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ORIGINAL PAPER

Couples' interpersonal behavior and depressive symptoms at the trait and state-level

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Abstract

Increasingly, psychopathology is studied from an explicit interpersonal perspective, focusing on the two fundamental dimensions of interpersonal functioning: agency and communion. While theories of depression and empirical findings indicate the significance of agentic and communal behaviors in depression and overall well-being, there has not been a thorough examination of depressive symptoms in relation to agentic and communal behaviors in social interactions. To address this gap, in the present study, we examined how daily life own and perceived partner agentic and communal behavior (operationalized as dominant vs. submissive, and warm vs. cold behaviors), and complementarity between partners (i.e., contrastive agentic and symmetrical communal behavior) relate to depressive symptomatology at the trait level, and negative and positive affect at the state level. The data were collected in 2014–2015 from 50 Dutch-speaking heterosexual romantic couples using experience sampling methodology (ESM). Couples reported on depressive symptoms before the ESM period, and reported on their own and perceived partner agentic and communal behavior, and affect 10 times per day for 7 days. Contrary to our hypotheses, neither aggregated own and perceived partner interpersonal behavior nor momentary complementarity was related to depressive symptomatology. At the state level, we found that positive and negative affect were predicted by momentary own and perceived agentic and communal behavior *separately*, not necessarily by complementarity in own and perceived partner behavior. Moreover, communal behaviors explained more variance in momentary affect than agentic behaviors. Overall, our findings suggest that agentic and communal behaviors have implications for affect, however, contrary to interpersonal theory, complementarity of interpersonal behaviors between partners at the momentary level is not necessarily associated with momentary affect.

Keywords Agency · Communion · Affect · Depressive symptoms

Prominent theories of depression, from cognitive (Beck, 1983) over psychodynamic (Blatt, 2005) to interpersonal perspectives (Coyne, 1976), highlight the importance of interpersonal functioning in explaining depressive symptomatology (for similar perspectives see e.g., Schilbach et al., 2013). However, depression research has mainly focused on the role of intrapersonal processes such as cognitive biases, emotion regulation difficulties, or maladaptive beliefs of the individual (Joormann & Stanton, 2016; Nieto et al., 2020), and only scattered research has focused on isolated interpersonal factors or psychopathological processes such as attachment styles and excessive reassurance seeking.

Recently, there has been a growing interest in systematically studying psychopathology from an interpersonal perspective (Gilboa-Schechtman et al., 2023; Wright et al., 2023). For instance, the Contemporary Integrative Interpersonal Theory (CIIT) views psychopathology as reflecting problems surrounding agency and communion, two basic dimensions of interpersonal functioning (Hopwood et al., 2021; Horowitz, 2005). Agency refers to motives related to being in control, leading, and self-definition, and translates into behavior as being controlling and dominant on one end to being submissive on the other. *Communion* pertains to motives of getting along and being close with

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others– behaviorally presenting itself from being warm to being cold or hostile (Bakan, 1966; Grosse Holtforth et al., 2010).

According to interpersonal theory (Horowitz, 2005; Pincus, 2005; Wiggins, 1996), the original theory CIIT is based on, one of the typical patterns of interpersonal functioning is the principle of complementarity which suggests that contrastive behaviors in the agency dimension and mirroring behaviors in the communion dimension characterize adaptive or normative social interactions. It is further suggested in CIIT that non-complementary interactions where agentic and communal motives of the individuals are frustrated can feed into psychopathology.

Although theories and empirical evidence suggest that agentic and communal behaviors play an important role in depression and overall well-being, depressive symptoms have not been comprehensively investigated in relation to the frustration of agentic and communal motives in social interactions. Elucidating the role of these interpersonal facets in depressive symptoms may provide important insights into how depressive symptoms may arise, be maintained and intervened upon from an explicitly interpersonal viewpoint. In this study, we therefore aim to examine how agentic and communal behaviors, as reflections of satisfaction and frustration of agentic and communal motives, in social interactions of the individual and their romantic partner (as perceived by the individual) relate to depressive symptoms at both the trait and state-level.

Agency

The first motive underlying interpersonal functioning is agency. Many accounts of depression imply a loss of agency and increased submissiveness in depressive experience. From an evolutionary perspective, social rank theory (Gilbert, 2016) posits that depression has evolved as a response to defeat in social competition, that is, failing to attain any outcome valuable to others (e.g., being selected as a romantic partner/friend, having a say in a relationship). It is thought that the depressive response protects the person from further instances of failure. Other accounts of depression also mention a lack of assertiveness and perceived lack of control in relationships (Rubenstein et al., 2016), submissive behavior to minimize social burden/threat (Allen & Badcock, 2003), and submissiveness due to fear of abandonment or humiliation (see sociotropy and autonomy vulnerability factors; Beck, 1983). Supporting these theories, ample research shows that the interpersonal style of individuals with depressive symptoms largely falls into a submissive style, although there is some variability (e.g., Cain et al., 2012; Dinger et al., 2015; Grosse Holtforth et al., 2014).

Echoing these theories and empirical evidence in daily emotional well-being, heightened negative affect has been linked with reduced power (i.e., having less influence on others, a component of agency) (Keltner et al., 2003), increased submissive behavior (Sadikaj et al., 2013), and perceived other's high agentic behavior in a clinical sample involving individuals with personality disorders (Wright et al., 2017). At the same time, a sense of power, and thus higher influence, as well as higher agentic behavior than usual, increases the likelihood of positive emotions (Keltner et al., 2003).

So far, studies have largely examined only the individual—focusing on depressed individuals' typical way of relating to others or the individuals' interpersonal behavior and its link with affect in the moment. However, to understand how the satisfaction or frustration of motives contribute to the person's well-being, it is crucial to consider other people's behavior as well as how it interacts with the individual's behavior (i.e., complementarity). Specifically, interpersonal behaviors reflect motives, drives that direct behaviors toward desired (interpersonal) outcomes (McClelland, 1988), which are either satisfied or frustrated by other people, which can consequently impact individuals' affect (Horowitz et al., 2006).

With regards to agency, a complementary interaction involves contrastive reactions where dominant behavior invites the other to behave submissively and vice versa. As such, if both partners are dominant or submissive, this would lead their motives to be frustrated and potentially be linked to maladaptive outcomes (Wright et al., 2023). Indeed, lab studies, where individuals' interpersonal behaviors are rated second-by-second, show that individuals who engage in interactions that are complementary in agency dimension are more satisfied with the interaction (Dryer & Horowitz, 1997) and find the other person more likable (Kurzius et al., 2022). Here, complementarity in agency means that momentary bids for being in control were met with being submissive (e.g., following the instructions of the other person) within small fragments of the overall interaction. However, a lab study in couples assessing complementarity on an overall interaction level (i.e., where participants report agentic and communal behaviors of the self and the partner after the end of the interaction) suggested that high levels of control (i.e., high agency), and not non-complementarity per se, is associated with higher negative affect (Cundiff et al., 2015). This study suggests that the main effects of own and perceived partner agency should be considered as well when investigating complementarity, and that it is also imperative to consider at which time-scale complementarity is examined.

It could be that within-situation second-by-second complementarity, measured in laboratory paradigms, reflects

whether momentary bids for being in control/dominant or being close are being satisfied or frustrated. On the other hand, interaction-level complementarity may indicate whether there is an (in)balance of power or warmth in the interaction as a whole. Studies so far have mainly focused on complementarity on a second-by second level in laboratory paradigms (Dryer & Horowitz, 1997; Kurzius et al., 2022), offering a fine-grained assessment of complementarity, or on an interaction-level in the lab (Cundiff et al., 2015) and in daily life (Halberstadt et al., 2023), perhaps capturing outcomes or overall impressions of specific interactions. However, it is also important to capture complementarity in ongoing interpersonal behaviors as they unfold in daily life, rather than as a summary of an interaction, as measured in interaction-level complementarity. Thus, assessing momentary complementarity in daily life, which lies between second-by-second and interaction-level complementarity, can offer a more comprehensive picture of complementarity in daily life. Additionally, this approach may enable us to capture situations involving implicit or ambiguous interactions.

Up to now, only one study has looked at complementarity in agency and affect link in daily interactions, asking participants to report interpersonal behaviors after each social interaction. Using a difference score to compute complementarity, they found that individuals' agentic complementarity was associated with positive affect (Halberstadt et al., 2023). However, further research is needed to gain insight into how own and perceived agentic behavior separately, and together (i.e., their interaction), play a role in shaping daily affect.

Communion

The second motive that drives interpersonal behavior is communion. The link between communal behavior and depressive symptoms seems more complex. For instance, cognitive theories of depression posit that, depending on personality vulnerabilities, there are differences in communal behavior. Specifically, some individuals' depressive experience involves displaying behaviors high in communion, due to being extremely concerned about having positive exchanges with others. Others, however, tend to act less warm (e.g., withdraw from relationships) due to fear of losing their independence and control (Beck, 1983). Indeed, some empirical studies found that individuals with depressive symptoms tend to have an interpersonal style that is high in communion while others suggested that they are prone to be colder (e.g., Cain et al., 2012; Dinger et al., 2015; Grosse Holtforth et al., 2014), and also that conflict discussions between partners tend to become less communal over the course of the interaction when husbands' depressive symptoms are high (Lizdek et al., 2016). In line with these findings, a qualitative study on couples where a partner experienced depression found that partners of depressed individuals mention two types of interpersonal behavior of their partner, who either show an extreme desire to be close or engage in withdrawing behavior (Sharabi et al., 2016).

Unsurprisingly, studies suggest that own and perceived other high communal behavior are linked to high positive affect and low negative affect (Sadikaj et al., 2011; Wang et al., 2014), while own (Rappaport et al., 2017) and perceived quarrelsome (i.e., low communal) behavior has been associated with negative affect (Kaurin et al., 2022).

Contrary to reciprocity in agency dimension, complementarity in communion implies mirroring/similar behavior, such that warm behavior (i.e., high communion) normally invites warm behavior and cold behavior invites cold behavior (Kiesler, 1983). This implies that if partners are on opposite sides of communion, their motives are frustrated, and this would lead to maladaptive outcomes. For instance, a study involving a lab interaction task suggests that, if both partners are high in communion, they report relationship satisfaction and positive affect (Slotter et al., 2023), while if one of the partners is acting distant or hostile this is linked with low satisfaction and frustration. Moreover, communal complementarity is suggested to be especially related to emotional well-being as it is more closely linked with affect than agentic complementarity (Halberstadt et al., 2023). Arguably, when one's own communal behavior is higher (i.e., behaving or feeling warmer) than their partner's, individuals may experience more negative affect, for example, feeling rejected, compared to situations where they perceive their partner to be warmer than them. This is also in line with rejection sensitivity that has been associated with depressive symptoms (Gao et al., 2017).

Importantly, complementarity hypothesis suggests that if both partners are low in communion, their interactions would be complementary, thus adaptive. The reasoning behind it is that, theoretically, the motive underlying low communal behavior is to distance oneself from the other. Therefore, if the other reciprocates with low communal behavior, the person's motive would be satisfied. However, behaviors that are low in communion have been associated with anger, irritability, and dissatisfaction in close relationships (e.g., Gottman, 1979). Indeed, low communal behaviors are often driven by negative emotions and frustration of belongingness motives (see e.g., Baumeister, 2012; Gerber & Wheeler, 2017). In addition, empirical studies call into question CIIT's assumption that interactions where both individuals are low in communion are complementary, thus would be associated with favorable affect, since individuals often tend to have high communal motives and, thus,

some frustration is likely to occur when both sides show low communal behavior (Fournier et al., 2009; Horowitz et al., 2006). Therefore, it is more reasonable to expect negative outcomes when both partners are low in communion.

This study

In the present study, we sought to investigate how one's own and the perception of other's interpersonal behavior, and the interaction between the two, are linked with depressive symptoms. Importantly, we investigate this both at the trait level, by looking at the aggregate interpersonal behaviors in relation to depressive symptoms, and at the state-level by examining in the moment associations with low positive and high negative affect (two main proxies of depressive symptoms in daily life). This moment-to-moment interaction is important because daily frustration or lack of satisfaction of one's interpersonal motives, reflected as noncomplementary interactions with partner, may lead to prolonged negative affect and low positive affect which then cumulatively contributes to depressive experience. We will investigate these associations in intensive longitudinal dyadic data involving romantic partners that report multiple times a day for one week on agentic and communal behaviors of themselves and their partner as well as negative and positive affect.

For the agency dimension, based on reviewed theories and empirical research, we hypothesize that there will be a main effect of own submissiveness (i.e., low agency) on depressive symptoms such that aggregate own low agency will be associated with depressive symptoms at the trait-level and low agency will be related to high negative affect and low positive affect at the state-level. We do not expect a main effect of perceived agency since, following the complementarity hypothesis, what should matter is whether the individual's behavior is complemented or not. Following the complementarity hypothesis which assumes that contrastive agency-related behaviors are complementary, we hypothesize that if both partners are low in agency, this will be linked with exacerbated depressive symptoms at the trait-level, and high negative and low positive emotions at the state level. Whereas, when they are contrasted such that the individual is low and the partner is high in agency, the main effect of submissiveness on depressive symptoms will be attenuated.

For the communion dimension, we expect a main effect of own and perceived partner communion such that high own and perceived partner communion will be linked with low depressive symptoms at the trait level, and high positive and low negative affect at the state level. We also expect an interaction effect of own and perceived partner communion such that if both partners are high in communion, this will be linked with lower depressive symptoms and low negative and high positive affect. However, when both partners are cold, we expect that this will be associated with high depressive symptoms and high negative and low positive affect.

At the same time, if own and partner communal behavior are contrastive, this will be associated with depressive symptoms at the trait-level, and high negative and low positive emotions at the state-level. Further, due to possible rejection sensitivity that has been linked with depressive symptoms (Gao et al., 2017), we hypothesize that, when the individual is higher in communion compared to the partner, this would be linked with worse outcomes compared to when partner's communal behavior is higher than the individual's.

To our knowledge, there is no study that investigated complementarity and its link with depressive symptoms at the trait level. At the state level, there has been only one recent study that examined how perceived complementarity relate to affect in daily life (Halberstadt et al., 2023). In this study, complementarity in communal behaviors, as measured by a difference score, was more predictive of affect than complementarity in agentic behaviors. However, with difference scores, one cannot disentangle which predictors (i.e., own or partner agency/communion or both) are driving the association between the difference score and the outcomes. Moreover, it assumes that incongruence at all levels (e.g., when both partners are submissive vs. dominant) would equally be associated with the outcome (i.e., depressive symptoms) (see Nestler et al., 2019). In order to specifically examine the effect of complementarity on depressive symptoms and affect, one has to control for the main effects. Thus, we will investigate how own and perceived interpersonal behavior of the partner and the interaction of the two will be linked with depressive symptoms and related affect.

Method

Participants

Fifty Dutch-speaking couples (N = 100) were recruited in Belgium as part of a larger study conducted in 2014–2015 on romantic relationships (see OSF for the list of publications that used this data; https://osf.io/bqe57/) through social media, flyers, and advertisements in community and therapy centers. Couples were included if they were (1) in a relationship for at least two months, (2) over the age of 18, and (3) self-described as heterosexual. Couples were selected of varying age, relationship duration, and cohabitation status to ensure a representative sample. There were no a priori power analyses for ideal sample size as there were limited guidelines for power analysis in dyadic data when the data was collected. The mean age of the participants

was 27.75 years (*SD* = 10.60; range: 18–70) with an average relationship duration of 6 years (*SD* = 8.98 years), ranging from 2 months to 35 years. Out of these couples, ten were married, 18 were unmarried but cohabiting, and 22 lived separately. Sixty percent of the participants held a university degree. Compliance rate in ESM period was 92.03% (N = 6465). Participants reported that they had contact with their partner since the last beep 78.22% of the beeps. Participants were compensated with 40 euros for their participation. The data collection protocol was approved by the Social and Societal Ethics Committee of KU Leuven.

Procedure

Participants were invited to the lab, where they gave informed consent and completed background questionnaires. Next, they were given smartphones and were informed about the experience sampling method. Participants received 10 notifications (i.e., questionnaires) randomly in 1 hour intervals for 7 days. The time frame for these notifications ranged from 10 AM to 10 PM. Notifications were synchronized within couples, ensuring that they received the notifications at the same time. With each notification, they answered a number of questions in a randomized fashion to inhibit collaboration.

Measures

State-level measures

Own and perceived agentic and communal behavior. Following the CIIT and interpersonal circumplex literature, dominance was selected as a representative behavior of the agentic dimension, while warmth was chosen as a representative behavior of the communal dimension (Hopwood et al., 2019; Horowitz et al., 2006; Wright et al., 2023). At each notification, participants indicated how they behaved towards their partner on agency (ranging from submissive to dominant) and communion (ranging from cold to warm) using a 9 × 9 interpersonal grid (Moskowitz & Zuroff, 2005) such that both agency and communion scores ranged from 0 to 8. Specifically, they were asked "Indicate how you behave/come across towards your partner at the moment".

Similarly, participants reported how they perceived their partners' behavior in terms of agency and communion at each notification using the interpersonal grid, by indicating "how you perceive your partner's behavior towards you at the moment".

Negative affect. Participants reported how sad, anxious, depressed, and angry they were at the moment on a scale of 100 (0 = "not at all", 100 = "very much"). Specifically, they were asked, for example, "How angry do you feel at this moment?". The wording of questions for every emotion was identical. In the analysis, negative affect was calculated as the average of sad, depressed, angry, and anxious emotions of the participant per time point. Within-subject reliability of negative emotions (ω = 76) and between-subject reliability were high (ω = .96).

Positive affect. Participants also reported how relaxed, satisfied, happy, and cheerful they were at the moment using a scale of 100 (0 = "not at all", 100 = "very much"). The wording of the questions were identical to the questions for negative affect. In the analysis, positive affect was calculated as the average of relaxed, satisfied, happy, and cheerful emotions of the participant per time point (within-subject omega (*ω*):.82, between-subject omega (*ω*) = .98).

Trait-level measures

Trait-level own and perceived agentic and communal behavior were calculated as the mean own and perceived agentic and communal behavior reports per participant over the course of the experience sampling procedure.

Depressive symptoms were measured with the Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The scale consists of 20 items assessing the frequency of depressive symptoms in the past week (e.g., "I felt depressed", "I had crying spells"). The answers were on a scale of 0 to 3 (i.e., 0 = "rarely or none of the time [less than 1 day]" to 3 = "most or all of the time [5–7 days]"). The scores were summed, with 60 as the maximum score. CES-D scores were overall relatively low, ranging from 1 to 32 (*M* = 11.96, *SD* = 7.17).

Data-analytic procedure

Before conducting the trait and state-level analyses, we calculated within- and between-person correlations between the variables of interest (see Figs. 1 and 2; also see descriptive Table 1).

Trait-level analysis

We ran two multilevel models for each dimension (i.e., agency and communion), predicting depressive symptoms from aggregated (over 70 time points) own agentic/communal behavior, perceived partner agentic/communal behavior, and the interaction of the two where aggregated agentic and communal behaviors (level 1) were nested within dyads (level 2). Here, the interaction term refers to complementarity, allowing us to examine the link between the combinations of own and perceived partner interpersonal behaviors and depressive symptoms, controlling for main effects (see

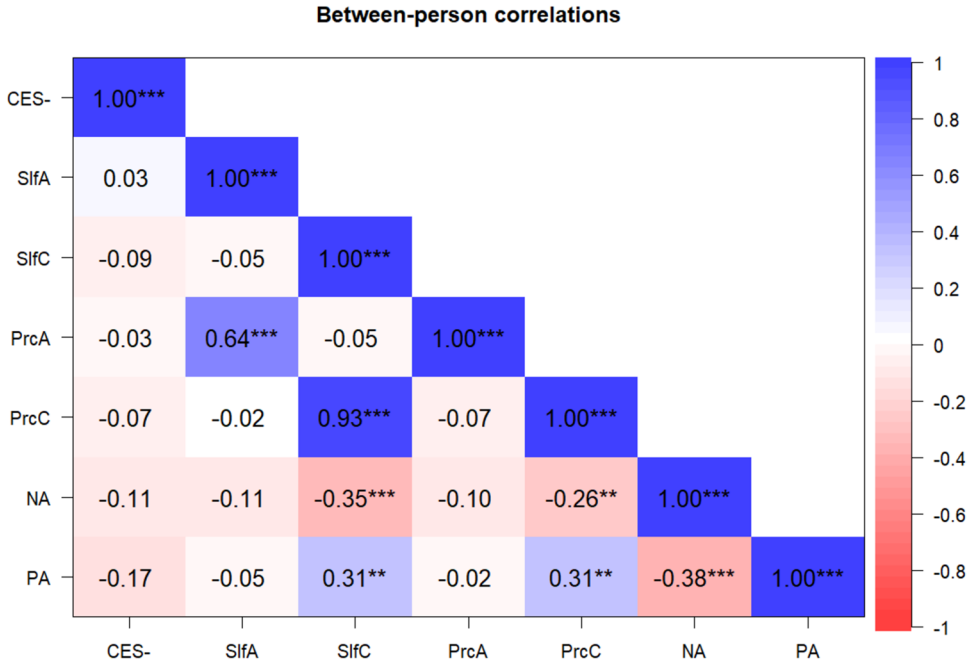


Fig. 1 Trait-level between person correlations. *SlfA* Own agency, *SlfC* Own communion, *PrcA* Perceived Partner Agency, *PrcC* Perceived Partner Communion, *NA* Negative Affect, *PA* Positive Affect

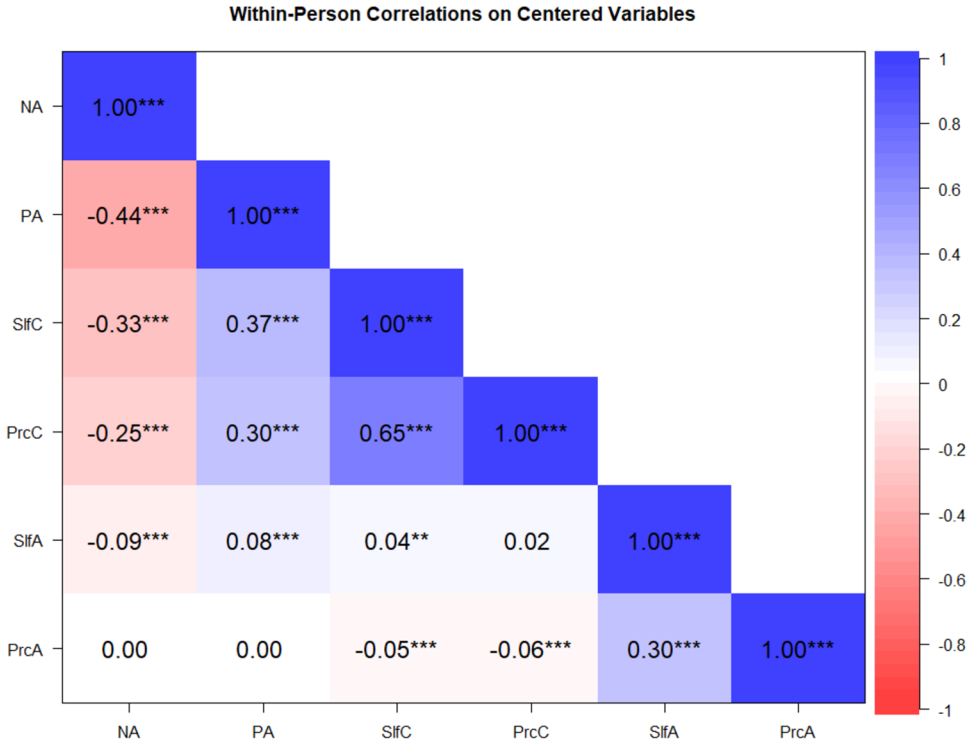


Fig. 2 State-level within person correlations on centered variables. *SlfA* Own agency, *SlfC* Own communion, *PrcA* Perceived Partner Agency, *PrcC* Perceived Partner Communion, *NA* Negative Affect, *PA* Positive Affect

Woods & Wright, 2024). We accounted for the nonindependence of the partners' responses in a dyad by correlating the errors of the partners.

State-level analysis

We ran multilevel models for each dimension (i.e., agency and communion) where we predicted in-the-moment negative and positive affect separately from in-the-moment own agentic/communal behavior, perceived partner agentic/communal behavior, and the interaction of the two. We person-mean centered all of the predictor and outcome variables, given the focus on the within-person relationships between the variables (Bolger & Laurenceau, 2013).

In all models, a maximum of 70 repeated assessments across 7 days (level 1) were nested in dyads (level 2). We

Table 1 Descriptives of variables aggregated over time points

Variable	*M*	*SD*	Range	Score interval of the scale
CES-D	11.02	6.39	0–32	0–60
Negative affect	10.27	9.55	0.06–42.13	0–100
Positive affect	59.59	11.61	38.99–95.09	0–100
Own communion	5.8	0.95	3.32–8	0–8
Perceived partner communion	5.76	0.92	3.45–7.97	0–8
Own agency	3.95	0.61	1.59–5.64	0–8
Perceived partner agency	3.97	0.63	1.66–5.47	0–8

CES-D Centre for Epidemiological Studies Depression Scale

conducted multilevel modeling for dyadic data—accounting for dependencies between the partners (Kenny et al., 2006). All parameter estimates included random effects, allowing them to vary across dyads. Additionally, we allowed correlated errors within the same participants and dyads, which accounts for the fact that measurements within the same participant or dyad are likely to be more similar to each other than measurements across different participants or dyads.

To decide whether to run a model in which partners are distinguishable or indistinguishable based on gender for both trait and state-level analyses, we evaluated model fits of distinguishable and indistinguishable models by comparing them using ANOVA (which can be used for nested models) as well as comparing the BIC scores.[1] Distinguishable models had a better fit for all state-level analyses. Therefore, we report the results of the distinguishable models. For trait-level analyses, in the model where we predicted depressive symptoms from mean own agentic behavior and mean perceived partner agentic behavior and their interaction, the distinguishable model performed better. However, in the model where we used mean own communal behavior and mean perceived partner communal behavior and their interaction as predictors, the indistinguishable model had a better fit. Therefore, we report the distinguishable model findings for the former, and the indistinguishable model findings for the latter.

Moreover, as exploratory analyses, we conducted the same state and trait-level analyses looking at the main and interaction effects of partner's behavior reported by the partner instead of perceived behavior to examine whether findings for perceived partner behavior match with findings for the partner's behavior reported by the partner. Per reviewer's suggestion, we also explored whether interpersonal behaviors have differential effects on low and high arousal negative and positive affect. The specific results of these exploratory analyses can be found in the Supplementary Materials, and global interpretations will be discussed shortly.

[1] In the preregistration, we planned to estimate a model for distinguishable dyads including one intercept and adding a dummy variable (men = 0, women = 1) to the main effects and the interaction effect, which reveals whether there are differences in fixed effects between men and women. However, this approach was adapted following later recommendations (Gistelinck et al., 2018). Using the original approach with dummy variables would have resulted in the same conclusion as the later approach comparing model fits, as there were several gender differences in the models with one intercept and dummy variable (men = 0, women = 1).

Transparency and openness

We preregistered the methodology, prior knowledge of the dataset, and analysis plan (see https://osf.io/bqe57/) following the experience sampling methods preregistration guideline of Kirtley et al. (2021). The data was preprocessed and analyzed using R (Version 4.3.1) and the models were run using the *nlme* package (Pinheiro et al., 2023). The code for all analyses and a list of all measures used in the study are publicly available (see https://osf.io/bqe57/). The metad ata is in EMOTE database (see https://emotedatabase.com/datasets/6) and can be provided upon request through the database.

Results

Trait-level analyses

Between-person correlations for mean own and perceived agency/communion, and depression scores are in Fig. 1. Depression scores were not correlated with any of the variables. Mean own agency and perceived partner agency were highly correlated ($r = .64$, $p < .001$), just as communion and perceived partner communion ($r = .93$, $p < .001$).

Agency and depressive symptoms

In the model where we predict depression score from mean own and perceived partner agency (see Table 2), we did not find main effects nor an interaction effect of own and perceived partner agency for neither men nor women.

Communion and depressive symptoms

Regarding the model where we predict depression score from mean own and perceived partner communion (see Table 3), overall there were no main effects nor an interaction effect of own and perceived partner communion. The absence of interaction effects in both models implies that the complementarity of aggregated own and perceived

Table 2 Predicting depressive symptoms from mean own and perceived partner agentic behavior

Predictors	Women (N = 50)			Men (N = 50)		
	B	*t*	*p*	*B*	*t*	*p*
Intercept	12.70	11.64	<.0001	10.78	12.73	<.0001
Mean own agency	−0.23	−0.11	.90	2.45	1.26	.20
Mean perceived partner agency	−2.96	−1.44	.15	−0.28	−0.17	.86
Mean own agency * mean perceived partner agency	−2.11	−1.70	.09	−5.06	−1.89	.06

Table 3 Predicting depressive symptoms from mean own and perceived partner communal behavior

Predictors	Women (N = 50)			Men (N = 50)			Pooled*		
	B	*t*	*p*	*B*	*t*	*p*	*B*	*t*	*p*
Intercept	12.6	9.55	<.0001	9.94	10.35	<.0001	11.31	13.32	<.0001
Mean own communion	0.17	−0.11	.95	−2.75	−1.10	.27	−0.92	−0.47	.63
Mean perceived partner communion	−0.67	−1.44	.82	1.56	.61	.53	.30	0.15	.87
Mean own communion * Mean perceived partner communion	−0.84	−0.67	.50	−0.16	−0.27	.78	−0.36	−0.64	.52

In BIC comparison, indistinguishable model was a better fit. Therefore, pooled effects should be considered

Table 4 Predicting at the moment negative affect from own and perceived partner agentic behavior

Predictors	Women (N = 50)				Men (N = 50)			
	B	*t*	*p*	95% CI	*B*	*t*	*p*	95% CI
Intercept	10.36	8.43	<.0001	[7.96,12.76]	10.11	8.5	<.0001	[7.78, 12.45]
Own agency	−1.34	−3.62	**<.001**	[−2.06,−0.61]	−0.34	−1.34	.17	[−0.85, 0.15]
Perceived partner agency	0.36	1.05	.28	[−0.30, 1.02]	0.44	1.88	.06	[−0.01, 0.90]
Own agency* perceived partner agency	−0.08	1.88	.64	[−0.46, 0.28]	0.02	0.16	.87	[−0.29, 0.35]

P-values in bold indicate statistical significance at $p < .05$

Table 5 Predicting at the moment positive affect from own and perceived partner agentic behavior

Predictors	Women (N = 50)				Men (N = 50)			
	B	*t*	*p*	95% CI	*B*	*t*	*p*	95% CI
Intercept	56.62	3.86	<.0001	[53.74, 59.49]	62.42	3.7	<.0001	[59.11,65.72]
Own agency	1.56	3.34	**<.001**	[0.65, 2.48]	0.96	3.12	**.002**	[0.35, 1.56]
Perceived partner agency	−0.25	−0.63	.52	[−1.02, 0.52]	0.10	0.31	.74	[−0.53, 0.74]
Own agency* perceived partner agency	.47	2.76	**.006**	[0.13, 0.81]	.18	1.02	.30	[−0.16, 0.52]

P-values in bold indicate statistical significance at $p < .05$

interpersonal behavior did not have implications for depressive symptoms.

State-level analyses

Within-person correlations of all variables can be seen in Fig. 2. Own agency was negatively correlated with negative affect at the same time point although the correlation was low and it was loosely positively correlated with positive affect. Perceived partner agency was positively but weakly correlated with negative affect and it did not correlate with positive affect. There was a weak but significant correlation between own and perceived partner agency.

Regarding communion, own and perceived partner communion at one timepoint was negatively correlated with negative affect, and positively correlated with positive affect at that same time point. Own and perceived partner communion at concurrent time points were positively correlated.

Agency and daily affect

The results of the model where we predicted negative affect from own and perceived partner agency are shown in Table 4. In general, we did not find evidence that perceived partner agency or its interaction with own agency are linked with negative affect for men and women. The only significant effect was the main effect of own agency for women such that when women reported lower agency than usual, they also reported more negative affect. The main effect of own agency for men was not significant.

In the model where we predicted positive affect from the same predictors (see Table 5), the main effect of own agency was positive for both men and women. This means that high own agency at one moment was associated with higher positive affect at that same moment. There was no main effect of perceived partner agency on positive affect for neither men nor women. There was a significant interaction effect of own and perceived agency for women but

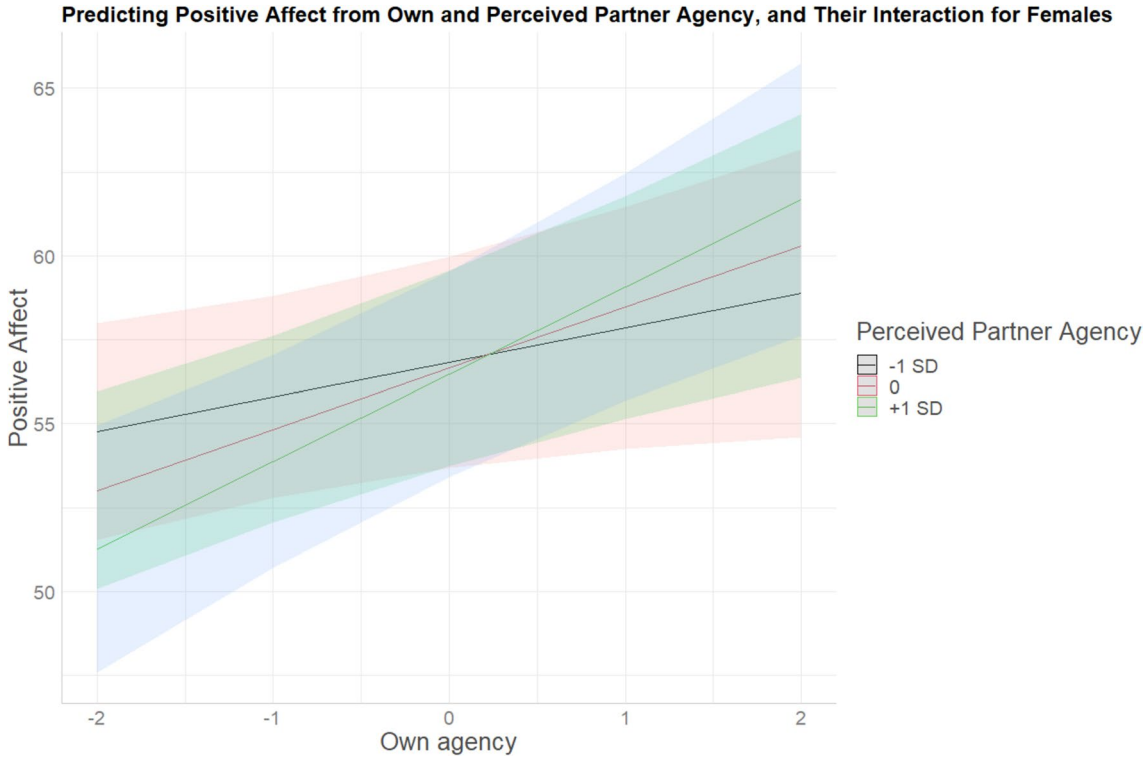


Fig. 3 Predicting positive affect from own and perceived partner agency, and their ınteraction for females

Table 6 Predicting at the moment negative affect from own and perceived partner communal behavior

Predictors	Women (N = 50)				Men (N = 50)			
	B	*t*	*p*	95% CI	*B*	*t*	*p*	95% CI
Intercept	10.44	8.29	<.0001	[7.98, 12.91]	9.90	8.41	<.0001	[7.98, 12.91]
Own communion	−3.14	−6.24	**<.0001**	[−4.12, −2.15]	−1.41	−4.6	**<.0001**	[−2.01, −0.81]
Perceived partner communion	−0.79	−2.14	**.032**	[−1.52, −0.06]	−0.87	−2.74	**.006**	[−1.05, −0.25]
Own communion* perceived partner communion	−0.14	−0.51	.60	[−0.70, 0.41]	0.27	1.44	.14	[−0.09, 0.65]

P-values in bold indicate statistical significance at $p < .05$

not for men. Women reported higher positive affect when both their own and perceived partner agency were higher than usual, while they reported lower positive affect when they had low agency and they perceived their partner high in agency (see Fig. 3).

We conducted post-hoc contrast tests in all models to see whether the significant main effects (i.e., slopes) for men and women were significantly different from each other. The main effect of own agency on negative affect was significantly stronger for women than men [X^2 (1, N = 100) = 4.68, p = .03]. The main effect of own agency and positive affect did not significantly differ between men and women [X^2 (1, N = 100) = 1.36, p = .24].

Communion and daily affect

The results of the model, where we predicted negative affect from own and perceived partner communal behavior, are shown in Table 6. The main effect of own communion was significantly negative for both men and women.

Perceived partner communion was also significantly negatively associated with negative affect for both men and women. These results imply that when participants reported higher own or perceived partner communion than usual, they also reported less negative affect. There were no significant interaction effects between own and perceived partner communion for men or women.

Regarding positive affect, own communion was positively associated with positive affect for both men and women (see Table 7). Perceived partner communion was also positively linked with positive affect for both men and women, meaning that higher own and perceived partner communion than usual are associated with more positive affect. There was also a significant interaction effect for females such that females reported the highest positive affect when both own and perceived partner communion were high, while they had the lowest positive affect when

Table 7 Predicting at the moment positive affect from own and perceived partner communal behavior

Predictors	Women (N = 50)				Men (N = 50)			
	B	*t*	*p*	95% CI	*B*	*t*	*p*	95% CI
Intercept	56.52	3.83	<.0001	[53.64, 59.41]	62.39	3.65	<.0001	[59.05, 65.73]
Own communion	5.07	9.85	**<.0001**	[4.06, 6.07]	3.90	7.92	**<.0001**	[2.94, 4.87]
Perceived partner communion	1.53	3.78	**<.001**	[0.73, 2.32]	1.67	4.60	**<.0001**	[0.96, 2.39]
Own communion* perceived partner communion	.69	2.40	**.016**	[0.12, 1.25]	.16	.67	.50	[−.31, 0.65]

P-values in bold indicate statistical significance at $p < .05$

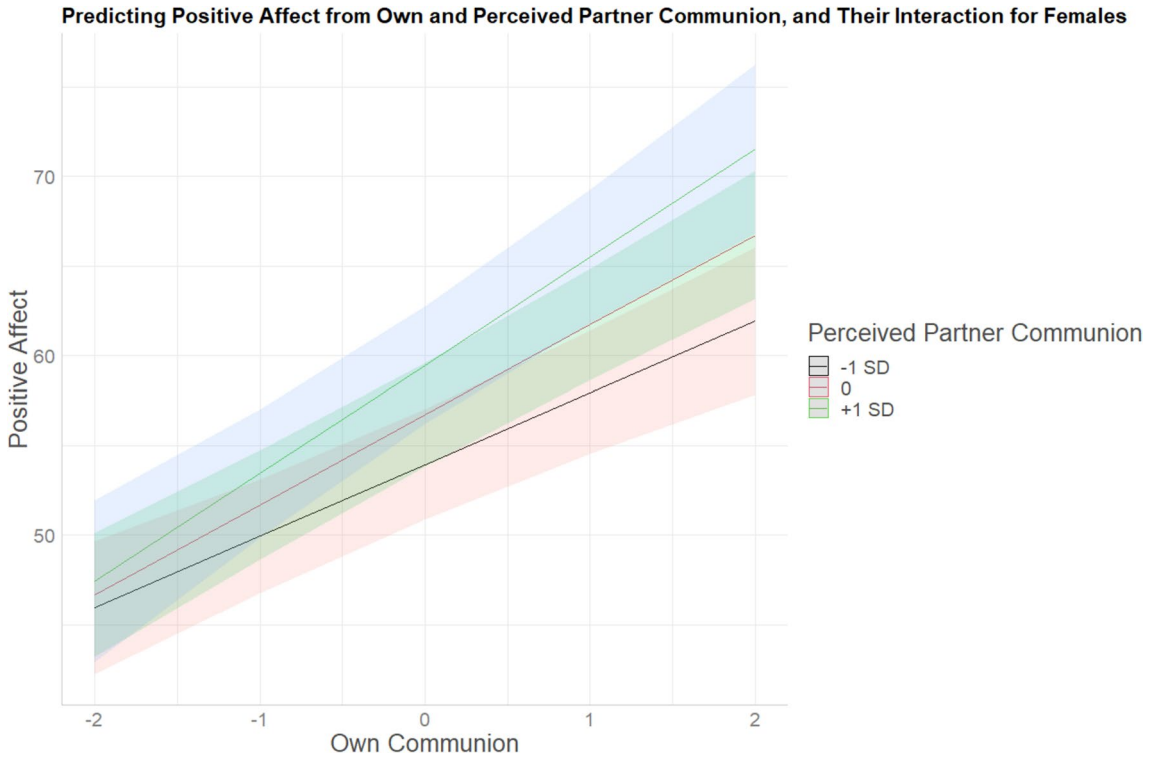


Fig. 4 Predicting positive affect from own and perceived partner communion, and their ınteraction for females

both own and perceived partner communion were low (see Fig. 4). There was no significant interaction effect for males.

Post-hoc contrast tests comparing the significant main effects (i.e., slopes) in all models for men and women showed that the main effect of own communion on negative affect was significantly stronger for women than men [X^2 (1, N = 100) = 6.7878, p = 0.009]. However, the main effect of perceived partner communion on negative affect did not significantly differ between men and women [X^2(1, N = 100) = .02, p = .86]. In the model where we predicted positive affect from communal behaviors, the main effects of own and perceived partner communion also did not differ between men and women [X^2 (1, N = 100) = 3.13, p = .07; X^2 (1, N = 100) = .09, p = .75].

We also examined whether agentic or communal behaviors explained more variance in negative and positive affect by comparing the R-square of each model. For both negative and positive affect, the R-square scores were higher in models where we used own and perceived communal behavior as predictors, suggesting that communal behaviors are more tied to affect compared to agentic behaviors.

Exploratory analysis: partner's behavior reported by the partner

At the trait-level, we conducted the same analyses using the partner's behavior reported by the partner instead of perceived partner behavior. We did not find any significant results, similar to the original analyses using the perceived partner behavior (see Supplementary Materials Tables 1 and 2).

At the state-level, the models where we predicted negative and positive affect from own agency/communion and agentic/communal behavior of partner (reported by the partner), and the interaction of the two were overall similar to the models where we used perceived partner behavior (see Supplementary Materials Tables 3, 4, 5, 6). There was a main effect of own agency on negative affect and on positive

affect. There were also main effects of own and perceived partner communion on both negative and positive affect. The only difference was in the model predicting positive affect from own agency and partner's agency (reported by the partner). Here, there was also a main effect of the partner's agency (reported by the partner) on positive affect for both females and males, on top of the main effect of own agency (seen in the previous models where we examined perceived partner dominance). This meant that the partner's behavior reported by the partner (although not necessarily perceived) is related to the individual's own positive affect.

Exploratory analysis: low and high arousal negative and positive affect

At the state level, we conducted the same analyses by categorizing negative affect into low (i.e., sad, depressed) and high arousal (i.e., angry, anxious), and also positive affect into low (i.e., satisfied, relaxed) and high arousal (i.e., happy, excited) by calculating the mean of momentary affect scores belonging to each category. The results revealed some differences in how agentic and communal behaviors relate to low and high arousal affect, mainly suggesting that high arousal negative affect was driving the associations between communal behaviors and overall negative affect. See Supplementary Materials for the detailed explanation of the findings.

Discussion

In this study, we examined how own and perceived partner interpersonal behavior, focusing on dominance and warmth as specific aspects of agency and communion, and their complementarity, relate to depressive symptoms in romantic couples at the trait and the state level. At the trait-level, contrary to our hypotheses, average own and perceived partner interpersonal behavior did not relate to depressive symptoms. Potentially, this null finding is due to the healthy convenience sample, which overall had low depressive scores, limiting our ability to find effects.

At the state-level, we found main effects, and contrary to our hypotheses, we found almost no interaction effect between own and perceived partner interpersonal behaviors. Specifically, as hypothesized, lower momentary agency was associated with higher negative affect for women but not for men, while higher agency was linked with higher positive affect for both men and women. Perceived agentic behavior was not associated with negative or positive affect. Regarding communion, high own and perceived communion were related to high positive and low negative affect in both men and women, as expected.

These findings overall imply that momentary own and perceived partner agentic and communal behavior are *separately* associated with affect (as proxies of depressive symptoms in daily life), and not through their complementarity per se. Similarly, a lab interaction study, looking at within-situation complementarity in romantic couples, indicated that *overall* levels of warmth and control in interactions are predictive of affect and relationship satisfaction, rather than complementarity (Cundiff et al., 2015). Our results support the cognitive behavioral models of marital relationships which suggest that low levels of warmth are associated with maladaptive outcomes (e.g., low relationship satisfaction, depressive symptoms) (Gottman, 1979). However, cognitive behavioral models also suggest that high levels of control (i.e., agency) are associated with maladaptive outcomes while our results showed that when both own and perceived agency were higher than usual, positive affect increased. Perhaps, higher agency scores reflected a slight increase in agency, rather than reflecting extreme controlling behavior since the variation in agentic behaviors was quite low.

Overall, the results diverge from the interpersonal theory and the CIIT which postulate that the interaction between self and other's agentic and communal behavior (i.e., complementarity) should matter for relationship (Kiesler, 1983; Sullivan, 1953) and psychopathology-related outcomes (Hopwood et al., 2021), at least when momentary complementarity is measured in daily life, at a larger time scale than in second-to-second laboratory paradigms. One possible explanation could be that complementarity may be most important in second-to-second behaviors within-situation, indicating that short-term bids for being in control or warm are being satisfied (e.g., interrupting is responded by silence from the partner (Roche, 2022). Therefore, an even more fine-grained assessment within social interactions may be needed. For ESM research, Roche (2022), for instance, suggests explicitly asking participants whether they have "exchanged dominance and control effectively" in a social interaction when examining complementarity in daily interactions. Thus, further research is needed to assess whether different ways of measuring complementarity link with psychopathology.

An interesting finding is that low agency (i.e., submissiveness) was associated with negative affect only for women. In line with this, post-hoc tests suggested that the significant main effects of own agency and communion were stronger for women. One possible explanation is that women tend to have a stronger relational self than men, meaning that they are more likely to define themselves relationally (e.g., being a friend, being part of a group) (Gabriel & Gardner, 1999; Grace & Cramer, 2003; Madson & Trafimow, 2001) (also see, people vs. things orientation in women vs. men; McIntyre & Graziano, 2019). Therefore, interpersonal

behaviors overall may be more closely tied with their affect. Not coincidentally, the prevalence of depression is higher in women compared to men (Piccinelli & Wilkinson, 2000). Considering this prevalence together with females' greater interpersonal sensitivity, viewing depression as an interpersonally fueled disorder could therefore be an interesting avenue for explaining the gender prevalence difference in depression, although clearly more research is needed to further explore this. Additionally, it should be noted that, in the present study, agentic and communal behaviors of the self and their partner were not predictive of depressive symptoms at the trait-level for both genders. Thus, this interpersonal sensitivity was observed only at the state-level, when looking at daily interactions.

Interestingly, we found an interaction effect for women such that when women rated both their own and their partners' agency higher than usual, they also reported the highest positive affect. This finding diverges from the complementarity hypothesis which states that both partners being high on agency would lead to frustration of both partners' agency motives and result in negative affect. It could be argued that extreme dominance of the partner (e.g., high control) might have unfavorable outcomes, while slight increases in dominance of the partner could be an indication that the partner is happy (as supported by a positive correlation between own agency and positive affect in the moment). The fact that dominance ratings were accumulated towards the middle (dominance score of 4 out of 8) and had low standard deviations also implies that the observed effect may reflect a slight, rather than an extreme, increase in dominance. Another explanation could be that in intimate relationships, slight increases in one's own and partner's dominance may be related to feeling powerful and self-confident as a couple, as opposed to perhaps feeling threatened in interactions with general others.

Moreover, communal behaviors were more predictive of daily affect than agentic behaviors (as suggested by R^2 comparison of the models predicting negative and positive affect). This finding is in line with several other studies indicating that perceived coldness/hostility is more related to negative affect than perceived dominance (Kaurin et al., 2022) and that communal complementarity is a stronger predictor of affect compared to agentic complementarity (Halberstadt et al., 2023). One explanation could be that romantic couples' communal motives may usually be more salient than their agentic motives, and therefore, the satisfaction and frustration of communal motives in social interactions may have a bigger impact on their affect. In general, individuals' life goals tend to emphasize more communal (e.g., benevolence) than agentic motives (e.g., power) (Locke & Heller, 2017; Schwartz & Rubel, 2005) and several studies show that individuals act warm even though the other person is behaving distant, suggesting that individuals generally have high communal motives in social interactions (Tracey, 1994, 2004).

Additionally, further exploratory analyses, where we categorized negative and positive affect into low and high arousal affect, mainly suggested that high arousal negative affect was driving the observed negative associations between communal behaviors, particularly perceived partner communal behavior, and overall negative affect. This may imply that, in close relationships, perceived coldness or lack of warmth from a partner may provoke anger or anxiety, potentially due to perceived rejection. Such perceptions of rejection have been strongly linked to hostility, aggression, or anxiety (Ayduk et al., 1999).

Lastly, when we conducted the same analyses using the agentic and communal behavior of the partner reported by the partner, we found similar findings to our original analyses using the perceived behavior of the partner. This finding lends itself to several explanations. First, it could be that partners overall tend to agree on how one of the partners behaved, thus perceived behavior is close to behavior of the partner reported by the partner. However, this seems unlikely as the within-person correlations between perceived communal behavior and partners' communal behavior reported by the partners was rather low (r=.23). Second, it could be that not only the perceived behavior is associated with affect but also the partner reported behavior has implications for individuals' affect. Further research is needed that further examines the interplay between perceived behavior, partner reported behavior and own behavior, and how these are associated with affect, as the small sample size in the present study prevented us from examining this.

The present study is not without limitations. First, the depression scores were quite low in the sample as it was a healthy convenient sample. Interestingly, in this sample, depression scores also did not correlate with high negative and low positive affect that are core features of depression. This limited our conclusions on how interpersonal behaviors relate to depressive symptoms at the trait-level. Second, the sample was relatively small with 50 couples. Thus, the results should be considered as preliminary.

Third, the majority of studies on agentic and communal complementarity and their relation to well-being have been conducted in Western samples. Several studies suggest that agentic and communal orientation tendencies differ across cultures (e.g., Schwartz & Rubel, 2005). For instance, in Eastern cultures, communal tasks are more valued than agentic tasks, while the opposite is the case for Western cultures (Wojciszke & Bialobrzeska, 2014). This difference in value attached to agentic and communal behaviors might have implications for how these behaviors go together with individuals' affect. For instance, in Eastern contexts, high

own agentic behavior might have attenuated impact on positive affect compared to Western contexts. Thus, our results may not be generalizable to cultures in which general value attached to agency and communion differ. Further research on how agentic and communal behavior relates to affect and perhaps depressive symptomatology is needed in non-Western cultures.

Lastly, the sample only consisted of mixed-sex couples, where possibly agentic and communal behaviors in the relationship are influenced by gender norms assigned to men and women in romantic relationships. We are not aware of any research on how agentic and communal behaviors and complementarity are associated with individuals' affect in same-sex couples, however, a study comparing same-sex and mixed-sex couples found that same-sex couples are more egalitarian when, for instance, sharing responsibilities (Roisman et al., 2008). As such, potentially for same-sex couples different complementarity patterns are ideal (e.g., having overall similar levels of agency across situations). Future research is needed to shed light on this.

Conclusion

Overall, the findings of the present study show that, in the context of romantic relationships, own and perceived partner agentic and communal behaviors in daily life are separately associated with negative and positive affect, and not through their complementarity per se. As such, at least in the context of romantic relationships and when complementarity is measured momentarily in daily life, our findings diverge from one of the assumptions of interpersonal theory, suggesting that (non)complementary interactions are associated with individuals' affect through the frustration and satisfaction of motives. Moreover, communal behaviors appeared to be more closely tied with affect compared to agentic behaviors. There were no associations between agentic and communal behaviors and depressive symptoms at the trait-level, perhaps due to a healthy convenience sample. Further research is needed on clinical samples (of depressive symptomatology) to test the CIIT's assumption that non-complementary interactions can be markers of psychopathology.

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Author contributions Rana B. Kalkan-Cengiz conducted the data analysis and wrote the first draft of the manuscript, and was involved in the conceptualization of the study. The data was collected by Laura Sels. Martine Verhees, Laura Sels, and Peter Kuppens were involved in the conceptualization of the study and gave continuous feedback on the manuscript and edited the manuscript.

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Code availability Preregistration and code are available on OSF (https://osf.io/bqe57/)

Declarations

Conflict of interest The authors are not aware of any conflict of interest.

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