

# Implicit Accommodation to an Angry Romantic Partner: Effects on Romantic Relationship

## Persistence

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### **Abstract**

Accommodation in intimate relationships refers to the tendency to react constructively instead of retaliating when a partner behaves in a potentially destructive way. We tested the effect of implicit accommodation on romantic relationship persistence compared with the effects of explicit measures. We measured implicit accommodation with the affective valence of facial expression in response to the partner's angry facial expression using automated facial coding software. Explicit accommodation and relationship satisfaction were measured with self-reported scales. Using Bayesian analyses, we revealed that the effect of implicit accommodation credibly predicted relationship persistence above and beyond the effect of explicit measures. In conclusion, implicit accommodation may be a potent predictor of romantic relationship persistence, which provides additional information to explicit measures.

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## Implicit Accommodation to an Angry Romantic Partner: Effects on Romantic Relationship Persistence

Facial expressions of emotion play a key role in social communication and interaction (Darwin, 1872/1965). They convey affective messages to an observer, and in turn, the observer considers them as affective information (Ekman, 2003). Individuals also speculate interpersonal traits of others such as dominant personality traits or affiliative motives via facial expressions (Knutson, 1996). Moreover, emotions delivered via facial expressions in social situations carry crucial information related to the sender's attitude, which was found to predict the quality of relationships (Gottman, Levenson, & Woodin, 2001).

Previous studies found that facial expressions elicit congruent facial reactions from those who observe them (Chartrand & Bargh, 1999; Dimberg & Thunberg, 1998; Stel & Vonk, 2010). More recent studies viewed facial mimicry as unconscious motor behavior not free from a motivational system, suggesting that the imitation of facial expressions may be contingent on social contexts (Hess & Fischer, 2013; Hofman, Bos, Schutter, & van Honk, 2012). For example, the mimicry of happy face tends to be absent in competitive social interactions but present in affiliative interactions. On the other hand, the mimicry of disgust or angry faces is more likely to present in competitive situations (Hofman, Bos, Schutter, & van Honk, 2012; Likowski, Mühlberger, Seibt, Pauli, & Weyers, 2011; Seibt et al., 2013).

Individuals may also display incongruent facial reactions to others' emotional facial expression depending on their motivation consciously and unconsciously: competitive or cooperative. For instance, participants showed negative emotional reactions to a partner's display of smile when they anticipated competitive interaction with their partner before an investment game (Lanzetta & Englis, 1989). Similarly, those who were subliminally primed with competition showed an increased reaction in *corrugator supercilii*, which is related to frowning, upon witnessing computer-generated happy faces; on the other hand, in the neutral

condition, participants unintentionally attuned their facial expressions to computer-generated happy and sad expressions (Weyers, Mühlberger, Kund, Hess, & Pauli, 2009).

Besides, in close relationships, individuals often react positively to their partners' negative facial expressions. Evidence suggests that individuals in a romantic relationship show positive facial expressions to their partner's angry face but not to strangers (Häfner & Ijzerman, 2011). Likewise, individuals encountering expressions of anger by their partner in a cooperative relationship, react with positive facial expression (Seibt et al., 2013). This incongruent reaction was not observed in competitive or neutral relationships.

Positive facial reactions toward a partner's angry face can be explained by the accommodative process, whereby people react to potentially destructive behavior in an adaptive and constructive way instead of retaliating (Häfner & Ijzerman, 2011; Seibt et al., 2013). This incongruent modulation of facial expressions in response to intimate partners may benefit the relationship. In general, the facial expression of anger has a negative impact on romantic bonding (Hess & Fischer, 2013), since partner's angry face elicits a vicarious negative affect (Schrammel, Pannasch, Graupner, Mojzisch, & Velichkovsky, 2009) and can be presumed as a lack of intention to affiliate by their partners (Hess, Blairy, & Kleck, 2000; Knutson, 1996). More importantly, reciprocated angry facial expression in a romantic relationship is one of the risk factors predicting future breakups (Gottman et al., 2001). These pieces of evidence suggest that positive and soothing emotional reactions to the partner's anger—contrary to reciprocated anger—contribute to building an affiliative relationship.

Facial accommodation in romantic relationships not only provides useful information about the quality of relationship but also is a valid measure of unintended behavioral tendency. In psychology, explicit and implicit measures are distinguished by intentionality (Payne, Govorun, & Arbuckle, 2008; Schacter, Bowers, & Booker, 1989). Facial expression could be an implicit measure. This can be supported by previous studies showing that facial

accommodation is presented within 1s out of deliberate control (Häfner & Ijzerman, 2011) and in the subliminally primed cooperative condition (Seibt et al., 2013).

Implicit measures can provide additional information about romantic relationship to explicit measures. This is because explicit measures may be biased by self-

deception (Paulhus, 1984) and subjectivity issues (Nisbett & Wilson, 1977). In particular, individuals often have positive illusions to their imperfect romantic partners because of their motivation to sustain satisfactory relationships (Murray, 1999). Previous studies also support that implicit measures predict the future quality of intimate relationships better than explicit measures do.

For example, implicit attitudes toward spouses among newlyweds predicted marital satisfaction in four years (McNulty, Olson, Meltzer, & Shaffer, 2013). Greater the positive implicit attitudes toward spouses, marital satisfaction was less likely to reduce over the four years of marriage. On the other hand, explicit attitudes toward spouses did not predict long-term marital satisfaction, even though they were positively correlated with short-term marital satisfaction. Moreover, implicit measures predicted relationship persistence within one year; on the other hand, self-reported evaluations failed to reliably predict the persistence of a relationship (Lee, Rogge, & Reis, 2010).

Implicit measures of the aforementioned studies have been obtained generally by implicit associations (e.g., the Implicit Association Test; Greenwald, McGhee, & Schwartz, 1998) toward a romantic partner. Implicit associations are used to conjecture implicit attitudes toward a targeted object that people possess, which may be hard to be directly observed. What sets facial expression apart from those conventional implicit measures is that facial expression in itself is a form of social behavior. Facial expression is a pivotal element of social interaction, which brings about the exchange of emotional information and has major influence on interpersonal relationships (Darwin, 1872/1965; Gottman et al., 2001;

Hess & Fischer, 2013). Unintended facial reaction to an object can be a reliable indicator of current emotional experience (Dimberg, 1990; Dimberg, Thunberg, & Elmehed, 2000), which can be interpreted by an observer (Ekman, Freisen, & Ancoli, 1980). This visibility of facial expression makes implicit accommodation not just a measure of implicit attitudes but also a form of interpersonal behavior per se.

In this study, we tested whether implicit accommodation would predict the persistence of romantic relationships. We used unintended facial accommodation as the implicit measure of accommodative behavior (i.e., implicit accommodation). Although implicit accommodation is known to be associated with communal strength (Häfner & Ijzerman, 2011) and supportive motives (Seibt et al., 2013), the relationship between implicit accommodation and the persistence of romantic relationships has yet to be reported. We hypothesized that implicit accommodation would predict the persistence of romantic relationship in six months. In other words, the more partners react positively to their partner's angry face without intention, it is more likely to maintain romantic relationships within six months. We also compared the predictive power of implicit accommodation and explicit measures (i.e., explicit accommodation and self-reported relationship satisfaction) in predicting the persistence of romantic relationships.

## **Method**

### **Participants**

We recruited 50 heterosexual romantic couples ( $N = 100$  individuals), which is the minimum sample size for logistic regression analysis (Peng, Lee, & Ingersoll, 2002). Although our sample size is relatively small, the current study takes the advantage of Bayesian analysis as it offers not only the estimated effects of predictors but also the uncertainty of the estimated effects (Depaoli & van de Schoot, 2017). Bayesian methods allow the readers to judiciously decide the reliability of the result in reference to the precision

of the estimated effects. Thus, the small sample size is less fatal when using Bayesian methods than using the Null Hypothesis Significance Testing (Depaoli & van de Schoot, 2017; Kruschke & Liddell, 2018).

Two couples who did not complete the study procedure were not included in the analysis. Thus, a total of 48 romantic couples were included in the final analyses. Every participant was Korean. The mean ages were 23.60 ( $SD = 2.82$ ; age range:19-30) for males and 22.42 ( $SD = 2.52$ ; age range:19-30) for females. They were in a romantic relationship for an average period of 13.86 months ( $SD = 12.58$ ,  $Min\ 2$ ,  $Max\ 57$ ). All participants were awarded a \$13 gift. This study was approved by the Institutional Review Board (IRB).

### **Procedure**

Following written informed consent, participants were allocated to two independent rooms separated from their partner. Then, they were instructed to participate in the first procedure. Angry, happy, and neutral faces of each participant were photographed. Before taking the photograph, we asked the participants to recall experiences involving targeted emotion, either anger or happiness. All photographs were taken in random order. Then, participants were asked to complete a packet of self-reported measures related to explicit accommodation and relationship satisfaction.

In the second step, participants were instructed to participate in a procedure that measured implicit facial accommodation. Laptop computers (LG15U370) with a 15.6-inch monitor were used to present the facial stimuli, which were happy, neutral, and angry faces of the partner and of an opposite-sexed stranger. Each participant observed a total of six facial stimuli placed in a random order, three of their partner and three of a stranger. Within this step, the following instruction was provided to imply the social context of the experimental procedure and to bring participants' attention to the facial stimuli without revealing the experimental intentions. "We are going to start an experiment to measure your facial



expressions in response to photographs of various facial expressions. Vividly imagine that the person in the photograph is in front of you while looking at you. We are going to measure how you will react to this person. Before we start, we are going to show you several facial photographs that will be used in the experiment. Please pay attention to the faces shown on the screen.” Each facial photograph was presented for 4 s on the screen, and participants’ facial expression was recorded with a built-in webcam simultaneously. The recording duration of the current study (4 s) was based on the previous study, which suggested that facial display of emotion may last for 4 s at the most (Ekman, 2003).

After they completed the facial task, participants were to rate their subjective perception in response to each facial stimulus. Next, participants were also instructed to monitor their own partner’s facial reactions recorded in the second procedure and evaluate the partner’s affective valence. Lastly, we telephonically followed up to verify the persistence or termination of romantic relationships after 6 months.

## Measures

**Self-reported relationship satisfaction.** We used the adapted version of the Marital Satisfaction Inventory (MSI; Snyder, 1994) for unmarried couples (Yoo, 2000), which consists of 41 binary items measuring relationship satisfaction. The Cronbach’s  $\alpha$  was .91.

**Explicit accommodation.** The Exit, Voice, Loyalty, and Neglect (EVLN) scale (Rusbult, Verette, Whitney, Slovik, & Lipkus, 1991) was used to measure explicit accommodation of participants. The EVLN scale is a self-report questionnaire with 16 Likert items measuring participants’ reaction to their partner’s negative behaviors. A higher the score, participants are more likely to react favorably to the partner’s potentially destructive behaviors. The Cronbach’s  $\alpha$  was .70.

**Implicit accommodation.** In this study, we measured implicit accommodation. We recorded a sequence of accommodative facial reactions to partner’s angry face and averaged

the affective valence of the entire facial reactions. Affective valence of facial expression denotes positivity and negativity in facial expressions. We used affdex (ver. 3.4.1, Affectiva Inc.) to analyze affective valence of facial expression. Affdex is computerized facial coding software based on deep learning architectures (McDuff et al., 2016). Affdex automatically detects the activation of 14 action units and analyzes affective valence of facial expression in each frame. A valence score ranges from -100 (*negative valence*) to 100 (*positive valence*). Kulke, Feyerabend, and Schacht (2018) found that Affdex yields strongly reliable results in affective valence comparable with electromyography (EMG).

The affective valence of participants' Facial expressions in each facial video was analyzed frame by frame with Affdex. As one facial video in this study consisted of 64 frames (for 4 s), 64 valence data were obtained per facial video. To measure an affective valence score of participants' facial reaction to each facial photograph, valence data were averaged per facial video, which results in six different affective valence scores (-100 = *negative valence* and 100 = *positive valence*).

**Participants' subjective perception of facial stimuli.** Participants reported the affective valence of subjective emotional experience upon viewing each of the six facial stimuli with a 9-point Likert scale (1 = *very unpleasant*; 9 = *very pleasant*). Participants also classified the experienced emotion into one of seven categories, which were anger, disgust, fear, happiness, sadness, surprise, and neutral.

**Participants' evaluation of their own partner's facial reactions.** Participants (A) were asked to evaluate the affective valence (from 1 = *very unpleasant* to 9 = *very pleasant*) and likability (from 1 = *very hateful* to 9 = *very likable*) of partners' (B) facial reactions to the participants' (A) angry, neutral, and happy faces.

## Data Analysis

The outcome variable of this study was relationship persistence, which was measured 6

months after the research participation (0 = ended, 1 = persisted). Relationship persistence should be identical for both male and female partners in the same dyad but may differ from dyad to dyad (i.e., a between-dyad variable). Since dyadic data with a between-dyad outcome cannot be accurately analyzed by the Actor-Partner interdependence model (APIM) using multilevel modeling or structural equation modeling (Kenny, Kashy, & Cook, 2006, Chapter 7; McMahon, Pouget, & Tortu, 2006), we set a dyad as a unit of analysis in a conventional logistic regression model. In other words, male and female partners' data were merged into one data point with one outcome variable, halving the degree of freedom into 48 from 96 of the original data set. This step decreases Type I errors at the expense of a reduced degree of freedom (see Kenny et al., 2006, Chapter 2 for details).

Initially, using the sum and difference approach<sup>1</sup>, we examined whether the effects of predictors on relationship persistence would differ by means of sex. Since results revealed that the effects of implicit accommodation and explicit accommodation on relationship persistence did not significantly vary by sex, we estimated one common coefficient for both male and female partners' implicit accommodation ( $\beta_2$ ) and explicit accommodation ( $\beta_3$ ). Yet the effect of self-reported relationship satisfaction on relationship persistence did significantly vary by sex, so we estimated two coefficients for male and female partners ( $\beta_{4\text{male}}$  and  $\beta_{4\text{female}}$ ). Duration of current relationship by the time of research participation was incorporated as a control variable ( $\beta_1$ ).

We utilized the Bayesian approach to perform logistic regression analysis and to generate the marginal posterior distributions of regression coefficients. A multiple logistic regression model was tested to investigate the marginal effect of implicit accommodation

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<sup>1</sup> The dyadic average and difference of a predictor are incorporated as predictors in a multiple logistic regression model. If the coefficient of the average is not significant and the coefficient of the difference is, one can conclude that the effects of the predictor differ between male and female partners. Otherwise, the effects of male and female partners' predictor variables are regarded as identical (Kenny et al., 2006, p. 184).

after controlling for the effect of relationship duration, explicit accommodation, and male and female partners' relationship satisfaction. The posterior was generated as a Markov chain Montel Carlo (MCMC) sample using the R (R Core Team, 2017), rjags, and JAGS (Plummer, 2013; 2018), accessed with the R scripts written by Kruschke (2015). We specified a weakly informative default prior distribution for logistic models in order to minimize the influence of the prior on the posterior (Gelman, Jakulin, Pittau, & Su, 2008). The posterior distributions for the standardized regression coefficients were generated for the sake of comparing the effects of predictors and for a more intuitive understanding of odds ratios (ORs). Four chains were initialized at the maximum likelihood values of the parameters and burned in (for 1,000 steps), and a total of 100,000 steps were saved. Autocorrelation was very small in all regression models; therefore, the resulting MCMC sample seemed to be highly reliable.

## Results

### Preliminary Analyses

We examined that the mean values of the affective valences measured with Affdex would differ by facial stimuli. The 2 (target: stranger vs. partner)  $\times$  3 (facial expression: angry vs. neutral vs. happy) within-subject factor analysis with Greenhouse-Geisser correction showed that the main effects of target,  $F(1, 95) = 136.48, p < .001, \eta_p^2 = .59$ , facial expression,  $F(1.86, 176.21) = 57.98, p < .001, \eta_p^2 = .38$  were significant along with their interaction,  $F(1.94, 183.83) = 5.34, p = .006, \eta_p^2 = .05$ . Post hoc tests using Bonferroni correction revealed that participants reacted to their partners' facial expressions ( $M = 32.22, SD = 34.26$ ) more positively than strangers ( $M = 4.45, SD = 28.09$ ), regardless of facial expressions,  $ps < .001$ . Participants' facial reactions to partners' facial expressions were significantly positive in the following order,  $ps < .001$ : happy ( $M = 46.12, SD = 32.2$ ), neutral ( $M = 32.82, SD = 32.92$ ), and angry ( $M = 17.7, SD = 31.87$ ).

Participants' subjective perception of partners' angry faces ( $M = 4.64, SD = 1.77$ ) was

significantly more negative in valence than neutral ( $M = 6.99$ ,  $SD = 1.28$ ),  $t(93) = -10.46$ ,  $p < .001$ ; and happy faces ( $M = 7.94$ ,  $SD = 0.96$ ),  $t(93) = -15.31$ ,  $p < .001$ . Note that the degree of freedom was 93 instead of 95, due to two missing values for self-reports of affective valence on partner's neutral and happy faces.

Participants' implicit accommodation did not correlate with their self-reported affective valence in reaction to their partners' angry face ( $r = .16$ ,  $p = .123$ ). On the other hand, participants' implicit accommodation was significantly correlated with the affective valence ( $r = .49$ ,  $p < .001$ ) and likability ( $r = .42$ ,  $p < .001$ ) evaluated by his or her own partner.

Apart from implicit accommodation, the valence scores of participants' facial reactions to the other five facial stimuli were not associated with other study variables with three exceptions. The valence score of participants' facial reaction to their partners' neutral face was significantly correlated with participants' explicit accommodation,  $r = .23$ ,  $p = .023$ . More importantly, the valence scores in participants' facial reactions to their partners' neutral face (posterior mean  $\beta = 0.88$ , 95% HDI = 0.55, 2.04; zero deemed not credible) and to the opposite-sexed stranger's angry face (posterior mean  $\beta = 1.20$ , 95% HDI = 0.24, 2.12; zero deemed not credible) credibly predicted the relationship persistence 6 months after the research participation. However, after controlling for implicit accommodation, the uncertainty of the effects of those variables became large compared to the magnitude of the effects of the variables (i.e., zero among the credible values); whereas, the effect of implicit accommodation remained credible after controlling for those variables (posterior mean  $\beta = 1.11$ , 95% HDI = 0.00, 2.28; zero deemed not credible).

### **Descriptive Statistics and Correlations**

Table 1 displays the results of descriptive statistics and correlation analysis. Specifically, participants' implicit and explicit accommodation were positively correlated with their own and partner's relationship satisfaction. Both partners' relationship satisfaction

was positively correlated; however, implicit and explicit accommodation did not correlate between two partners.

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Table 1.

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### Main Analyses

Across the sample, 75% of couples (36 out of 48) persisted in their romantic relationships. As expected, implicit accommodation credibly predicted romantic relationship persistence after controlling for the effects of duration of relationship by the time of research participation, explicit accommodation, and male and female partners' relationship satisfaction (see Table 2). Specifically, the marginal posterior of the standardized regression coefficient for implicit accommodation ( $\beta_2$ ) had a mean of 1.37 and a 95% HDI that extended from 0.25 to 2.55. 99.61% of the 100,000 representative values in the marginal posterior were above zero; therefore, zero was considered not credible. This result indicates higher the implicit accommodation, lower the chance of romantic breakup, six months after the research participation. Among the other predictors, only the marginal effect of male partners' relationship satisfaction credibly predicted relationship persistence, marginal posterior mean  $\beta_{4_{\text{male}}} = 1.23$ , 95% HDI = 0.15, 2.38; zero deemed not credible, with 99.01% of the posterior greater than zero.

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Table 2.

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In order to investigate whether the predictors were differentially predictive of relationship persistence, we examined the posteriors for the differences of standardized regression coefficients. Results revealed that the magnitude of the estimated effect of implicit accommodation was larger compared to explicit accommodation, the posterior mean difference of  $\beta_2 - \beta_3 = 1.67$ , 95% HDI = 0.22, 3.18, with 99.10% of the differences being greater than zero; to female partners' relationship satisfaction, the posterior mean difference of  $\beta_2 - \beta_{4_{\text{female}}} = 2.25$ , 95% HDI = 0.42, 4.2, with 99.50% of differences being greater than

zero. Although, for implicit accommodation versus relationship duration, the difference of the effects could be greater than zero, the uncertainty was relatively larger, the posterior mean difference of  $\beta_2 - \beta_1 = 0.76$ , 95% HDI =  $-0.70, 2.25$ , with 85.19% of differences being greater than zero. Meanwhile, the difference of the effects was uncertain between implicit accommodation and male partners' relationship satisfaction, the posterior mean difference of  $\beta_2 - \beta_{4_{\text{male}}} = 0.14$ , 95% HDI =  $-1.49, 1.79$ , with 56.39% of differences being greater than zero.

To rule out an alternative explanation, we examined whether implicit accommodation can be explained as an amusement reaction to partner's angry face. Results showed that 17.71% of participants (17 out of 96) reported that they experienced joy when looking at their partners' angry faces. However, participants who experienced joy ( $M = 27.59, SD = 33.27$ ) and who did not ( $M = 15.58, SD = 31.38$ ) did not significantly differ in the mean value of implicit accommodation,  $t(22.54) = 1.36, p = ns$ .

### Discussion

The aim of this study was to test the effects of implicit accommodation on the persistence of a romantic relationship. We used the automated facial coding software to measure the affective valence in participants' facial reactions to their partners' angry faces (i.e., implicit accommodation). Results revealed that participants' implicit accommodation credibly predicted the persistence of romantic relationship 6 months after the research participation after controlling for explicit accommodation, self-reported relationship satisfaction, and relationship duration. Higher the levels of implicit accommodation, the greater were the chances persistence of a romantic relationship. Moreover, the effect of implicit accommodation was credibly above and beyond the effects of relationship duration, explicit accommodation, and female partners' relationship satisfaction in predicting relationship persistence. Only self-reported relationship satisfaction of male partners

predicted romantic relationship persistence in six months along with implicit accommodation. Our findings indicate that implicit accommodation is a potent predictor of romantic relationship persistence that provides independent and incremental information to self-report measures. In other words, the healthy and adaptive affective interaction through unintentional nonverbal communication between romantic partners may be evident in implicit accommodation, which cannot be obtained by conventional explicit measures.

Results of this study demonstrate that in contrast to implicitly measured accommodation, explicitly measured accommodation, which was positively correlated with one's and partner's self-reported relationship satisfaction at the initial, could not predict relationship persistence. An explanation of these results is as follows. Unintentional behaviors like implicit accommodation require less self-regulation and deliberate efforts than intentional behaviors (Gyurak, Gross, & Etkin, 2011; Hofmann, Friese, & Strack, 2009). Thus, unintentional behaviors are less likely to exploit excessive self-control and cognitive resources; therefore, they may become more apparent in situations difficult to control (i.e., emotional entanglement between romantic partners) (Finkel & Campbell, 2001; Vohs, Finkenauer, & Baumeister, 2011). On the contrary, explicit accommodation necessitates the exertion of massive self-control resources, which may result in the early dissolution of romantic relationships (Finkel & Campbell, 2001; Rusbult & Yovetich, 1994). Another possible explanation is that participants' implicit accommodation may reveal genuine attitudes toward their angry partner which can easily be misled or disguised by the use of self-deception, by lack of self-awareness, or by social desirability (Lee et al., 2010; J. K. McNulty et al., 2013; McNulty & Olson, 2015).

An alternative explanation for this result is possible. Positive reaction to a partner's negative affect may be considered as an expression of amusement rather than a soothing gesture. However, implicit accommodation did not correlate with the self-reported affective



valence of emotional experience in reaction to partner's angry face. Moreover, there was no significant difference in the level of implicit accommodation between those who reported that they felt joy and those who did not. This disproves the alternative interpretation of implicit accommodation as an expression of amusement in reaction to their partners' angry faces. Some might also claim that the effect of implicit accommodation can simply be a positive facial reaction to the partner in general or to negative facial expressions regardless of the sender. However, positive facial reactions to partners' happy and neutral faces or to a stranger's angry face were unable to credibly predict relationship persistence after controlling for implicit accommodation.

The implications of this study are as follows. First, this study provides a novel method to obtain implicit measures of accommodative behavior in close relationship. Supporting previous findings (e.g., Banse et al., 2013; Imhoff & Banse, 2011; Lee et al., 2010; McNulty et al., 2013), the current study verifies that adopting an implicit measure as well as explicit measures elicited more accurate predictions about future relationship than using explicit measures exclusively. Employing unintended facial expression as an implicit measure is a novel approach that sets this study apart from other studies with traditional implicit measures which were obtained by implicit associations. Indeed, the data of this study showed that implicit accommodation may not be only a measure of implicit attitudes to partners' angry face but also a form of nonverbal behavior, which could be observed by partners. More positive the participants' facial reactions to their partners' angry face, their partner was more likely to evaluate the facial expressions as positive and likable. On top of those facts, our findings imply that the outcomes of future studies involving romantic relationship may be enhanced by employing unintended facial expression as a measure of implicit accommodation.

Second, this study supports that unintended facial accommodation can be considered as

a nonverbal behavior in romantic relationships expressing affiliative and cooperative motives. Studies on nonverbal facial behavior have hitherto focused mostly on positive facial reaction to positive facial expression, namely facial mimicry. Few studies preliminarily showed that accommodative facial expression in response to partner's angry face is correlated with cooperative motives and the desire for affiliation (Häfner & Ijzerman, 2011; Seibt et al., 2013). Expanding on such findings, this study discovered that unintended facial accommodation can predict the persistence of romantic relationship. Indeed, it has been suggested that regulating negativity than exchanging positive emotions in close relationship is more strongly associated with the longevity of a relationship (Gottman et al., 2001). Our findings imply the need to incorporate the concept of accommodation, not just mimicry when conducting research on the prosociality of facial expressions in interpersonal interaction.

The limitations of this study are as follows. First, the sample in this study was limited to unmarried couples, and therefore, the results may not be applicable to married couples. Whether implicit accommodation affects the persistence of relationship among married couples remains to be tested in future studies. Second, we employed an experimental setting rather than actual interactions between partners in real time, which may result in different interactive outcomes between partners. Therefore, further studies are needed to test the effect of implicit accommodation in real settings. Third, it is unclear whether a better quality of romantic relationship was signified as a higher level of implicit accommodation, or a higher level of implicit accommodation resulted in a better quality of romantic relationship, resulting in a longer duration of relationship. Thus, future studies need to investigate the causal relationship between implicit accommodation and relationship quality and persistence.

Despite the limitations, this study is worthwhile in that it provides plausible evidence suggesting implicit accommodation may be a potent predictor of romantic relationship persistence. Brief and unintended facial accommodation in response to an angry partner may

evinced the healthiness of romantic relationships, which could not have been revealed using explicit measures. This study also contributes to the field of relationship research by guiding future studies to employ unintended facial expressions as implicit measures of accommodative behavior.

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**Table 1.** *Correlation between study variables*

	1	2	3
1. Relationship satisfaction	<b>.59<sup>***</sup></b>	.20 <sup>*</sup>	.22 <sup>*</sup>
2. Implicit accommodation	.27 <sup>**</sup>	<b>.28</b>	.06
3. Explicit accommodation	.41 <sup>***</sup>	.12	<b>-.02</b>
<i>M</i>	29.45	17.7	95.23
<i>SD</i>	7.96	31.87	14.04

*Note.*  $N = 96$ . The correlations between the participants' variables are presented below the diagonal; the correlations between the participants' and their partner variables are presented above the diagonal (grey cells); the unit of analysis was dyad ( $N = 48$ ) for the correlations in the diagonal (boldface).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 2.** *Prediction of romantic relationship persistence after 6 months*

Variable	OR	$\beta$	95% HDI
(Intercept)	5.75	1.75	[0.81, 2.72]
Relationship duration	1.83	0.6	[-0.34, 1.67]
Implicit accommodation	3.93	1.37	[0.25, 2.55]
Explicit accommodation	0.74	-0.3	[-1.25, 0.61]
M_Relationship satisfaction	3.41	1.23	[0.15, 2.38]
F_Relationship satisfaction	0.42	-0.88	[-2.18, 0.36]

*Note.*  $N = 48$  dyads. Prefix *M* and *F* denote male and female variables, respectively. OR = The mean value of the odds ratio in the marginal posteriors. 95% HDI = 95% highest density interval.