0.206]	0.117*	0.050	[0.017, 0.216]	0.106*	0.049	[0.010, 0.202]	0.106*	0.050	[0.007, 0.205]
Empathizer's Accuracy x Empathizer's Age Group	-0.102	0.085	[-0.270, 0.066]	0.070	0.088	[-0.103, 0.244]	-0.602	0.353	[-1.298, 0.095]	0.233	0.355	[-0.467, 0.933]

Note. CI = confidence interval. We report all effects as unstandardized regression coefficients. Positive thoughts denote instances in which the partner's thoughts were accompanied by positive affect that was equal to or higher than her own personal average. Negative thoughts denote instances in which the partner's thoughts were accompanied by negative affect that was equal to or higher than her personal average. Note the inverse transformation of empathic accuracy for thoughts: The direction of the interpretation is therefore reversed. When predicting relationship satisfaction with emotional congruence, all estimates were non-significant, as reported in the text.

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

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