

WORKING PAPER NO: 515

Positive Affect Moderates Partner's Liking Effects on Trust and Attraction

Ramadhar Singh¹

Indian Institute of Management Bangalore, India
ramadhar@iimb.ernet.in

Jocelyn Shu Qing Teng

National University of Singapore, Singapore
shuqing02@hotmail.com

Naureen Bhullar

Indian Institute of Management Bangalore, India
naureenb@iimb.ernet.in

Krithiga Sankaran

Indian Institute of Management Bangalore, India
krithiga.sankaran@iimb.ernet.in

Year of Publication – May 2016

¹ **Corresponding author:** Ramadhar Singh, Organizational Behavior and Human Resource Management Area, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore 560 076, India.
Email: ramadhar@iimb.ernet.in

Positive Affect Moderates Partner's Liking Effects on Trust and Attraction**Abstract**

Attitude similarity effects on attraction seem to be mediated sequentially by positive affect, inferred attraction, and trust. That is, the first two mediators influence each other in building trust, which is translated into attraction. However, because the mediators and attraction were measured responses to attitude similarity, the correlational nature of data precluded definitive conclusions about sequence of the mediators. Further, a general model of attraction denies any causal role of positive affect. In this experiment, therefore, the authors manipulated (a) positive affect and (b) the partner's liking for the participant, and measured trust before attraction. As predicted, positive affect moderated the partner's liking effects on trust and attraction, and the interaction in trust mediated the interaction in attraction.

Keywords: positive affect, attraction, inferred attraction, sequential dependency, trust

Two phenomena in interpersonal relationships have been of great interest to social scientists since the 1950s. One is *homophily* (Lazarsfeld & Merton, 1954) or *similarity-attraction* (Byrne, 1961): People tend to be drawn to those who share attitudes, beliefs, characteristics, or values with them (see, e.g., Montoya & Horton, 2013, Montoya, Horton, & Kirchner, 2008, for meta-analyses). Another is *liking-attraction* (Backman & Secord, 1959; Gouldner, 1960): People tend to be attracted to those who signal liking for them (see, e.g., Gordon, 1996, for a meta-analysis; Montoya & Horton, 2012, for a review). Byrne (1971) interpreted inferred attraction of the partner as agreement with the participant's positive self-attitude and hence treated it as another case of attitude similarity (cf. Byrne & Griffitt, 1966; Byrne & Rhamey, 1965). However, others contend that attitude similarity implies the partner's attraction that is merely reciprocated by the participant (Aronson & Worchel, 1966; Condon & Crano, 1988). Stated simply, inferred attraction is a mediator of attitude similarity effects on interpersonal attraction.

In the research reported, the present authors investigated positive affect as a moderator and trust in the partner as a mediator of partner's liking effects on attraction. We did so for three key reasons. First, trust--the level of confidence people have that a stranger would respond to and try to satisfy their mutual needs and goals (Rempel, Holmes, & Zanna, 1985)—serves as "... the social glue in relationships, groups, and societies..." (Van Lange, 2015, p. 1). In particular, trust in the benevolent intent of the partner mediates the effects of both partner's liking (Montoya & Insko, 2008) and similar attitudes (Singh et al., 2015) on interpersonal attraction. Thus, the similarity-attraction and liking-attraction effects can parsimoniously be explained by the same underlying mechanism of trust.

Second, the early attraction studies were essentially directed at showing positive affect as the sole mediator of attitude similarity effects on attraction. That is, attitude similarity induces positive affect in the participants, which gets associated with the partner (Byrne & Clore, 1970; Singh, 1974). However, when positive affect was studied alongside the two other possible mediators of inferred attraction (Condon & Crano, 1988) and respect (Montoya & Horton, 2004) within a multiple-regression framework (Baron & Kenny, 1986), mediation by positive affect seemed hardly so straightforward. For example, positive affect measured alone mediated attitude similarity effects on attraction (Experiment 1) but did not do so when pitted against inferred

attraction and respect (Singh, Yeo, Lin, & Tan, 2007, Experiment 2). When the positive affect measure included items overlapping with the *interest* and *activation* dimensions (Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003) [which have been shown to have some cross-cultural generality (Thompson, 2007)], positive affect was a reliable mediator above and beyond the effects of respect and inferred attraction (Singh, Chen, & Wegener, 2014). Further, the three-mediator model provided a better fit to the data when positive affect, respect, and inferred attraction were treated as influencing each other rather than as acting independently. Most interestingly, sequential mediation analysis showed that positive affect accounted for attitude similarity effects on attraction via its succeeding mediators of inferred attraction and/or trust (Singh et al., 2015, Note 5, p. 20). Such results held because indirect effects of attitude similarity via one mediator were estimated while controlling for indirect effects via the alternative mediators in PROCESS Model 6 (Hayes, 2013). Although Singh et al. (2015) concluded that the respective mediators of positive affect and trust may be distal and proximal to attraction within Byrne's (1971) paradigm, they did recommend that "... future research aimed at addressing the possibility of a specific ordering might benefit from more direct manipulation of the hypothesized distal variable to examine its influence on the other mediators and on attraction" (p. 17). We agree, for the mediators and the outcome variable of attraction were all measured responses to attitude similarity in the experiments reported so far (Singh et al., 2014, 2015). Thus, the correlational nature of those data precluded definite conclusions about mediation in general (Bullock, Green, & Ha, 2010; Fiedler, Schott, & Meiser, 2011; Spencer, Zanna, & Fong, 2005; Trafimow, 2015) and sequential mediation in particular (Thoemmes, 2015).

In addition to showing sequential dependency between mediators of the similarity-attraction link, Singh et al. (2015) advocated for proximity between trust and attraction. That is, trust is closer to attraction but distal from attitude similarity. Such position seems justified by two lines of experimental evidence. First, when a predictor is experimentally manipulated along with its mediator, the effect of the predictor on the outcome variable should be eliminated or significantly reduced (Spencer et al., 2005). Contrary to this prescription, whenever attitude similarity was crossed with a mediator of either affect in the participants (Griffitt, 1970; Gouaux, 1971) or inferred attraction (Byrne & Griffitt, 1966; Byrne & Rhamey, 1965; Clore & Baldridge, 1970; Condon & Crano, 1988; Singh, 1975; Singh, Lin, Tan, & Ho, 2008), similarity effects on

attraction were never weakened. However, when inferred attraction was crossed with benevolent intent of the partner that signals trust, reciprocation of attraction occurred when the two were consistent but not when they were inconsistent (Montoya & Insko, 2008, Experiment 2). Second, and more interestingly, manipulation of the partner's benevolent intent rendered attitude similarity effects on attraction nonsignificant (Singh, Tay, & Sankaran, in press). Taken together, these findings argue for multiple mediators (Bullock et al., 2010) and their sequential effects on trust proximal to attraction (Singh et al., 2015).

To provide a better test of the sequential dependency of inferred attraction on positive affect, we manipulated the positive affect of the participant and the partner's liking for the participant, and measured trust before attraction. Notably, the first two supposedly distal mediators of attitude similarity effects on attraction preceded the measurement of the proximal mediator of trust which preceded the measurement of attraction. If the suggested sequential dependency of inferred attraction on positive affect induced by similar attitudes suggested earlier (Singh et al., 2015) has merit, the preceding induced positive affect should moderate the succeeding partner's liking effects on trust and attraction (Hypothesis 1). Moreover, the interaction in trust should mediate the interaction in attraction (Hypothesis 2). Hypothesis 1 about interaction between positive affect and partner's liking comes from the previous finding that these two mediators build upon each other, instead of acting independently, in fostering trust. If so, the interaction between two preceding mediators in trust may also account for the corresponding interaction in attraction.

The final reason for experimentally manipulating positive affect and inferred attraction--the two previously acknowledged mediators of attitude similarity effects on attraction (Singh et al., 2014, 2015)--as a moderator and a predictor, respectively, was to test a general model of interpersonal attraction in a novel way. According to Montoya and Horton (2012, 2014), attraction develops from mere cognitive assessments of the partner's *capacity* (i.e., can the partner facilitate the immediate interests/goals?) and *willingness* (i.e., is the partner willing to facilitate the pursuit of immediate interests/goals?). Moreover, any information about the possible liking of the partner for the participants (e.g., physical similarity, DeBruine, 2002; warmth, Singh et al., 2009; Hello on telephone, McAleer, Todorov, & Belin, 2014) promotes

attraction mainly via trust, that is, the willingness assessment. Montoya and Horton (2014) suggested, therefore, that the two-dimensional cognitive model of attraction can be questioned only “if ... positive affect ... were found to mediate the reciprocity [i.e., the partner’s liking] effect above the effect of the willingness assessment” (p. 68).

No such test has heretofore been reported. Nevertheless, there are some results which can be interpreted as for or against the two-dimensional cognitive model. In a study of the effects of flattery on helping (i.e., the sum of money given), for example, Vonk (2002, Experiment 2) measured mood of the participants by five positive and five negative adjectives. When she used mood as a covariate of flattery, results related to helping were unchanged as if mood did not mediate the effects of flattery on helping. In contrast, induced affect was more effective in building trust in unfamiliar persons--the usual targets in attraction studies--than in familiar ones (Dunn & Schweitzer, 2005). Given that affect had significant effects on attraction over and beyond those of attitude similarity in some early studies (e.g., Gouaux, 1971; Griffitt, 1970), we manipulated positive affect, instead of measuring it before trust, to evaluate Montoya and Horton’s (2014) suggestion. Should the partner’s liking effects on trust and attraction be moderated by the manipulated positive affect as predicted from Singh et al.’s (2015) hypothesis of sequential mediation by positive affect, inferred attraction, and trust, then both the inadequacy of the proposed two-dimensional cognitive model and also the importance of affect in relationship formation (Morry, 2007; Zajonc, 1980) would be demonstrated.

Method

Participants and Design

Undergraduate students (97 women, 23 men, *Mean* = 19.42 years, age range: 18-24) from a public university in Southeast Asia participated to fulfill their requirements of an introductory psychology module. We randomly assigned them to the four cells of a 2 (positive affect: low (0) vs. high (1)) x 2 (partner’s liking: disliking (0) vs. liking (1)) between-participants factorial design (*n*s = 30 per cell).

Cover Story

We introduced the study to each individual participant as one involving responding to others in everyday life and eventually interacting with one or two another same-sex unknown partner(s) on a problem-solving task. We made it clear that the participant would do three tasks before the face-to-face meeting with the partner(s). First, one would describe oneself by two adjectives on two sheets of paper and seal them in the envelopes given. Second, the partners in the adjacent cubicle would read that self-description and then send a message about the upcoming interaction to the participant in another sealed envelope. Finally, the participant would form an opinion of the partner for one min, and judge his or her on the Partner Opinion Questionnaire (POQ). This cover story was intended to justify the manipulated partner's liking for the participant (i.e., inferred attraction; Montoya & Insko, 2008).

Positive Affect Induction at Time 1

After collecting the sealed envelope containing the alleged self-description, the experimenter handed out an affect induction paragraph to the participant. She urged the participant to "get deeply involved in the incident described." The paragraphs were adapted from King, Hicks, Krull, and Del Gaiso (2006, Experiment 5). In the high positive affect induction condition, the paragraph described how the participant found a lost little girl in a park, facilitated a reunion between the child and her parents, and was hailed as a hero. In the low positive affect condition, in contrast, the paragraph described how the participant, while hurriedly driving to an important job interview, ran through a yellow light, crashed into another car, and killed a baby. Our decision to use these two scenarios to induce positive affect was guided by findings of King et al. (2006). The positive-mood scenario had induced higher positive affect relative to both the neutral and negative-mood scenarios. In contrast, the positive-mood scenario had induced lower negative affect than both the neutral and negative-mood scenarios. Because of our central interest in positive affect that has been found to be a reliable mediator of the similarity-attraction link (Singh et al., 2014, 2015), we used only the two extreme scenarios.

After reading the paragraph, the participant rated how *active*, *attentive*, *inspired*, and *determined* he or she felt on 5-point scales (Egloff et al., 2003; Thompson, 2007). As in previous studies (Singh et al., 2014, 2015), we averaged responses to these four items to yield an overall measure of positive affect (Cronbach's alpha (α) = .78).

Partner's Liking Manipulation at Time 2

After 10 min of collecting the first self-description envelope, the experimenter's assistant returned with another sealed envelope containing the bogus hand-written message from the first interaction partner. Following the procedure of Montoya and Insko (2008), the message began with two common sentences ("This seems to be an interesting study. I now have an idea of the interaction partner."), and ended with three other sentences manipulating the partner's low or high liking for the participant. The sentences manipulating low liking read as follows:

He [she] does not seem like a really fun and interesting person. I would really not like to get to know him [her] better. In fact, I am not at all excited about the interaction.

In contrast, the sentences manipulating high liking read as follows:

He [she] seems like a really fun and interesting person. I would really like to get to know him [her] better. In fact, I am very excited about interacting with the partner.

After reading the message, the participant inferred the partner's liking for him or her on a 5-point Likert scale, anchored by 1 (*not at all*) and 5 (*extremely*).

The first envelope containing the participant's self-description was not used at all, and the second envelope was pre-planned for participants randomly assigned to the low *versus* high liking condition. We measured positive affect at Time 1 and inferred liking by the partner at Time 2 on 5-point scales to check on the success of the two manipulations.

Trust and Attraction Measures and Procedure

Participants read the message from the partner, formed an opinion of him or her for one min, and then responded to the POQ. The POQ had four items of trust in the partner's benevolent intent (i.e., *This partner would make me feel secure; ... act benevolently toward me; ... look out for my interests, and I would find this partner to be a dependable person.*) presented before four items of behavioral attraction (i.e., *I would like to meet my partner; ... get to know this person better ... be with my partner; and I look forward to working with my partner.*).

After collecting the completed booklets, the experimenter repeated the previous procedures with those participants who were assigned to the condition of low positive affect. That is, the participant read the paragraph inducing positive affect, rated their feelings, received another sealed envelope containing the message about high liking of the partner, and judged the second partner on the POQ. Those in the condition of high positive affect but low liking by the partner received another sealed envelope containing a message indicating high liking of the partner and judged the second partner on the POQ. Such additional requirements were intended to end the experiment with similar positive experiences for all the participants. These responses were neither coded nor considered, for the data from only the first partner were of interest. As in previous studies (e.g., Byrne, 1971; Montoya & Horton, 2004), there was no actual interaction session. Each session ended with a full debriefing that included justifications for the procedures used.

Results

Manipulation Checks

To check whether the manipulated positive affect and partner's liking were effective, we performed separate 2 x 2 (Positive affect x Partner's liking) analyses of variance (ANOVAs). The mean positive affect was higher when the participant was assigned to the high positive affect condition than when he or she was assigned to the low positive affect condition of Time 1, $F(1, 116) = 9.25, p = .003, \eta_p^2 = .07$. Given that we had taken affect ratings without any information about the partner's liking at Time 1, the negligible main effects of partner's liking on positive affect (shown on the top right side) and the negligible interaction between induced affect and

liking on positive affect, $F_s(1, 116) \leq 0.78$, $ps \geq .38$, suggest a successful random assignment of the participants into the two conditions of partner's liking.

The message from the partner at Time 2 influenced inferred liking appropriately, $F(1, 116) = 461.98$, $p < .001$, $\eta_p^2 = .80$. As can also be seen in Table 1, inferred liking was higher when the partner reported high rather than low liking for the participant. Further, this effect was somewhat stronger for participants in the high ($M = 4.03$, $SD = 0.89$ vs. $M = 1.07$, $SD = 0.25$) rather than low ($M = 3.88$, $SD = 0.86$ vs. $M = 1.33$, $SD = 0.61$) positive affect condition, resulting in a marginally significant interaction between the two factors, $F(1, 116) = 2.86$, $p = .09$, $\eta_p^2 = .02$. Simple effects of the partner's liking were slightly stronger at the high, $F(1, 58) = 308.33$, $p < .001$, $\eta_p^2 = .84$, than the low level of positive affect, $F(1, 58) = 173.76$, $p < .001$, $\eta_p^2 = .75$.

Results indicated that the two experimental manipulations were successful. At Time 1, the partner's liking information was unavailable. So, there was null interaction between induced affect and partner's liking in positive affect. At Time 2, however, both manipulations were present. Thus, the marginal interaction effect on inferred liking suggests that the causal flows were from positive affect to inferred liking.

Construct Distinction

We performed a two-factor confirmatory factor analysis (CFA) of the eight responses in AMOS with a correlation between the two factors. The fit of the two-factor structural model to the data was satisfactory, $\chi^2(19) = 27.66$, $p = .09$, non-normed fit index/Tucker-Lewis index (NNFI/TLI) = .98, incremental fit index (IFI) = .99, root mean square error of approximation (RMSEA) = .06, standardized root mean residual (SRMR) = .03. In another one-factor CFA of those eight responses, however, the fit was not so good, $\chi^2(20) = 47.13$, $p = .001$, NNFI/TLI = .95, IFI = .96, RMSEA = .11, SRMR = .03. In fact, the second χ^2 was significantly larger than the first one, $\chi^2_{\Delta}(1) = 19.47$, $p < .01$. The α s of the trust and attraction responses were .86 and .90, respectively. The correlation of .81 between them suggested that trust and attraction were correlated but distinct constructs.

Moderation of Partner's Liking Effects by Positive Affect

In separate 2 x 2 ANOVAs, we found a statistically significant Positive affect x Partner's liking effect on trust, $F(1, 116) = 7.39, p = .008, \eta_p^2 = .06, \text{power} = .76$, as well as on attraction, $F(1, 116) = 5.60, p = .02, \eta_p^2 = .05, \text{power} = .65$. We present the two interaction effects in Figure 1 which has the partner's low *versus* high liking listed along the horizontal axis and the high *versus* low positive affect as the two lines.

As can be seen, the partner's liking contributed to trust much more when participants were high, $F(1, 58) = 139.72, p < .001, \eta_p^2 = .70, \text{power} = 1$, than low, $F(1, 58) = 45.52, p < .001, \eta_p^2 = .44, \text{power} = 1$, in positive affect. Likewise, the partner's liking contributed to attraction more when participants were high, $F(1, 58) = 96.09, p = .000, \eta_p^2 = .62, \text{power} = 1$, than low, $F(1, 58) = 56.14, p = .000, \eta_p^2 = .49, \text{power} = 1$, in positive affect. Taken together, these interaction effects confirm Hypothesis 1 about moderation of partner's liking effects on trust and attraction by positive affect.

Simple effects of positive affect on trust were significant when the partner's liking was low, $F(1, 58) = 6.27, p = .02, \eta_p^2 = .10, \text{power} = .69$, but not when it was high, $F(1, 58) = 1.35, p = .25, \eta_p^2 = .02, \text{power} = .21$. On attraction, however, simple effects of positive affect were marginally significant when the partner's liking was low, $F(1, 58) = 2.99, p = .09, \eta_p^2 = .05, \text{power} = .40$, as well as high, $F(1, 58) = 2.77, p = .10, \eta_p^2 = .04, \text{power} = .37$. Results point out dependency, not independence (Montoya & Horton, 2014), between positive affect and inferred attraction.

Replicating previous findings (Montoya & Insko, 2008), the main effect of the partner's liking was very strong on trust, $F(1, 116) = 165.52, p < .001, \eta_p^2 = .58$, and attraction, $F(1, 116) = 151.42, p < .001, \eta_p^2 = .57$. As can be seen in the bottom right side of Table 1, means of the trust and attraction responses were higher when the partner had expressed high than low liking for the participant. However, there was no main effect of positive affect on either response, $F(1, 116) \leq 1.93, ps \geq .17, \eta_p^2s \leq .01$.

Moderated Mediation

We first centered the two categorical predictors of positive affect and the partner's liking to their respective mean of .5 and then took their products to create the centered interaction term. In a moderated mediation analysis by PROCESS 4 in SPSS (Hayes, 2013), we specified the centered interaction term as the predictor, the two centered factors as the covariates, trust as the mediator, and attraction as the outcome variable. The output yielded (1) the indirect effect (IE) of the interaction term on attraction via trust ($IE = ab$, where a = the interaction effect on the mediator of trust; b = the mediator effect when attraction was regressed on both the predictor and the mediator), (2) the bias corrected 95% confidence interval (CI) around the IE from 5000 bootstrap re-samples, and (3) the mediation effect size (MES) (i.e., $MES = ab/c$, where c is the total effect of the predictor on attraction). We accepted the IE as significant only if its bias-corrected 95% CI excluded zero.

In Figure 2, we list the unstandardized regression coefficients from the foregoing moderated mediation analysis. As can be seen, the interaction between the two manipulated predictors of positive affect and partner's liking on trust reliably mediated the corresponding interaction effect on attraction, $IE = 0.48$, 95% CIs: 0.14, 0.88, $MES = .65$. The total interaction effect on attraction, $c = 0.74$, $t = 2.37$, $p = .02$, was rendered nonsignificant by trust, $c' = 0.27$, $t = 0.99$, $p = .33$, supporting Hypothesis 2 of moderated mediation.

To further solidify the support for Hypothesis 2, we estimated the conditional IE of the partner's liking on attraction by trust at the two levels of positive affect by PROCESS Model 8. As expected, the conditional mediation effect was stronger when the induced positive affect in participants was high, $IE = 1.36$, 95% CIs: 0.96, 1.79, $MES = .50$, than low, $IE = 0.89$, 95% CIs: 0.57, 1.29, $MES = .33$. The conditional mediation of positive affect on attraction by trust was significant in the condition of the partner's low liking, $IE = -0.35$, 95% CIs: -0.68, -0.08, $MES = .33$, but not in the condition of the partner's high liking, $IE = 0.12$, 95% CIs: -0.07, 0.33, $MES = .18$. Collectively, these conditional indirect effects further illustrate dependency of inferred attraction on positive affect in influencing the willingness assessment.

Discussion

The present research demonstrates that positive affect and inferred attraction influence each other in promoting trust in and attraction toward the partner. Given the earlier evidence for sequential dependency between the measured mediators of positive affect and inferred attraction in interpersonal attraction from attitude similarity (Singh et al., 2014, 2015), we predicted an interaction between these two manipulated distal mediators of the similarity-attraction effect. As hypothesized, positive affect moderated the partner's liking effects on trust as well as on attraction. Further, the interaction effect in trust fully mediated the interaction effect in attraction. Both of these findings constitute a novel kind of experimental-correlational confirmation (Smith, 2012) of the previous finding that positive affect determines attraction through its sequential effects on the two proposed mediators of inferred attraction and trust (Singh et al., 2015).

One objection to our evidence for the moderated mediation of the interaction in attraction by trust can be raised on the grounds that the correlation between trust and attraction was as high as .81. Such a correlation coefficient was also obtained in a previous experiment that manipulated attitude similarity and measured both inferred attraction and trust before attraction (Singh et al., 2015, Experiment 2C, Table 3). Given that our CFAs of the present data obtained satisfactory support for a two, instead of one, factor-structure and that trust and attraction were also empirically distinct constructs in several previous experiments (Montoya & Insko, 2008; Singh et al., 2015), it is likely that awareness of inferred attraction does make these two proximal variables overlap with each other considerably.

Our finding of moderated mediation has both positive and negative implications for the two-dimensional cognitive model of interpersonal attraction (Montoya & Horton, 2014). On the positive side, we demonstrate that the partner's liking effects on reciprocated attraction are indeed mediated by the willingness appraisals in both North America (Montoya & Insko, 2008) and Southeast Asia (Singh et al., 2015). Further, the same mediator of trust theoretically proximal to attraction (Montoya & Insko, 2008; Singh et al., 2016) can now parsimoniously account for the otherwise divergently construed phenomena of *similarity-attraction* (Byrne,

1961; Singh et al. 2015) and *liking-attraction* (e.g., Backman & Secord, 1959; Gouldner, 1960) in personal relationships.

On the negative side, our findings question the adequacy of the two-dimensional cognitive model of attraction. Recall that induced positive affect moderated liking effects on trust and attraction. Such moderation by an experimentally manipulated mediator of positive affect points out that even partner's liking effects on attraction may have mediators in addition to the two posited cognitive mediators of respect and trust. While affect may be necessary at the early stage of acquaintance, willingness to enter into or continue the relationship might consist of separable dimensions of perceived *acceptance* by the partner (i.e., inferred attraction) and *trust* in his or her benevolence (i.e., security that the partner would look out for the participant's interests). Thus, "... behavioral attraction might be explained better by specifying *how* affective and cognitive mediators influence each other ... rather than" (Singh et al., 2014, p. 295) ignoring cognition for affect (Byrne & Clore, 1970) or affect for cognition (Montoya & Horton, 2014).

Given our central goal of demonstrating an interaction between positive affect and inferred attraction, we manipulated incidental affect unrelated to the partner at Time 1 and inferred attraction of the partner at Time 2 and measured positive affect and inferred attraction at the two respective points of time. Positive evaluations by a partner also influence immediate mood and attraction (Singh, 1974, 1975). Thus, it is possible that the direct experience of personal rejection or acceptance by the partner can also elicit affect which may determine trust (Dunn & Schweitzer, 2005) and attraction (Singh et al., 2015). We recommend that affect should be measured after communication of rejection or acceptance by the partner in future research to investigate the further inadequacy of the two-dimensional cognitive model of attraction.

In the present case, the impact of rejection-acceptance of the participant by the partner on trust and attraction was stronger when the induced positive affect was high than low. We predicted such interaction from Singh et al.'s (2015) hypothesis of sequential mediation of the similarity-attraction link by positive affect and inferred attraction. What we demonstrated converges with the interaction pattern reported in other studies of affect and information. That is, positive affect leads people to rely more on any additional information presented than does

negative affect (e.g., Briñol, Petty, & Barden, 2007; Huntsinger, 2013). Huntsinger, Isbell, and Clore (2014) further contend that the incidental happiness and sadness confer the respective positive and negative values on the subsequently presented communication (i.e., rejection-acceptance signal) from the partner and thus activate differential processing of the information given. To us also, the flexible affective control of cognition and judgments in general is an example of sequential mediation in which affect not only precedes cognition but also moderates subsequent information processing.

Whether one tests mediation with the measured mediators (Baron & Kenny, 1986; Fiedler et al., 2011) or those manipulated with the key predictor (Spencer et al., 2005), the obtained evidence can hardly be definite about the causal pathways uncovered (Tate, 2015; Thoemmes, 2015). The measured mediators and the outcome variable are essentially correlational data which preclude definitive causal inferences (Fiedler et al., 2011; Smith, 2012; Trafimow, 2015). Likewise, the manipulated mediator fails to moderate the predictor-outcome link particularly when there are multiple distal mediators (Bullock et al., 2010; Clore & Baldridge, 1970; Condon & Crano, 1988; Griffitt, 1970; Gouaux, 1971; Singh, 1975; Singh et al., 2008). Precisely because of these methodological concerns, we manipulated two of the distal mediators of the similarity-attraction link (Singh et al., 2015) and measured only willingness assessment of the two-dimensional model of attraction (Montoya & Horton, 2014). Given the convergent evidence for the sequential mediation from both the experimental and correlational approaches of this experiment and the correlational approach of the past work (Singh et al., 2014, 2015), we are more confident of the specified sequential causal paths now than before.

Our evidence for the moderation of partner's liking effects on attraction by positive affect suggests that Vonk's (2002) evidence against mediation of the flattery-helping link by mood of the participants may be questioned on at least two grounds. First, her measure of affect might not have been as valid as was ours (Egloff et al., 2003; Thompson, 2007). Second, affect was used as a covariate, instead of a mediator (Baron & Kenny, 1986; Hayes, 2013), of helping. Accordingly, we recommend revisiting the mechanism underlying the ingratiation-helping relationship by proper mediation analysis of either the measured or manipulated positive affect.

Funding

This research was supported in part by the National University of Singapore (Grant R-581-000-049-112) and the Indian Institute of Management Bangalore (Grants 7384 and 7399E) to the first author. We thank Laura A. King for providing us with a copy of the mood induction paragraphs.

References

- Aronson, E. & Worchel, P. (1966). Similarity versus liking as determinants of interpersonal attractiveness. *Psychonomic Science*, *5*, 157-158.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.
- Backman, C. W., & Secord, P. F. (1959). The effect of perceived liking on interpersonal attraction. *Human Relations*, *12*, 379-384.
- Briñol, P., Petty, R. E., & Barden, J. (2007). Happiness versus sadness as a determinant of thought confidence in persuasion: A self-validation analysis. *Journal of Personality and Social Psychology*, *93*, 711-727. DOI: 10.1037/0022-3514.93.5.711
- Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (Don't expect an easy answer). *Journal of Personality and Social Psychology*, *98*, 550-558. DOI: 10.1037/a0018933
- Byrne, D. (1961). Interpersonal attraction and attitude similarity. *Journal of Abnormal and Social Psychology*, *62*, 713-715.
- Byrne, D. (1971). *The attraction paradigm*. New York: Academic Press.
- Byrne, D., & Clore, G. L. (1970). A reinforcement model of evaluative responses. *Personality: An International Journal*, *1*, 103-128.
- Byrne, D., & Griffitt, W. (1966). Similarity versus liking: A clarification. *Psychonomic Science*, *6*, 295-296.
- Byrne, D., & Rhamey, R. (1965). Magnitude of positive and negative reinforcements as a determinant of attraction. *Journal of Personality and Social Psychology*, *2*, 884-889.
- Clore, G. L., & Baldridge, B. (1970). The behavior of item weights in attitude-attraction research. *Journal of Experimental Social Psychology*, *6*, 177-186.
- Condon, J. W., & Crano, W. D. (1988). Inferred evaluation and the relation between attitude Similarity and interpersonal attraction. *Journal of Personality and Social Psychology*, *54*, 789-797. DOI:10.1037/0022-3514.54.5.789
- DeBruine, L. M. (2002). Facial resemblance enhances trust. *Proceedings: Biological Sciences*, *269*, 1307-1312. DOI:10.1098/rspb.2002.2034

- Dunn, J., & Schweitzer, M. (2005). Feeling and believing: The influence of emotion on trust. *Journal of Personality and Social Psychology, 88*, 736-748. DOI: 10.1037/0022-3514.88.5.736
- Egloff, B., Schmukle, S. C., Burns, L. R., Kohlmann, C. W., & Hock, M. (2003). Facets of dynamic positive affect: Differentiating joy, interest, and activation in the positive and negative affect schedule (PANAS). *Journal of Personality and Social Psychology, 85*, 528-540. DOI: 10.1037/0022-3514.85.3.528
- Fiedler, K., Schott, M., & Meiser, T. (2011). What mediation analysis can (not) do. *Journal of Experimental Social Psychology, 47*, 1231-1236. DOI: 10.1016/j.jesp.2011.05.007
- Gordon, R. A. (1996). Impact of ingratiation on judgments and evaluations: A meta-analytic investigation. *Journal of Personality and Social Psychology, 71*, 54-70.
- Gouaux, C. (1971). Induced affective states and interpersonal attraction. *Journal of Personality and Social Psychology, 20*, 37-43.
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review, 25*, 161-178.
- Griffitt, W. (1970). Environmental effects on interpersonal affective behavior: Ambient affect, temperature, and attraction. *Journal of Personality and Social Psychology, 15*, 240-244.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York: Guilford Press.
- Huntsinger, J. R. (2013). A flexible impact of affective feelings on priming effects: Assimilation and contrast. *Personality and Social Psychology Bulletin, 40*, 450-462.
DOI: 10.1177/0146167213514279
- Huntsinger, J. R., Isbell, L. M., & Clore, G. L. (2014). The affective control of thought: Malleable, not fixed. *Psychological Review, 121*, 600-618. DOI.org/10.1037/a0037669
- King, L. A., Hicks, J. A., Krull, J. L., & Del Gaiso, A. K. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology, 90*, 179-196. DOI: 10.1037/0022-3514.90.1.179
- Lazarsfeld, P. F., & Merton, R. K. (1954). Friendship as a social process: A substantive and methodological analysis. In M. Berger, T. Abel, & C. H. Page (Eds.), *Freedom and control in modern society* (pp. 18-66). New York: Van Nostrand.
- McAleer, P., Todorov, A., & Belin, P. (2014). How do you say 'Hello'? Personality impressions

- from brief novel voices. *PloS One*, *9*, e90779. DOI: 10.1371/journal.pone.0090779
- Montoya, R. M., & Horton, R. S. (2004). On the importance of cognitive evaluation as a determinant of interpersonal attraction. *Journal of Personality and Social Psychology*, *86*, 696–712. DOI: 10.1037/0022-3514.86.5.696
- Montoya, R. M., & Horton, R. S. (2012). The reciprocity of liking effect. In M. Paludi (Ed.), *The psychology of love* (pp. 39-57). Santa Barbara, CA: Praeger.
- Montoya, R. M., & Horton, R. S. (2013). A meta-analytic investigation of the processes underlying the similarity-attraction effect. *Journal of Social and Personal Relationships*, *30*, 64-94. DOI: 10.1177/0265407512452989
- Montoya, R. M., & Horton, R. S. (2014). A two-dimensional model for the study of interpersonal attraction. *Personality and Social Psychology Review*, *18*, 59-86.
DOI: 10.1177/1088868313501887
- Montoya, R. M., Horton, R. S., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, *25*, 889-922. DOI: 10.1177/0265407508096700
- Montoya, R. M., & Insko, C.A. (2008). Toward a more complete understanding of the reciprocity of liking effect. *European Journal of Social Psychology*, *38*, 477-498.
DOI: 10.1002/ejsp.431
- Morry, M. M. (2007). The attraction-similarity hypothesis among cross-sex friends: Relationship satisfaction, perceived similarities, and self-serving perceptions. *Journal of Social and Personal Relationships*, *24*, 117-138. DOI: 10.1177/0265407507072615
- Rempel, J. K., Holmes, J. G., & Zanna, M. P. (1985). Trust in close relationships. *Journal of Personality and Social Psychology*, *49*, 95-112.
- Singh, R. (1974). Reinforcement and attraction: Specifying the effects of affective states. *Journal of Research in Personality*, *8*, 294-305.
- Singh, R. (1975). Reinforcement, affect, and interpersonal attraction. *Psychologia*, *18*, 142–148.
- Singh, R., Chen, F., & Wegener, D. T. (2014). The similarity-attraction link: Sequential versus parallel multiple-mediator models involving inferred attraction, respect, and positive affect. *Basic and Applied Social Psychology*, *36*, 281-298.
DOI: 10.1080/01973533.2014.912583
- Singh, R., Lin, P. K. F, Tan, H. L., & Ho, L. J. (2008). Evaluations, attitude similarity, and

- interpersonal attraction: Testing the hypothesis of weighting interference across responses. *Basic and Applied Social Psychology*, 30, 241-252. DOI: 10.1080/01973530802375052
- Singh, R., Simons, J. J. P., Young, D. P. C. Y., Sim, B. S. X., Chai, X. T., Singh, S., & Chiou, S. Y. (2009). Trust and respect as mediators of the other- and self-profitable trait effects on interpersonal attraction. *European Journal of Social Psychology*, 39, 1021-1038. DOI: 10.1002/ejsp.605
- Singh, R., Tay, Y. Y., & Sankaran, K. (2016). Causal role of trust in interpersonal attraction from attitude similarity. *Journal of Social and Personal Relationships*, 33, in press.
- Singh, R., Wegener, D. T., Sankaran, K., Singh, S., Lin, P. K. F., Seow, M. X., Teng, J. S. Q., & Shuli, S. (2015). On the importance of trust in interpersonal attraction from attitude similarity. *Journal of Social and Personal Relationships*, 32, 829-850. DOI: 10.1177/0265407515576993
- Singh, R., Yeo, S. E., Lin, P. K. F., & Tan, L. (2007). Multiple mediators of the attitude similarity-attraction relationship: Dominance of inferred attraction and subtlety of affect. *Basic and Applied Social Psychology*, 29, 61-74. DOI: 10.1080/01973530701331007
- Smith, E. R. (2012). Editorial. *Journal of Personality and Social Psychology*, 102, 1-3. DOI: 10.1037/a0026676.
- Spencer, S. J., Zanna M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89, 845-851. DOI: 10.1037/0022-3514.89.6.845
- Tate, C. U. (2015). On the overuse and misuse of mediation analysis: It may be a matter of timing. *Basic and Applied Social Psychology*, 37, 235-246. DOI: 10.1080/01973533.2015.1062380
- Thoemmes, F. (2015). Reversing arrows in mediation models does not distinguish plausible models. *Basic and Applied Social Psychology*, 37, 226-234. DOI: 10.1080/01973533.2015.1049351
- Thompson, E. R. (2007). Development and validation of an internationally reliable short form of the positive and negative affect schedule (PANAS). *Journal of Cross Cultural Psychology*, 38, 227-242. DOI:10.1177/0022022106297301

Trafimow, D. (2015). Introduction to the special issue on mediation analyses: What if planetary scientists used mediation analysis to infer causation? *Basic and Applied Social Psychology, 37*, 226-234. DOI: 10.1080/01973533.2015.1064290

Van Lange, P. A. (2015). Generalized trust four lessons from genetics and culture. *Current Directions in Psychological Science, 24*, 71-76. DOI: 10.1177/0963721414552473

Vonk, R. (2002). Self-serving interpretations of flattery: Why ingratiation works. *Journal of Personality and Social Psychology, 82*, 515-526. DOI: 10.1037/0022-3514.82.4.515

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070. DOI: [10.1037/0022-3514.54.6.1063](https://doi.org/10.1037/0022-3514.54.6.1063)

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*, 151-175.

Table 1

Mean and Standard Deviation (SD) of Positive Affect, Inferred Attraction, Trust, and Attraction at the Manipulated Levels of Positive Affect and the Partner’s Liking

Responses	Positive Affect		Partner’s Liking	
	Low	High	Low	High
Manipulation Checks				
Positive Affect at Time 1	1.89 ^b (0.66)	2.34 ^a (0.91)	2.13 (0.80)	2.10 (0.86)
Inferred Attraction at Time 2	2.60 (1.48)	2.55 (1.63)	1.20 ^b (0.48)	3.95 ^a (0.87)
Mediator and Outcome Variables				
Trust	3.68 (1.06)	3.49 (1.29)	2.70 ^b (0.91)	4.48 ^a (0.61)
Attraction	3.67 (1.12)	3.59 (1.47)	2.67 ^b (1.02)	4.60 ^a (0.69)

Note. The value below the mean is the corresponding *SD*. The column means with different superscripts differ significantly at $ps \leq .001$. $ns = 30$ per cell.

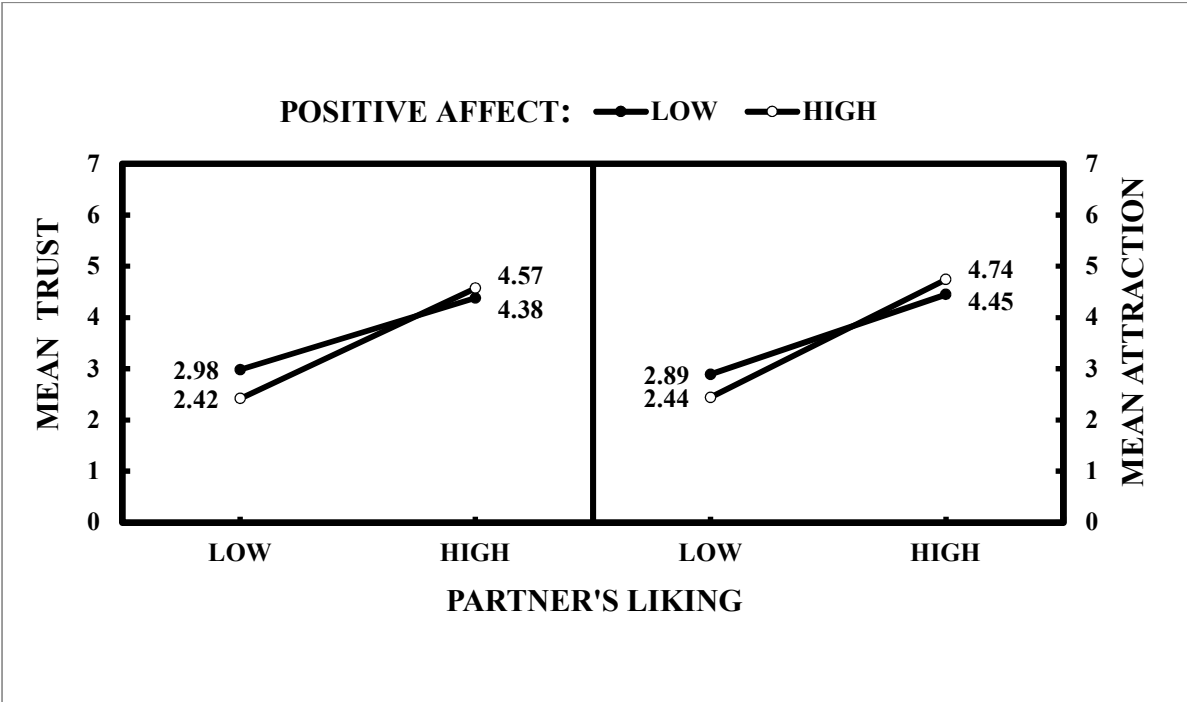


Figure 1. Profiles of the Positive affect x Partner's liking effects on the trust and attraction responses.

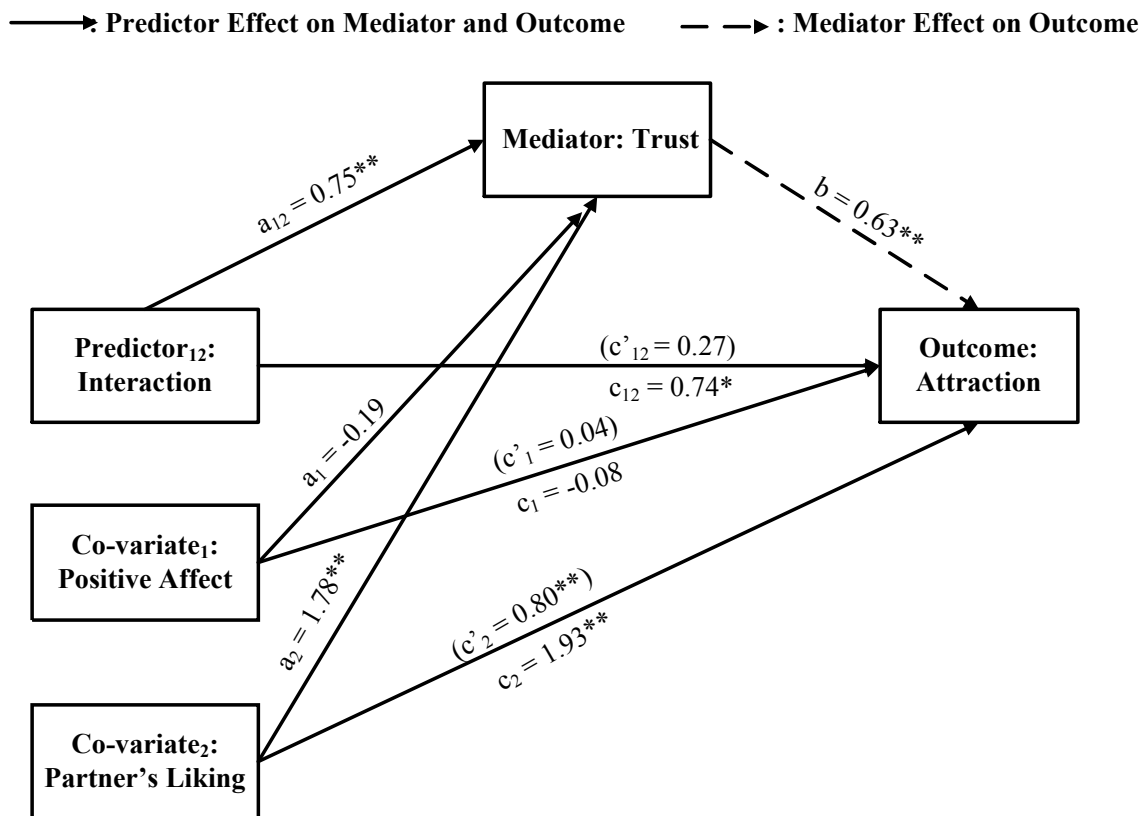


Figure 2. Unstandardized beta coefficients from the moderated mediation analysis of the interaction between positive affect and the partner’s liking in attraction by the corresponding interaction in trust. $*p \leq .05$; $**p \leq .01$.