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Everyday Empathic Accuracy in Younger and Older Couples: Do You Need to See Your Partner to Know His or Her Feelings?

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Abstract

On average, older adults are less accurate than younger adults at recognizing emotions from faces or voices. We challenge the view that such differences in emotion-recognition tasks reflect differences in empathic accuracy (the ability to infer other people's feelings): Empathic accuracy relies not only on sensory cues (e.g., emotional expressions) but also on knowledge about the target person. Using smartphone-based measures, we assessed empathic accuracy in younger and older couples' daily lives and found that younger adults' empathic accuracy was higher than older adults' empathic accuracy when their partners were visibly present. During the partners' absence, however, when judgments relied exclusively on knowledge of those partners, no age differences emerged, and performance in both age groups was still more accurate than chance. We conclude that across adulthood, sensory information and knowledge differentially support empathic accuracy. Laboratory emotion-recognition tasks may therefore underestimate older adults' empathic competencies.

Keywords

empathic accuracy, experience sampling, age differences, emotions, aging

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Think about a close friend or relative. Can you predict how this person is feeling right now, even though he or she is not present? The current study suggests that your judgment would probably be better than chance. Whereas many researchers have studied people's ability to interpret emotional expressions in the laboratory, we examined how accurately people judge others' current feelings in everyday life. The ability to correctly judge another person's internal states, such as his or her current feelings, is referred to as *empathic accuracy* (Ickes, 1993; Zaki, Bolger, & Ochsner, 2009). This ability is considered the cognitive component of empathy (e.g., Richter & Kunzmann, 2011). However, possessing it does not imply that the empathizer necessarily shares the target person's emotional state or sympathizes with him or her. Empathic accuracy is considered to be crucial for social interactions, job performance, and personal well-being (Hall, Andrzejewski, & Yopchick, 2009). Prior research has raised the possibility that this ability does not remain reliable throughout life and decreases with age, the decline beginning as early as middle adulthood. This possibility is implied by a large body of laboratory studies showing that, compared with younger adults, middle-aged and older adults do worse at reading emotions from sensory stimuli (e.g., facial expressions or voices; Lambrecht, Kreifelts, & Wildgruber, 2012; Riediger, Voelkle, Ebner, & Lindenberger, 2011; Ruffman, Halberstadt, & Murray, 2009; Ruffman, Henry, Livingstone, & Phillips, 2008). However, we propose that age differences in the specific ability to label sensory stimuli, such as emotional expressions, do not necessarily reflect differences in the ability to infer another person's feelings.

In general, when people fail to understand emotional expressions in the laboratory, it does not necessarily imply corresponding deficits in inferring others' emotions

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in daily life (Funder, 1987; Krueger & Funder, 2004). Empathic judgments (i.e., assumptions about another person's current feelings) rely not only on the adequate perception of sensory cues, such as emotional expressions, but also on acquired knowledge (Ickes, 1993; Sze, Goodkind, Gyurak, & Levenson, 2012). For instance, people may consider their knowledge about a familiar person (e.g., how tense this person usually feels at work) when making empathic judgments. This knowledge can support empathic accuracy even when the other person is absent (Wilhelm & Perrez, 2004). It seems obvious that everyday empathic accuracy is not limited to the ability to interpret any sensory information provided by the target person's emotional expressions. However, researchers who have conducted age-comparative studies have predominantly targeted people's ability to interpret sensory stimuli. Much less is known about age differences in the ability to infer another person's current feelings; this ability may rely both on interpretations of emotional expressions and on knowledge about an interaction partner. We argue that this conventional focus not only may be selective but also may underestimate older adults' everyday competencies. Building on the two-component model (i.e., mechanics and pragmatics) of intellectual functioning (Baltes, 1987; Lindenberger & Baltes, 2000), we propose that the skills required to use either sensory cues or acquired knowledge for empathic judgments are differentially affected by age. Sensory functioning (i.e., the speed of and accuracy in processing sensory information) declines across adulthood (Baltes & Lindenberger, 1997; Lin et al., 2011), but acquired knowledge is less sensitive to aging (Charness & Krampe, 2008; Salthouse, 2003). Making empathic judgments on the basis of sensory cues—an ability that is targeted when subjects are asked to label emotional expressions in traditional emotion-recognition tests—may thus be even more difficult for older adults than for younger adults. In contrast, the ability to use acquired knowledge for empathic judgments should be less affected by aging. We therefore predicted that in daily life, age differences in empathic accuracy would be larger for judgments supported by sensory cues and smaller for judgments derived exclusively from knowledge.

We tested this prediction by comparing two everyday scenarios: empathic judgments with and without the presence of the target person. In both cases, people use knowledge about a target (e.g., this person's typical mood in the morning) to judge his or her current affect. However, additional sensory cues about the target person's current affect (e.g., facial or verbal information) are available only when the target person is present. In such cases, people can use sensory cues to adjust their empathic judgments. In contrast, when a target person is absent, empathic judgments about that person must rely exclusively on knowledge acquired before the time of the judgment.

In the present study, we repeatedly assessed empathic judgments in cohabitating heterosexual couples' daily lives in both the absence and the presence of the target person. Because of the age-related decline in sensory functioning, we expected sensory cues, which are potentially provided in the partner's presence, to be more supportive of empathic accuracy for younger adults than for older adults. We therefore hypothesized that when their partners were present, younger adults would be more accurate than older adults. However, we expected younger adults' advantage over older adults to cease during the partner's absence. In short, we expected to find greater age differences when the partner was present than when the partner was absent.

Method

Participants

We recruited 100 heterosexual couples (i.e., 200 persons) from the Berlin, Germany, area by means of newspaper advertisements and a recruitment company. There were two age groups: 100 younger adults (age range = 20–30 years, M = 25.94, SD = 2.94), and 100 older adults (age range = 69–80 years, M = 74.20, SD = 2.89). The 100 members of each age group formed 50 couples. All couples cohabitated, and 6% of the younger couples and 96% of the older couples were married. The duration of the relationship for younger couples ranged from 0.82 to 11.45 years (M = 4.52, SD = 2.54) and, for the older couples, from 14.77 to 61.26 years (M = 48.62, SD = 10.16). Fifty-nine percent of the younger adults and 51% of the older adults had graduated from high school or a higher educational institution.

Emotion-recognition task

We included a conventional emotion-recognition task in our study to ensure that the sample was representative with respect to the well-established difference in facial-emotion recognition between younger and older adults as measured in the laboratory. We used 36 pictures from the FACES database (Ebner, Riediger, & Lindenberger, 2010) showing younger, middle-aged, and older men and women with angry, happy, sad, disgusted, neutral, and fearful facial expressions (six pictures for each emotion). Participants were asked to choose one of six emotion labels for each picture, and we calculated the proportion of responses in which participants correctly identified the facial expression. As expected, younger adults outperformed older adults in this test (younger adults: M = .71, SD = .09; older adults: M = .61, SD = .09). We statistically tested these results using the MIXED procedure in SAS (Version 9.1) by predicting emotion-recognition scores from age group (men: parameter estimate = −0.10, *SE* = 0.02, $p < .0001$; women: parameter estimate = −0.11, *SE* = 0.02, $p < .0001$; Fig. 1). To account for dyadic interdependencies between romantic partners, we treated partners as nested within couples and couples as the unit of analysis (Campbell & Kashy, 2002). We ran parallel models for men and women, and we requested different parameter estimates for men and women (Raudenbush, Brennan, & Barnett, 1995).

Experience sampling using smartphones

We used a smartphone-based, experience-sampling technology to capture empathic judgments in the participants' daily lives. Experience sampling collects data in people's natural living environments, capturing experiences and thoughts as they happen or shortly thereafter (Hoppmann & Riediger, 2009). Participants were provided with a Nokia E50 smartphone and responded to pseudorandomized prompts. Each participant had two roles in each measurement occasion: judging the partner's affect (i.e., the rater) and having his or her own affect judged by the partner (i.e., the target). Cohabitating partners' schedules were synchronized so that they received assessments simultaneously. We instructed couples not to talk to each other while completing the assessments. On average, participants provided 86.76 measurements (range = 72–94, *SD* = 3.48) over the course of 15 days, with six daily assessments.

Building on earlier accuracy paradigms (Ickes, Stinson, Bissonnette, & Garcia, 1990; Wilhelm & Perrez, 2004), we asked each partner to rate his or her own current affect and then his or her partner's current affect at the time of assessment using eight items for each measure, for a total of 16 ratings per person and measurement occasion. Four positive-affect items (happy, enthusiastic, balanced, content) and four negative-affect items (angry, downcast, disappointed, nervous) were included to cover low- as well as high-arousal affects for each valence and to represent prototypically variable emotions for both younger and older adults. Participants' self-ratings and judgments of their partners' affect were made on a 7-point scale ranging from 0 (*not at all*) to 6 (*very much*). For each measurement occasion, we subtracted each person's self-ratings for negative-affect items from his or her self-ratings for positive-affect items to compute a measure of affect balance. For participants' judgments about the partner's affect, we subtracted judgments for negative-affect items from judgments for positive-affect items. This yielded separate measures of participants' self-ratings (younger adults: *M* = 1.14, *SD* = 0.91; older adults: *M* = 1.45, *SD* = 0.83) and judgments of their partner's current affect (younger adults: *M* = 1.14, *SD* = 0.81; older adults: *M* = 1.39, *SD* = 0.80). Self-ratings and judgments displayed striking positive skewness when untransformed. We applied an inverse logarithmic transformation to both variables to approach normality (Tabachnick & Fidell, 2007).

After the affect ratings, participants indicated whether their partners were visible at that moment. On average, younger couples were together at 37% of the assessments (range = 11%–90%, *SD* = 17), and older couples were together at 59% of assessments (range = 18%–96%, *SD* = 24). The partners' mutual reports on their copresence diverged in 10% of the assessments. Because these differences were probably caused by delays in partners' responses to the synchronized assessment instruments, we included only those measurements (n = 15,661) in which both partners' responses about presence or absence matched.

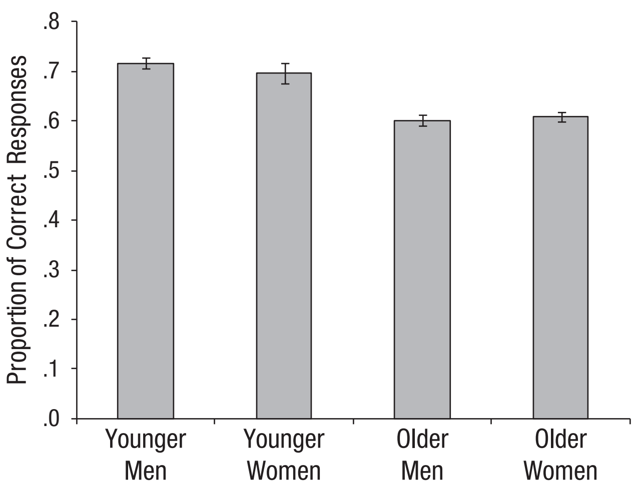

Fig. 1. Results of the model showing the proportion of correctly labeled facial expressions as a function of age and gender. Error bars represent ±2 *SE*.

Statistical analyses: modeling empathic accuracy

The basis for modeling empathic accuracy was the truth-and-bias model of judgment (West & Kenny, 2011), which we implemented in a multilevel model using the MIXED procedure in SAS 9.1. The truth-and-bias model of judgment can be used to predict a person's judgment about a target person (e.g., the rater's judgment of the target's current affect) by some criterion of accuracy (e.g., the target's self-rated current affect) while controlling for potential bias (e.g., the rater's own current affect). To model empathic accuracy, we predicted each rater's judgment by using the associated target's self-ratings across repeated assessments. Higher parameter estimates reflect higher empathic accuracy. We controlled for the rater's self-rated affect because romantic couples tend to be similar in their affects (Hoppmann, Gerstorf, Willis, & Schaie, 2011; Schoebi, 2008). Simply assuming that the partner's affect is similar to one's own may therefore enhance accuracy (West & Kenny, 2011). The present analyses accounted for this potential strategy and estimated participants' empathic accuracy above and beyond assumed similarity. We centered the two continuous predictors (i.e., both partners' self-ratings) and the dependent variable (i.e., the rater's judgment) at the personal mean of the target's self-rating. That is, we subtracted the personal mean of the target's self-ratings from each individual rating (West & Kenny, 2011). Further main predictors were the participant's age group (coded 0 for younger adults and 1 for older adults) and the partner's presence (coded 0 for absent and 1 for present). To test our hypothesis on the age-differential role of the partner's presence for empathic accuracy, we included a three-way interaction among age group, the partner's presence, and the target's self-rating, as well as all two-way interactions.[1]

Results

Our hypotheses were supported by the data. When predicting the rater's judgment of the target's affect, the three-way interaction of the target's self-rated affect, the partner's presence, and age group was significant both for men (parameter estimate = −0.12, SE = 0.04, $p < .05$) and for women (parameter estimate = −0.11, SE = 0.05, $p < .05$). This interaction effect was comparable for men and women (i.e., a contrast test by gender was not significant; parameter estimate = −0.01, SE = 0.07, p = .84). As illustrated in Figure 2, age differences in empathic accuracy depended on the presence or absence of the partner.

We further investigated the three-way interaction by repeating the analyses separately for younger and older adults (omitting the variable of age group from the model). Again, the rater's judgment of the target's affect served as the dependent variable. Predictors were the target's self-rated affect, the partner's presence, the interaction of these two variables, and the rater's self-rated affect. In line with our hypothesis, the interaction of the target's self-rated affect and the partner's presence was significant for both younger men (parameter estimate = 0.17, SE = 0.03, $p < .001$) and younger women (parameter estimate = 0.17, SE = 0.03, $p < .001$), but this interaction was not significant for older men (parameter estimate = −0.01, SE = 0.03, p = .71) or older women (parameter estimate = 0.01, SE = 0.04, p = .80). In other words, younger adults' empathic accuracy benefited from the partner's presence, whereas older adults' empathic accuracy did not.

We next checked the reported findings by running two separate analyses for absent-partner and present-partner situations (omitting the variable of the partner's presence from the model). There were no age differences when the partner was absent: The interaction of the target's self-rated affect and age group was not significant

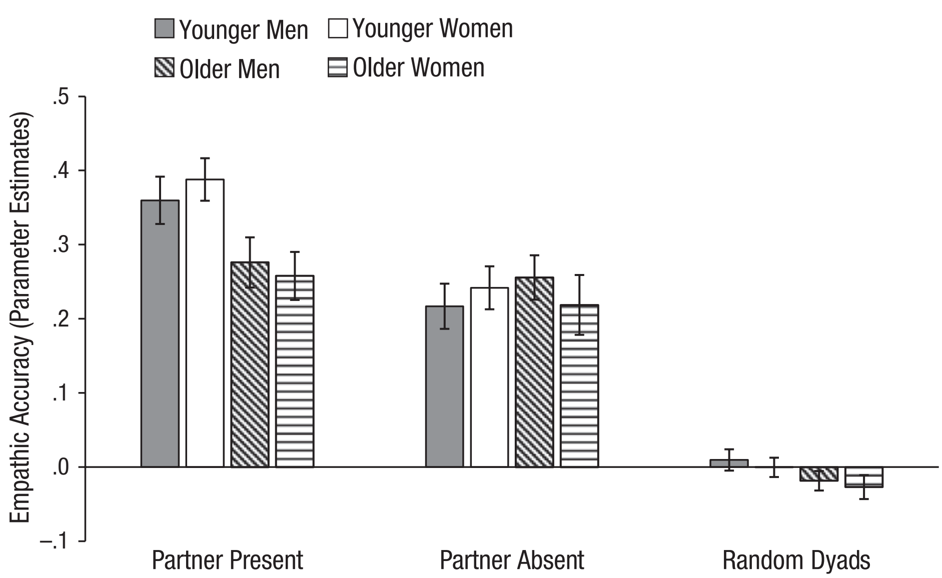

Fig. 2. Model results showing mean empathic accuracy as a function of absence or presence of romantic partner and group. Results are shown for real-life partners and for dyads in which partners were randomly swapped within age groups. Error bars represent ±2 *SE*. We ran complementary models with reversed dummy codes for dichotomous variables to generate each group of bars.

(men: parameter estimate = 0.05, *SE* = 0.05, p = .28; women: parameter estimate = −.00, *SE* = 0.05, p = .99). It is noteworthy that empathic accuracy when the partner was absent was significantly better than zero for all subsamples (younger men: parameter estimate = 0.22, *SE* = 0.03, p < .0001; younger women: parameter estimate = 0.24, *SE* = 0.03, p < .0001; older men: parameter estimate = 0.26, *SE* = 0.03, p < .0001; older women: parameter estimate = 0.22, *SE* = 0.04, p < .0001), which is consistent with the assumption that knowledge about one's partner can serve as a basis for empathic judgments when the partner is absent. In contrast, when the partner was present, there were age differences: The interaction of the target's self-rated affect and age group was significant in women (parameter estimate = −0.012, *SE* = 0.04, p < .01) and marginally significant in men (parameter estimate = −0.08, *SE* = 0.04, p = .06). There were no gender differences in any of these follow-up analyses (for gender contrasts, all ps > .47).

Next, we tested whether participants' judgments were specifically tailored to their partners or instead relied on more general clues (e.g., the time of day, the target's gender and age). We randomly swapped partners within age groups, thus creating artificial age-homogeneous, cross-gender dyads. We again predicted the rater's judgment with the random partner's self-rating, controlling for the rater's own self-rating. The estimates for empathic accuracy were not significantly different from zero, which indicates that there was no empathic accuracy in these random dyads (see Fig. 2; men: parameter estimate = 0.01, *SE* = 0.02, p = .65; women: parameter estimate = −0.03, *SE* = 0.02, p = .20).

We also explored the role of the length of the couples' relationships because, on average, older couples had longer relationships than younger couples. When repeating the analyses while controlling for relationship duration, our central finding—the three-way interaction of the target's self-rated affect, the partner's presence, and age group—remained significant both for men (parameter estimate = −0.12, *SE* = 0.04, p < .05) and for women (parameter estimate = −0.11, *SE* = 0.05, p < .05). Because relationship duration had a bimodal distribution in our sample, thus violating assumptions of normality, we additionally split the sample into equal tertiles. The first tertile, with the shortest relationships (n = 66), consisted only of younger adults; the second tertile, with medium relationship durations (n = 66), consisted of 51.4% younger adults; and the third tertile, with the longest relationships (n = 68), consisted only of older adults. We then repeated the analyses while controlling for group membership (dummy-coded with medium relationship duration as the reference group). Again, our central finding—the three-way interaction of the target's self-rated affect, the partner's presence, and age group—remained significant both for men (parameter estimate = −0.12, *SE* = 0.04, p < .05) and for women (parameter estimate = −0.11, *SE* = 0.05, p < .05).

In a last step, we examined the idea that relationship duration may influence the effect of the partner's presence on empathic accuracy. That is, we explored the explanatory value of relationship duration independent of participants' age. Within the younger and older age groups, relationship durations ranged from 0.82 to 11.45 years and from 14.77 to 61.26 years, respectively. For these two available ranges, we tested whether the effect of the partner's presence on empathic accuracy depended on the length of the couples' relationships. Here, we used relationship duration as a continuous predictor but ran the analyses separately for both age groups (within the age groups, the distribution of relationship duration approached normality). We predicted the rater's judgment from the three-way interaction of the target's self-rated affect, the partner's presence, and the couples' relationship duration (group-mean centered), as well as from all two-way interactions and main effects. The three-way interaction was not significant for younger adults (men: parameter estimate = −0.00, *SE* = 0.01, p = .98; women: parameter estimate = 0.02, *SE* = 0.01, p = .09) or for older adults (men: parameter estimate = 0.00, *SE* = 0.06, p = .99; women: parameter estimate = −0.03, *SE* = 0.13, p = .79). This result indicates that the effect of the partner's presence on empathic accuracy was independent of the length of the couples' relationships, within both ranges. Taken together, these control analyses suggest that our central finding of conditional age differences in empathic accuracy (depending on the partner's presence) was not due to differences in the relationship durations of younger and older participants.

Discussion

In this experience-sampling study, we investigated younger and older adults' empathic accuracy in daily life. Drawing on propositions of the two-component model of intellectual functioning (Baltes, 1987), we assumed divergent aging trajectories for the skills associated with using either acquired knowledge (which remains comparatively steady throughout life) or sensory cues (which decline throughout life) for empathic judgments. We predicted that age differences in empathic accuracy would be greater when the partner was visibly present than when he or she was absent.

Our results support this hypothesis. As expected, younger adults more accurately identified their partner's affect than older adults did when the partner was present, which reflects the pattern that typically emerges in laboratory studies in which emotion recognition from sensory stimuli is investigated (Ruffman et al., 2008). In contrast, there was no age difference in accuracy when the partners were apart. This age-differential pattern of results occurred because younger adults' empathic accuracy profited from the presence (vs. absence) of their partners, whereas older adults' accuracy did not. Our results rule out the possibility that participants simply applied a stable representation of their partner's affect to all ratings. This strategy would not have resulted in accuracy, which we measured as the statistical covariation of two ratings over time. It is important to note that all accuracy estimates were different from zero, which indicates that all participants were more accurate than chance. Thus, participants did not engage in random guessing, even when their partners were absent. This conclusion was further supported when we repeated our analysis after randomly swapping partners within age groups, thus creating artificial age-homogeneous, cross-gender dyads. Among those random dyads, empathic accuracy was not significantly different from zero.

The current study is, to our knowledge, the first to assess age differences in everyday empathic accuracy. As opposed to past research, which focused on age differences in the ability to interpret emotional expressions in the laboratory, the present study focused on younger and older adults' ability to infer a real target's feelings in daily life—an ability that may draw not only on the target's emotional expressions but also on additional information, such as one's acquired knowledge about the target. The experience-sampling method that we used provides enhanced ecological validity, which is considered a particular asset in age-comparative research on empathic accuracy (Isaacowitz & Stanley, 2011). Ecologically valid assessments in the complexity of daily life, however, also imply limitations concerning questions of causality. For example, we did not measure participants' use of acquired knowledge and sensory information directly; instead, we used the partner's presence or absence as a proxy variable. Experimentally manipulating the cues to a target's affect is a desirable route for future research. Furthermore, whereas the effects reported here are in line with predictions of the two-component model of intellectual aging (Baltes, 1987), our data do not address whether the observed results derive from aging-related changes or from other variables associated with age. For example, research suggests that empathic accuracy declines with relationship duration (Kilpatrick, Bissonnette, & Rusbult, 2002; Thomas, Fletcher, & Lange, 1997). Age-group differences in relationship duration may thus have contributed to mean levels in empathic accuracy. The literature does not suggest that relationship duration may differentially affect empathic accuracy (i.e., depending on the partner's presence), and our exploratory analyses also provided no support for this idea. It should be noted, however, that the variable of relationship duration had a bimodal distribution in our sample, with comparatively few cases in the medium range. Future researchers could recruit participants with wider ranges of both age and relationship duration than those covered by the present sample.

In the meantime, the present findings nevertheless offer two important implications for future research on empathic accuracy: First, in daily life, people can make relatively valid empathic judgments without using any sensory cues, which should be reflected in approaches to measuring empathic competencies. Second, people may differ in the degree to which their empathic accuracy benefits from various sources of information, which we exemplified on the basis of age-group differences. In essence, our results suggest that more comprehensive approaches to investigating empathic accuracy are needed, in terms of both the factors supporting empathic accuracy and interpersonal differences therein. In particular, they support recent calls to revisit the question of age differences in empathic competencies (Isaacowitz & Stanley, 2011; Richter, Dietzel, & Kunzmann, 2011). Coming back to the initial question of whether you could predict a social partner's current feelings when that person is absent: Your judgment would probably be better than chance, and although many abilities deteriorate with aging, this particular ability may remain reliable throughout your life.

Author Contributions

A. Rauers and M. Riediger developed the study concept and study design. M. Riediger conceptualized the dyadic smartphone-based assessment technology and coordinated its development. Testing and data collection were performed by A. Rauers and E. Blanke. A. Rauers analyzed and interpreted the data in consultation with M. Riediger and E. Blanke. A. Rauers drafted the manuscript, and M. Riediger and E. Blanke provided critical revisions. All authors approved the final version of the manuscript for submission.

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Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Note

1. To account for statistical dependencies in the dyadic longitudinal data, we followed recommendations that statistical models for longitudinal data from distinguishable dyads should accommodate two levels only, despite the conceptual appeal of three-level models (e.g., observations nested within persons, nested

within couples; Atkins, 2005; Kenny, Kashy, & Cook, 2006; Laurenceau & Bolger, 2005). Here, these two levels pertained to individuals crossed with observations, nested within couples. We used parallel multilevel models for men and for women (Bolger & Shrout, 2007; Raudenbush et al., 1995), requesting two distinct random intercepts for men and women. Beyond the variance explained by these random effects, additional variance was explained when specifying the residual structure by using the Kronecker product structure (TYPE = UN@AR(1) in SAS). We thereby accounted for (a) interdependencies due to repeated measurements over time and (b) dyadic interdependencies among the partner's ratings at a given measurement occasion (Bolger & Shrout, 2007; Kenny et al., 2006).

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