# The compassion connection: Experience sampling insights into romantic attraction

Joseph Ciarrochi [a,*], Baljinder Sahdra [a], Madeleine I. Fraser [b], Steven C. Hayes [c,d], Keong Yap [b], Andrew T. Gloster [e]

[a] *Institute for Positive Psychology and Education, Australian Catholic University, Sydney, Australia*
[b] *School of Behavioural and Health Sciences, Australian Catholic University, Sydney, Australia*
[c] *Psychology Emeritus, University of Nevada, Reno, NV, USA*
[d] *Institute for Better Health, Santa Rosa, CA, USA*
[e] *Faculty of Behavioral Sciences and Psychology, University of Lucerne, Lucerne, Switzerland*

## ARTICLE INFO

## ABSTRACT

Our study examines the relationship between self-compassion, other-compassion, and romantic attraction in couples, and questions the psychological homogeneity assumption—the idea that psychological responses are uniform across individuals and couples. We analyzed data from 161 participants in 84 couples, with an average age 32 (SD = 12.02), using smartphones for event sampling six times daily over a week to measure self-compassion, other-compassion, and attraction. Through within-person and network analysis, we discovered significant variability in how self and other-compassion influence attraction, identifying two distinct couple types: "synergistic," where compassion significantly affects attraction, and "independent," where it does not. Further analysis revealed that, when other-compassion is accounted for, males with high self-compassion were less attracted to their female partners. The significant diversity in how individuals and couples experience compassion and attraction challenges the assumption that conclusions drawn from group averages can be universally applied to individual couples. Clinically this means that efforts to enhance compassion in couples therapy should be tailored to the couple's unique dynamics. Indeed, for some men, emphasizing self-compassion without considering other-compassion could even be *detrimental* to the relationship. Our findings highlight the need for nuanced case formulation and personalized treatment planning in couples therapy, underscoring the complexity of relationship dynamics and the importance of rejecting "one size fits all" assumptions.

Romantic relationships not only fulfill an innate human need for connection (Gilbert, 2015), but they also represent dynamic, interactive systems. The quality of such adult relationships has far-reaching implications; healthy romantic bonds are associated with numerous individual and societal benefits, ranging from emotional well-being to conflict resolution (Sharkey et al., 2022). Conversely, relationship distress can serve as a precursor for mental illness (South, 2023). In this context, compassion emerges as a key interpersonal trait and a promising target for intervention to foster healthier relationship dynamics. Compassion involves an attentiveness to suffering, combined with a desire to alleviate it (Gilbert, 2020). Importantly, compassion can be directed in different ways; to others, receiving from others, and toward one's self. Emerging research (Sahdra et al., 2023) suggests individuals may experience differences in compassion directed toward themselves

(herein referred to as "self-compassion") compared to compassion directed toward others ("other-compassion").

Romantic relationships offer a dynamic backdrop for exploring the ebb and flow of compassion across multiple dimensions. Specifically, how does experiencing compassion impact perceptions of attraction within the relationship? Will a compassionate person find their partner more attractive, and vice versa? Attraction is a critical factor in marital satisfaction and behavior, as evidenced by multiple studies (Gonzalez Avilés et al., 2021; Mark & Herbenick, 2014; McNulty et al., 2008; Meltzer et al., 2014). In this study, the focus is on real-time fluctuations in couples' feelings of attraction toward one another, rather than longitudinal assessments like overall relationship satisfaction.

While it might seem intuitive that prosocial qualities like compassion would bolster attractiveness within a partnership, this is not necessarily

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a given. The presumption that compassion universally enhances attraction may stem from an unexamined belief in psychological homogeneity (Richters, 2021). This notion posits that psychological structures and processes operate uniformly across individuals, allowing researchers to generalize findings. For example, using an actor-partner interdependence model based on pooled averages could lead to sweeping conclusions like "compassion fosters couple attraction" (Gistelinck & Loeys, 2019). However, this approach would risk overlooking individual or couple-specific nuances. If variations do exist in how compassion influences feelings of attraction between partners, then such discrepancies would be dismissed as errors or deviations from the "true" positive effects of compassion, rather than as meaningful data points that could enrich our understanding of complex relationship dynamics.

The psychological homogeneity assumption has come under increasing scrutiny, theoretically (Molenaar, 2004; Richters, 2021) and empirically (Fisher et al., 2017; Rabinowitz & Fisher, 2020; Sanford et al., 2022). In light of this, our investigation aimed to explore the relationship between compassion and partner attraction without presupposing such homogeneity. To achieve this, we conducted an intensive longitudinal study that assessed daily fluctuations in both self-compassion and compassion toward one's partner, examining their influence on mutual feelings of attraction. Here, "actor" and "partner" are arbitrary labels for the first and second individuals within each couple, respectively. Our analytic strategy employed an idiographic approach, first estimating the effects of compassion on each individual before considering any group-level generalizations.

We posited two central nomothetic (i.e., group-based) hypotheses and formulated two exploratory idiographic questions (extent effects of individual and couple differs from nomothetic average). Our first hypothesis (H1) suggested that an uptick in moment-to-moment compassion (both self and other) would correspond with an increase in the actor's own attraction to their partner (self-report linked to self-report). The second hypothesis (H2) proposed that a rise in the actor's compassion would also be associated with the partner's increased attraction to the actor (self-report linked to partner's report). Our exploratory questions delved into idiographic analysis. The first question examined whether individuals (level 1) and couples (level 2) displayed variations in the extent to which compassion and attraction are interconnected, or "synergistic." A "synergistic" couple would be one in which fluctuations in the actor's compassion strongly correlate with both the actor's and the partner's levels of attraction. In contrast, "independent" couples would show no such link between compassion and attraction. The second exploratory question built upon the first: if we do observe differences between "synergistic" and "independent" couples in terms of compassion-attraction dynamics, what other distinguishing features might these groups exhibit? For instance, might "synergistic" couples report higher levels of relationship satisfaction or exhibit more compassion in general?

## 1. An actor-partner model of compassion

This paper centers on a general form of compassion directed toward both self and others, rather than specifically toward a partner, aligning with the approach taken in prior longitudinal studies (Blackie & McLean, 2022). Due to the constraints inherent in repeatedly assessing psychological constructs in daily life, we narrowed our operational definition of compassion. In particular, we focused on the degree to which an individual exhibited tolerance, benevolence, and care toward themselves and others during specified periods (Sahdra et al., 2023)—attributes that are integral to the concept of compassion (Neff & Beretvas, 2013; Strauss et al., 2016). It is important to note, however, that our operationalization is more limited in scope compared to other studies. Specifically, it omits additional dimensions of compassion, such as the recognition of suffering, the tolerance of uncomfortable feelings (Strauss et al., 2016), as well as elements like recognizing common humanity and experiencing reduced self-criticism (Tóth-Király & Neff, 2020).

Our core hypotheses (H1, H2) focused on the actor-actor and actor-partner effects depicted in Fig. 1. The actor-actor effects reflect the degree to which an individual's self-reported compassion—both for themselves and for others—correlates with their self-reported attraction to their partner. Since both measures are self-reported, they share a common methodological approach. We separately assessed these relationships for male (H1a) and female (H1b) participants, as the bulk of our data (over 95%) consisted of male-female dyads.

Conversely, actor-partner effects examine how an actor's level of compassion correlates with their partner's emotional responses, incorporating both self-report and partner-report methods. We hypothesized that when actors report higher levels of self-compassion and/or compassion for others, their partners would find them more attractive (H2a, H2b).

Much existing research that employs actor-partner designs has been either cross-sectional or reliant on a limited number of longitudinal data points. Such studies have examined the impact of actor and partner characteristics on various dyadic outcomes, including quality of life, depressive symptoms, marital satisfaction, and coping with illness (Kashy & Donnellan, 2018; Pakenham & Samios, 2013; Wall et al., 2014; Zuo et al., 2020). While these cross-sectional studies offer valuable insights, they are limited in their capacity to investigate how within-person fluctuations in compassion relate to changes in attraction both within individuals and between couples. Nor do such designs enable the exploration of variability in the relationship between compassion and attraction on a within-person or couple level. Our methodology involved collecting intensive within-person data, which permitted us to estimate the coefficients depicted in Fig. 1 for each individual and couple. This approach, in turn, enabled us to apply meta-analytic techniques to evaluate the general or pooled effects of compassion (Hypotheses 1 and 2) and the heterogeneity of those effects (Question 1).

## 2. The general advantages of compassion in romantic partnerships

There are compelling theoretical and empirical grounds for anticipating a positive correlation between compassion for others and favorable partner emotions, such as attraction. From an empirical standpoint, studies have demonstrated a connection between both males' and females' compassion toward others and marital satisfaction and cohesion. These correlations exist for both actor-actor relationships (e.g., a woman's compassion and her own satisfaction ratings) and actor-partner relationships (e.g., a woman's compassion and her male partner's satisfaction ratings; Jiang et al., 2020). Further research indicates that couples high in compassionate love tend to exhibit empathy and caring when their partner is distressed (Collins et al., 2014). The exchange of compassionate love correlates with enhanced relationship satisfaction—a finding consistent across genders and even after accounting for other styles of love (Fehr et al., 2014). Moreover, compassionate love is linked to greater partner support, intimacy, and commitment (Fehr et al., 2014; Sprecher & Fehr, 2005).

Other studies have explored the relationship between compassionate attitudes and sexual well-being in couples. For instance, Fraser et al. (2023) found that couples displaying more compassionate attitudes—both in general responsiveness and specific relational attitudes like forgiveness and gratitude—reported higher levels of sexual well-being. This construct was broadly defined to include aspects like sexual frequency, satisfaction, consistency of orgasm, as well as sexual harmony, awareness, and non-judgment (Fraser et al., 2023). Among expectant couples, Dawson et al. (2023) found that greater levels of self- and other-compassion correlated with higher relationship and sexual satisfaction, and lower sexual distress, while among postpartum couples it correlated with greater relationship satisfaction.

To date, most research seeking to understand the link between compassion and romantic relationships has focused on self-compassion
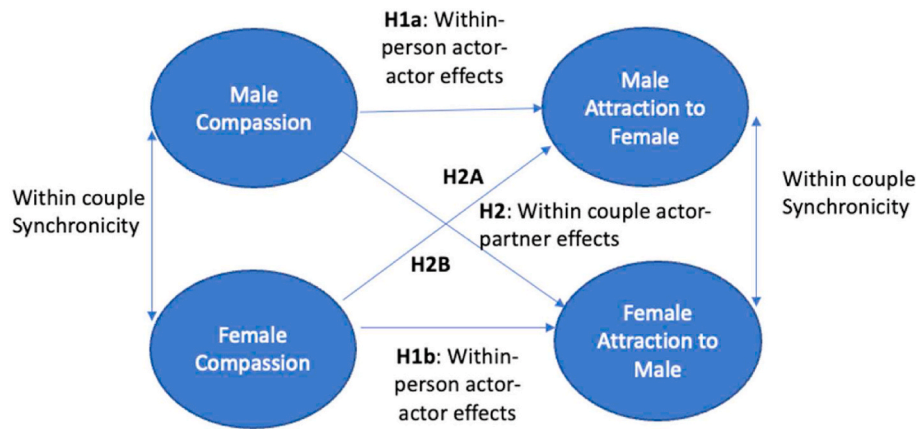
**Fig. 1.** Actor-partner model of moment-to-moment experiences
Note: For the sake of simplicity, self-compassion and compassion for others are not differentiated in the diagram.

([Lathren et al., 2021). Self-compassion is known to foster overall well-being (Neff & Beretvas, 2013), making self-compassionate individuals likely to be more agreeable partners. Additionally, self-compassion is associated with numerous traits conducive to healthy couple relationships, such as altruism, empathy, perspective-taking, and a readiness to forgive, apologize, and assist others (Fuochi et al., 2018; Lathren et al., 2021; Neff & Pommier, 2013; Welp & Brown, 2014).

The positive implications of self-compassion extend to various relational dynamics. Studies have found it to be correlated with heightened marital satisfaction, as observed among Iranian couples (Maleki et al., 2019) and parents of neurodiverse children (Shahabi et al., 2019). Furthermore, higher levels of self-compassion have been linked to lower tendencies for jealousy (Tandler & Petersen, 2020) and reduced maladaptive dependence on partners (Denckla et al., 2017; Kaya et al., 2022). As a predictor of relationship satisfaction, self-compassion has a well-supported empirical foundation (Fahimdanesh et al., 2020; Jacobson et al., 2018; Kaya et al., 2022; Neff & Beretvas, 2013)). It also appears to facilitate mutual acceptance of each other's flaws within relationships (Zhang et al., 2020).

Interestingly, the benefits of self-compassion are not solely subjective; they are also corroborated by partners. Research indicates that individuals with higher levels of self-compassion engage in behaviors that their partners perceive as more caring, accepting, and autonomy-granting (Neff & Beretvas, 2013). Moreover, in the specific context of health challenges, higher self-compassion levels have been associated with less difficulty in discussing sensitive issues such as infertility (Raque-Bogdan & Hoffman, 2015; Schellekens et al., 2017; Shaw et al., 2018).

A notable limitation of existing research is its emphasis on between-person relationships. Numerous studies indicate that individuals with higher levels of self-compassion also exhibit greater relationship satisfaction on average (Fahimdanesh et al., 2020; Kaya et al., 2022; Lathren et al., 2021; Neff & Beretvas, 2013).However, these between-person findings do not necessarily imply that a similar positive correlation exists at the within-person level (Hayes et al., 2022), which is the focal point of our current investigation. Between-person and within-person correlations can diverge substantially (Fischer & Karl, 2023). To illustrate, expert typists generally type both more quickly and accurately than novices, indicating a positive between-pearson correlation. Yet, when individual typists are encouraged to type faster, they invariably make more errors, revealing a negative within-person correlation between speed and accuracy.

Both between-person and within-person analyses offer valuable insights but serve different purposes. While the former helps in describing groups of people, the latter may be more instrumental in identifying potential intervention targets for individuals (Hamaker et al., 2015;

Hayes et al., 2019). For instance, one practical question our study aims to address at the within-person level is whether increases in self-compassion correspond with heightened attraction within a couple. Should the answer be negative, it would suggest that self-compassion may not be an effective intervention focus for that specific couple.

## 3. Is compassion a universal good?

Most existing conclusions about the relationship between compassion and relational well-being are framed in broad strokes, such as "self-compassion is a unique, if weak, predictor of relationship quality (Jacobson et al., 2018)" or "self-compassion is associated with a wide variety of close interpersonal relationship benefits" (Lathren et al., 2021, p. 1078). These conclusions are accurate when they describe the group average, but do they reflect individual experiences? That is, can we make the psychological homogeneity assumption that the group average reflects a causal model that describes each individual? A violation of this assumption suggests that for certain couples and contexts, enhancing compassion could be ineffectual or even detrimental to attraction.

There is empirical evidence to challenge the notion of psychological homogeneity in the effects of compassion. One study demonstrated that for men lacking the motivation to rectify interpersonal mistakes, increased self-compassion correlated with poorer marital outcomes (Baker & McNulty, 2011). Regarding other-focused compassion, research indicates that prosocial emotions like empathy do not universally translate into prosocial behavior; for instance, empathy more frequently prompts assistance toward ingroup rather than outgroup members (Stürmer et al., 2005).

It is also crucial to distinguish between psychological and statistical homogeneity, a distinction that is often overlooked. While statistical homogeneity assumes equal variances of dependent variables across all levels and groups of the independent variable—deviations from which can often be mitigated through transformations, weighted regression, or robust standard errors (Kutner, 2005)—psychological homogeneity posits that a single causal model is applicable to all individuals. If we operate under this assumption, any deviation from the average model is attributed to error. This is not testable in standard cross-sectional models and poses challenges even in models with limited longitudinal data points. However, in an intensive longitudinal design, one can estimate within-person relationships between variables, treating each individual as a unique study with its own effect size and standard error. This allows for a meta-analytic approach that can evaluate both pooled effects and significant levels of heterogeneity—i.e., variations greater than those expected by chance. Such an approach offers a more nuanced understanding of how compassion may play out in different relational contexts.

## 4. Study

### 4.1. Overview

Our study involved collecting data on self-compassion, other-compassion, and attraction within individuals and couples at six different times per day over the course of a week. This intensive longitudinal data served to evaluate the actor-partner model depicted in Fig. 1. Specifically, we investigated whether an actor's level of compassion correlates with their ratings of how attractive they found the partner (Hypothesis 1) and how much their partner was attracted to them (Hypothesis 2). Utilizing an idiographic approach (Hayes, et al., 2022), we first estimated the effects of compassion on attraction at the individual level before extending our estimates to the group.

We employed time-series analysis to examine within-person univariate relationships between the various forms of compassion and attraction (see Fig. 1, H1a, H1b, H2a, H2b). This individual-level data was subsequently subjected to a meta-analysis, treating each person as a unique "study," enabling us to calculate both the aggregate effects (H1 and H2) and the heterogeneity of those effects (Question 1).

While the initial analysis concentrated on univariate relationships, we also evaluated a comprehensive actor-partner model (as illustrated in Fig. 1) through a multilevel network analysis. To achieve this, cluster analysis was employed to segregate the sample into relatively homogeneous subgroups and reduce any problems of heterogeneity we find in addressing question 1. Multi-level vector auto-regression models were then utilized to assess the complete actor-partner model, facilitating a multivariate evaluation of Hypotheses 1 and 2. Lastly, we explored whether demographic variables or other moderators could account for the variability observed in our compassion-attraction subgroups (Question 2).

## 5. Materials and methods

### 5.1. Participants

The study consisted of 161 participants who provided data, from 84 couples ($M_{age}$ = 32, $SD$ = 12.02; 85 self-identified male romantic partners,77 self-identified female romantic partners, 79 different-sex couples with both individuals participating, 3 with one individual and partner not participating). We had too few same-sex couples ($n$ = 6) and people with partners not completing collection ($n$ = 3) to analyze these subsamples with sufficient power and consequently our analysis focuses on the 73 mixed sex couples. To participate, the couples had to be in a relationship for at least 6 months and had to have daily contact with their partner. Couples had been together an average of 8.48 years ($SD$ = 9.7), with 26% being married and 74% non married. Concerning living conditions, 64% lived with their partner, 26% lived with their parents and 10% lived separately. Participants were recruited from local advertisements, including university blackboards, local health providers, and social media in Switzerland. All participants were screened to ensure they were in their relationship for at least 6 months and had time to participate (Gloster et al., 2020). Couples were randomized into three groups, where: 1) both received a micro-intervention; 2) only one of the partners received the micro-intervention; or 3) neither received the micro-intervention. The micro-intervention consisted of a brief 15-min experiential exercise to promote psychological flexibility. The groups were balanced in terms of age and length of relationship. Following the micro-intervention participants were given a study-issued smartphone and instructed how to use it to engage in event sampling methodology 6 times daily for 7 days. Our analysis focused on the event sampling data; the effect of the micro-intervention is reported elsewhere (Gloster et al., 2020). Not every variable was assessed at every time point. For the key variables in our study, there was a maximum of 35 time points for measures of self-compassion, other compassion, and attraction, which were collected five times per day for 7 days.

We evaluated whether the micro-intervention group was related to any of our study variables and found no effects (See supp section 1), so all data was treated as a signal sample. Concerning missing values, participants completed between 16 and the full 35 experience sampling measures, with roughly 90% completing about 22 measures and 50 % completing about 29 measures. Missing value analysis revealed no relationship between missingness and responses (See supp section 2 for full reporting).

### 5.2. Measures

#### 5.2.1. Daily compassion and attraction

In this section, we describe the key items and report the intraclass correlations (ICC2s), which represent the reliability of the individual means for each variable. (ICC1s are reported in the results section). Compassion was measured with two items (Sahdra et al., 2023): "Since the last prompt … I looked at myself with tolerance, good will, and care ("self-compassion"; ICC2 = 0.98, 95% CI [0.978, 0.982]) and "I looked at others with tolerance, good will, and care ("Other-compassion"; ICC2 = 0.97,95% CI [0.965, 0.972]). Attractiveness was measured with a single item, "How attractive do you find your partner at the moment" (ICC2 = 0.97,95% CI [0.973, 0.978]? Participants responded to the items using a slider ranging from 0 (not at all) to 100 (very much).

#### 5.2.2. Potential covariates of compassion-attraction

We examined the extent that several variables measured daily and at baseline link to observed psychological heterogeneity in the compassion-attraction link within individuals. At level 1 (measures nested within person), we assessed positive affect (e.g., "Optimistic","Delighted" alpha = 0.90) and negative affect ("HowUnhappy","Stressed" alpha = 0.82), given its past links to compassion (Sahdra et al., 2023). We also assessed how often they had contact with their partner since the last prompt (0 - never to 6-more than five times; ICC2 = 0.95). At level 2 (person-level), we include demographic measures of length in relationship in months and living situation (alone, with parents, with partner, shared apartment). We also utilized seven items to assess relationship Dissatisfaction (Hendrick, 1988) (e.g., "How well does your Partner meet your needs"; "How satisfied are you with your relationship"; alpha = 0.82). Finally, we aggregated the compassion and attraction scores to form person-level compassion and attraction (ICC2 reported above), as well as associations between dynamic relationships (correlations) between self-compassion, and other-compassion and negative and positive affect.

### 5.3. Analyses

Our analysis sought to move from individual-level insights to group-level conclusions that were consistent with the individual level. Our *first step* involved estimating the bivariate relationships between compassion and attraction at the individual level, quantifying the strength of this relationship for each person. This approach is "idionomic" in that idiographic targets of interest (intact analytic units) are first analyzed uninfluenced by estimates based on collections (e.g., group averages), as would unfortunately be the case with multilevel analysis (Sahdra et al., 2024). Then, generally applicable or "nomothetic" conclusions are sought that augment such idiographic analyses. To estimate the within-person association between self-compassion, other-compassion, and attraction, we employed AutoRegressive Integrated Moving Average with eXogenous variables (ARIMAX) models for each individual—referred to as i-ARIMAX (Ciarrochi et al., n.d.). When applied to time-series data, the ARIMAX model offers multiple advantages over conventional regression techniques. It addresses non-stationarity in the data, accommodates autocorrelation and error dependence, and reduces data noise via its moving average component (Chatfield & Xing, 2019). The I-ARIMAX analyses resulted in a beta estimate and standard error for every compassion-attraction pairing and every individual. We

summarized these results using a meta-analytic framework, in which each individual is treated like a separate study. We utilized the package *metafor* (Viechtbauer, 2010) to provide pooled estimates of the average effect of compassion on attraction, as well as the heterogeneity of the effect.

Assuming significant heterogeneity exists in the actor-partner links between compassion and attraction), we believed it would be inaccurate to fit the same actor-partner model (Fig. 1) to the whole group. Some couples may have strong associations between compassion and attraction for the female (self-identified female romantic partner, herein referred to as "female") but not the male (self-identified male romantic partner, herein referred to as "male"), or vice versa. Some couples may show strong links to self but not other compassion. Instead of focusing on the whole group, our *second step* in the analyses sought to use cluster analysis to see if we could identify more homogeneous subgroups and apply the actor-partner model to those.

We used a method known as PAM (Partitioning Around Medoids) to analyze clusters in our data, specifically to investigate how compassion and attraction relate to one another at the level of couples. PAM is a well-known clustering technique that is both robust and efficient. Its robustness comes from the fact that it is based on medoids, which are actual data points in the dataset, rather than means (as in k-means) or modes. A medoid is the data point within a cluster that is most centrally located. It is the object that has the smallest average distance or dissimilarity to all other objects in the same group. The focus on medoids makes PAM less sensitive to outliers and noise in the data (Studer, 2013, pp. 1–34)

To identify the number of clusters, we employ the silhouette method as a measure of cluster quality (Rousseeuw, 1987). The silhouette method evaluates how well each data point fits within its assigned cluster compared to other nearby clusters. It produces a silhouette coefficient for each data point, ranging from −1 to 1. A higher silhouette coefficient indicates a better fit within its cluster, while a lower or negative coefficient suggests potential misclassification or overlap with neighboring clusters.

Having examined individual univariate relations (step 1) and reducing group-level heterogeneity in these relationships via cluster analysis (step 2), our third step sought to model the multivariate actor-partner model (Fig. 1) within subgroups The multilevel-VAR method allows for the simultaneous modeling of multiple variables across time and can capture both within-subject (level-1) and between-subject (level-2) variances (Bringmann et al., 2013). Multilevel-VAR models consider nested structure (observations nested within couples) and allow for contemporaneous, autoregressive, and bidirectional associations between variables at the within-level (Bringmann et al., 2013). We used the *mlVAR* package in R to estimate the lagged and contemporaneous actor-partner model for subgroups (Epskamp et al., n.d.). To meet the complete data requirements of mlVAR, we employed the "Copy Mean" imputation technique to address sporadic missing values. This approach has been shown to be equally effective, if not superior, to alternative methods for handling missing data (Genolini et al., 2013). The mlVAR analysis allowed us to estimate contemporaneous, temporal, and between-person networks.

## 6. Results

### 6.1. Descriptives

Table 1 presents the intraclass correlations for the key within-person variables. ICC values near 1 imply that there is a high degree of homogeneity within individuals or couples and that their responses are highly consistent over time. This scenario indicates distinct differences between clusters, showing that each individual or couple has unique characteristics or responses that set them apart from others. On the other hand, ICC values close to 0 indicate a lack of intra-cluster consistency, suggesting that observations within individuals or couples are as varied

**Table 1**

Interclass correlations for couples and individuals.

| | Individual | | | Couple | | |
|---|---|---|---|---|---|---|
| | ICC | L95% | U95% | ICC | L95% | U95% |
| PartnerAttract | 0.3 | 0.27 | 0.33 | 0.28 | 0.25 | 0.31 |
| SelfCompassion | 0.48 | 0.45 | 0.52 | 0.13 | 0.11 | 0.16 |
| OtherCompassion | 0.36 | 0.33 | 0.4 | 0.14 | 0.12 | 0.17 |
| PAffect | 0.3 | 0.27 | 0.33 | 0.19 | 0.16 | 0.22 |
| NAffect | 0.29 | 0.25 | 0.33 | 0.14 | 0.11 | 0.18 |
| PartnerContact | 0.09 | 0.07 | 0.11 | 0.31 | 0.29 | 0.34 |

as across the entire sample. This would mean that within a person or couple, responses to our measured variables (e.g., self-compassion, other-compassion, and attraction) do not show a consistent pattern that distinguishes them from responses in other individuals or couples.

As can be seen in Table 1, there are significant effects for both individuals and couples (confidence intervals don't overlap with zero), but these are not close to one, suggesting there is substantial heterogeneity within-person and the couple. Couple effects are the largest for partner attraction and level of daily partner contact, whereas individual effects are the highest for self and other compassion. Partner attraction is more strongly associated with couple-level than affect (confidence intervals do not overlap). The low ICC for individual-level contact suggests that differences in contact frequency among individuals are not pronounced. This contrasts with the higher ICC for couple-level contact, which demonstrates more consistent and distinct contact patterns among partners within a couple, compared to the variability of contact frequencies observed in individuals across different times. This higher ICC at the couple level highlights that couples have unique ways of interacting, influenced by shared traits or common environmental factors, making their contact patterns distinct from those of other couples and consistent over time.

Table 2 presents the correlations between compassion and attraction, at both the within and between levels. Generally, all correlations are significant and positive, as expected, with between-person effects generally larger than within-person effects. There is also clear evidence for actor-partner effects, both within couples (Table 2, upper right, shaded) and between couples (Lower left, shaded). These within effects indicate that couples are, on average, synchronized in their compassion and especially their feelings of attraction towards each other. We also examined between-person relationships between baseline relationship dissatisfaction and the experience sample variables and found expected relationships with mean levels of attraction ($r = -0.38$, $p < 0.01$), and other-compassion ($r = -0.18$, $p=.02$), but no significant relationship involving self-compassion ($r = -0.13$, $p = 0.11$). Higher relationship satisfaction was associated with higher attraction and other compassion. These average or nomethetic effects generally support hypothesis 1 and 2.

### 6.2. ARIMAX:Individual level effects and heterogeneity

We utilized I-ARIMAX analyses to estimate beta and standard error for every compassion-attraction pairing and every individual. These individual-level effects were then analyzed through a meta-analysis to derive aggregate effects and assess degrees of heterogeneity. The results are presented in Table 3. Consistent with hypothesis 1 and 2, the pooled effects tended to be highly reliable and in the expected direction, with within-person increases in compassion linked to increases in attraction for both females and males.The actor effects tended to be larger than the partner effects. Self and other compassion tended to be similarly linked to attraction.

Individual Betas were examined using meta-analytic tools to examine the heterogeneity of effects (Question 1). The $I^2$ statistic describes the percentage of variation across studies (or in this case, across individuals) that is due to heterogeneity rather than chance (Higgins &

**Table 2**

Within-person (above diagonal) and between-person correlations between couples' self- and other-compassion, and their feelings of attraction towards one another.

| | Women | | | Men | | |
|---|---|---|---|---|---|---|
| | SelfComp | OthComp | Attraction | SelfComp | OthComp | Attraction |
| **Women** | | **Within Correlations** | | | | |
| SelfComp | 1 | 0.50*** | 0.22*** | 0.10*** | 0.11*** | 0.08*** |
| OthComp | 0.50*** | 1 | 0.18*** | 0.08*** | 0.09*** | 0.03 |
| Attraction | 0.22*** | 0.18*** | 1 | 0.09*** | 0.10*** | 0.20*** |
| **Men** | | | | | | |
| SelfComp | 0.10*** | 0.08*** | 0.09*** | 1 | 0.52*** | 0.19*** |
| OthComp | 0.11*** | 0.09*** | 0.10*** | 0.52*** | 1 | 0.22*** |
| Attraction | 0.08*** | 0.03 | 0.20*** | 0.19*** | 0.22*** | 1 |
| **Women** | | **Between Correlations** | | | | |
| SelfComp | 1 | 0.72*** | 0.30** | 0.23* | 0.34** | 0.26* |
| OthComp | 0.72*** | 1 | 0.30* | 0.20 | 0.28* | 0.16 |
| Attraction | 0.30** | 0.30* | 1 | 0.29* | 0.27* | 0.49*** |
| **Men** | | | | | | |
| SelfComp | 0.23* | 0.20 | 0.29* | 1 | 0.69*** | 0.20 |
| OthComp | 0.34** | 0.28* | 0.27* | 0.69*** | 1 | 0.42*** |
| Attraction | 0.26* | 0.16 | 0.49*** | 0.20 | 0.42*** | 1 |

Note: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; Shaded areas represent actor-partner relationships; Bolded within correlations reflect state similarity between self-identified male romantic partner and self-identified female romantic partner. Bolded between indicates trait similarity.

**Table 3**

Average (pooled) within-person relationships between compassion and feelings of attraction to the partner, level of heterogeneity of that relationship, and percentage of males (m) and females (f) showing different magnitudes of the relationship (beta).

3a: Female ratings of attraction to partner

| | Pooled | | Heterog. | | Percentage Betas in Each Range | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compassion | B | SE | I2 | Q2 | Below −0.31 | −0.30 -.21 | −0.20 0.11 | −0.10 0.10 | 0.11 0.20 | 0.21 0.30 | Above 0.31 |
| MSelfcomp | 0.14 | 0.04 | 75 | 326 | 3% | 11% | 10% | 25% | 14% | 16% | 22% |
| MOtherComp | 0.08 | 0.04 | 83 | 866 | 4% | 14% | 14% | 23% | 16% | 10% | 19% |
| FSelfcomp | 0.24 | 0.03 | 71 | 285 | 3% | 3% | 3% | 23% | 15% | 16% | 37% |
| FOtherComp | 0.21 | 0.03 | 66 | 209 | 3% | 0% | 10% | 19% | 15% | 14% | 40% |

3b: Male ratings of attraction to partner

| | Pooled | | Heterog. | | Percentage Betas in Each Range | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Compassion | B | SE | I2 | Q2 | Below −0.31 | −0.30 -.21 | −0.20 0.11 | −0.10 0.10 | 0.11 0.20 | 0.21 0.30 | Above 0.31 |
| MSelfcomp | 0.22 | 0.03 | 74 | 324 | 3% | 5% | 8% | 19% | 19% | 14% | 32% |
| MOtherComp | 0.24 | 0.03 | 68 | 280 | 1% | 1% | 5% | 25% | 18% | 15% | 34% |
| FSelfcomp | 0.07 | 0.03 | 69 | 224 | 10% | 7% | 11% | 23% | 15% | 19% | 15% |
| FOtherComp | 0.08 | 0.03 | 63 | 198 | 10% | 1% | 4% | 34% | 19% | 15% | 16% |

**Note:** ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$. $I^2$ represents the percentage of total variability across studies that is due to true heterogeneity rather than chance. All $Q^2$ tests of heterogeneity are significant, $p < 0.05$.

Thompson, 2002). In the Cochrane library of meta-analyses, the median $I^2$ is 21% (Ioannidis et al., 2007) and values above 50% suggest that pooled effects are unreliable. $Q^2$ is used to test if there is significant heterogeneity.

There was substantial heterogeneity in all effects, with $i^2$ greater than 63% and $Q^2$ highly significant (Table 3a,b, middle columns). In standard meta-analysis values this large would generally suggest that the pooled effects should not be trusted.

To illustrate the heterogeneity, we display a forest plot in Fig. 2 showing the relationships between an actor's self-compassion (e.g., self-identified female romantic partner) and a partner's attraction (e.g., self-identified male romantic partner). These findings utilize self and other reports, thereby reducing the problem of self-report bias. Lines that fail to overlap indicate statistically significant differences. The plot reveals substantial heterogeneity. In many instances, higher levels of self-compassion are negatively correlated with a partner's attraction. While most cases are positive and situate themselves to the right of the zero line—aligning with the group average—it's notable that several individual averages fall outside the confidence interval of the group mean (indicated by the lowermost bar near the X-axis). We also observe an apparent in-couple correlation pattern: the existence of a positive relationship between female self-compassion and male attraction often

coincides with a similar positive link between male self-compassion and female attraction. We delve into this pattern more systematically in the subsequent analysis.

*6.3. Cluster analysis: increasing homogeneity by identifying subgroups*

We found support for both types of compassion being linked, on average, to attraction (H1 and H2), but there was substantial heterogeneity in actor and partner links (Q1), suggesting that group averages may be untrustworthy. We thus sought to identify more homogeneous subgroups using cluster analysis.

To determine the optimal number of clusters, we applied the silhouette method for a range of possible cluster solutions and calculated the average silhouette coefficient across all data points for each solution. The optimal number of clusters is the one that yields the highest average silhouette coefficient. In the present case, the silhouette scores for 2 to 10 cluster solutions were: 0.18, 0.14, 0.14, 0.13, 0.14, 0.14, 0.16, 0.16, 0.15, respectively. Thus, the two-cluster solution produced both the best and most parsimonious solutions. It produced virtually equal cluster sizes (n = 36 and 37). Fig. 3 provides a visualization of the two identified groups and the couples in the group. There was little overlap between the two groups. Fig. 3 also illustrates that the two groups still have some
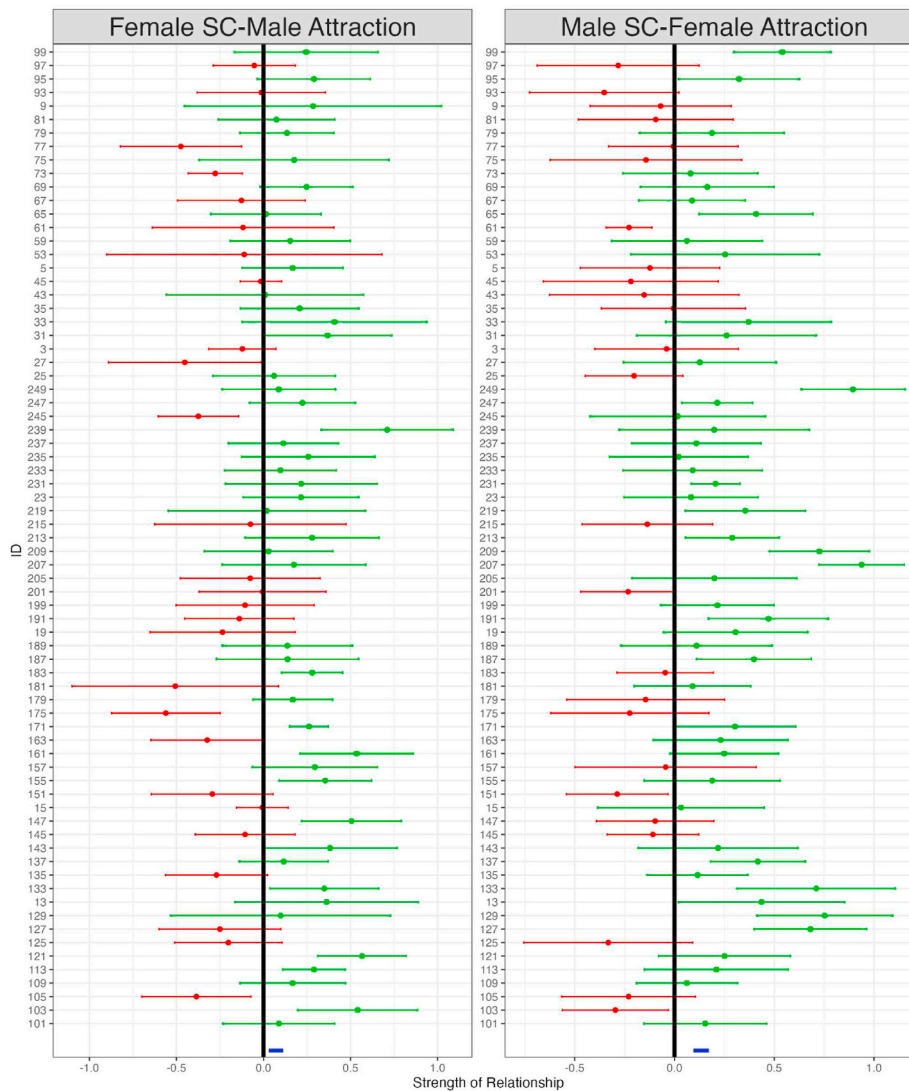
**Fig. 2.** The link between actors' self-compassion and partners' attraction to the actor.
**Note:** Red lines indicate negative relationships, green positive. The small blue line is the mean. Confidence intervals that do not overlap with 0 are considered significant, and intervals that don't overlap with each other indicate the strength of relationships differ between the two individuals.

heterogeneity, but are less heterogeneous than the group as a whole.

To help interpret the meaning of the clusters, Table 4 presents the means of the variables that went into the cluster analysis. Cluster 1 always had stronger links between compassion and attraction than Cluster 2. The effect size in Cluster 1 might be labeled medium, and in Cluster 2, Small to null (Funder and Ozer, 2019). We accordingly labeled the two groups the compassion/Attraction "synergy" and "independent" group. These effects suggest clustering of compassion-attraction dynamics at the couple level, as significant links between compassion and attraction by the female tended to be mirrored by the male in the couple, and vice versa.

### 6.4. Network analyses: multi-level vector auto-regression (MVAR)

In our final analysis, we used the *mlVAR* package in R to estimate the lagged and contemporaneous actor-partner model for both samples (Epskamp, S., Deserno, M., Bringmann, L., Veenman, M., n.d.). Fig. 4 presents the contemporaneous relationships between compassion synergistic and independent couples. For synergistic couples, there were clear actor-actor links between compassion and attraction for both males and females, supporting hypothesis 1. When these couples experienced more compassion in their daily life, they also experienced more

attraction to their partner. One actor-partner effect also supported hypothesis 2B but not 2a. When the male felt more compassion towards others, the female felt more attracted to the male (2b). However, the female's other compassion was not linked to the male's attraction to the female (H2a).

Hypotheses 1 and 2 were generally not supported in the independent couples. There was only one consistent link: When males experienced more attraction toward others, they also experienced more attraction to the female (Hypothesis 1A). However, this link was "counteracted" by other links. The males' other compassion was associated with higher female self-compassion, and higher female self-compassion was linked to lower male attraction to the female partner. The independent couples provide no clear evidence for hypothesis 1 or 2.

Despite the differences, there were some similarities between synergistic and independent couples: individuals who reported higher levels of self-compassion also tended to report increased levels of other-compassion. Furthermore, in couples where females indicated relatively high levels of attraction to their male partners, this sentiment was generally reciprocated by corresponding relatively high levels of attraction from the males.

Fig. 5 presents the between-person networks. While there were clear similarities, we also identified noteworthy divergences between within-
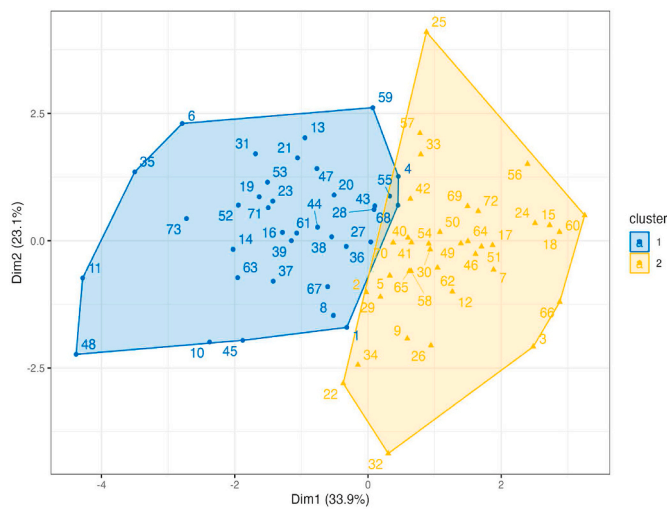
**Fig. 3.** Couple cluster assignment based on Partitioning Around Medoids (PAM) cluster analysis of links between female and male self/other compassion and female and male attraction.

**Table 4**
The average link between female and male self and other compassion and female and male attraction for two types of couple.

| Variable | Couple Type 1 Comp<−>Att Synergy | | Couple Type 2 Comp<−>Att Independ. | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| FOcomp<−>FPartAtt | 0.32 | 0.19 | 0.09 | 0.26 |
| FOcomp<−>MPartAtt | 0.21 | 0.19 | −0.03 | 0.24 |
| FScomp<−>FPartAtt | 0.35 | 0.20 | 0.11 | 0.27 |
| FScomp<−>MPartAtt | 0.22 | 0.20 | −0.07 | 0.26 |
| MOcomp<−>FPartAtt | 0.25 | 0.30 | −0.08 | 0.24 |
| MOComp<−>MPartAtt | 0.31 | 0.26 | 0.15 | 0.20 |
| MScomp<−>FPartAtt | 0.28 | 0.28 | −0.01 | 0.23 |
| MScomp<−>MPartAtt | 0.30 | 0.29 | 0.12 | 0.24 |

Note: Att<−>Comp: Compassion linked to contemporaneous attraction; Att ‖ Comp: Compassion unlinked to contemporaneous attraction. FOcomp, MOcomp = Female and male Other compassion; FScomp, MScomp = Female, and male Self-compassion. "<−>" = strength of association between Compassion and attraction.

person and between-person dynamics, underscoring their statistical independence (Molenaar, 2004). Specifically, males exhibiting higher levels of self-compassion were found to experience lower levels of attraction toward their female partners *in both groups*. This counterintuitive finding sharply contrasts with our earlier within-person analysis, which suggested that increases in self-compassion were positively associated with attraction levels, at least in the synergistic group.

Our next analysis focused on the temporal relations between compassion and attraction at a lag of 1. As shown in Fig. 6, all variables showed significant autocorrelation, suggesting that earlier values of compassion and attraction (lag 1) tended to predict later values, a kind of "mood" effect. For the synergistic group, there was only one lagged effect with earlier female's attraction to her partner predicting the female's self-compassion later. In contrast, there was no link for the independent group between a female's attraction and self-compassion (Beta = 0.00, SE = 0.031, $p > 0.95$) or indeed any form of compassion. Instead, this group showed distinctive links driven largely by the females' self-compassion. The male partner's self-compassion predicted future other compassion in both males and females. The female's other compassion, in turn, predicted later female self-compassion.

## 7. Differences between synergistic and independent couples

Our final analysis explored potential differences between couples that showed synergy between compassion and attraction and those who did not show such synergy (Question 2). We found no relationship between relationship living situation (e.g., living with a partner) and couple type, $X^2$ (3) = 1.8, $p = 0.61$. Analysis for numeric variables is presented in Table 5. We found no mean-level differences between the two types of couples. Both groups reported similar levels of relationship satisfaction, compassion, frequency of contact, affective experiences, and mutual attraction. The key group divergence lies in the day-to-day interplay between compassion and affect. Specifically, the synergistic group displayed a stronger connection between compassion and positive affect than the independent group; this pattern was consistent across both genders. Additionally, a stronger link between compassion and negative affect was observed among males in the synergistic group, though a similar trend in females did not reach statistical significance.

## 8. Discussion

While previous studies have posited a positive relationship between self-compassion and other-compassion and beneficial psychosocial outcomes in couples (Denckla et al., 2017; Jacobson et al., 2018; Kaya et al., 2022; Lathren et al., 2021; Neff & Beretvas, 2013; Shahabi et al., 2019; Tandler & Petersen, 2020), these assertions largely rely on cross-sectional, correlational, and between-subject designs. Our study departs from this trend by focusing on within-person changes, utilizing intensive daily diary methodologies to capture moment-to-moment variations in compassion and attraction among couples. We observed that elevations in self-compassion and other-compassion were generally linked to corresponding increases in partner attraction, corroborating existing literature.

However, a key nuance emerged: considerable heterogeneity existed in how these constructs influenced attraction within individual couples. Through subgroup analysis, we identified two distinct categories of couples. The first, termed "synergistic" couples, demonstrated a central role of compassion in enhancing mutual attraction. Conversely, a second "independent" (or non-synergistic) cluster showed minimal to no influence of compassion on attraction levels. These observations may have implications for therapeutic interventions aimed at couples. While strategies designed to bolster self- and other-compassion may yield transformative results for some, they could prove ineffectual or counterproductive for couples who do not experience compassion as central to attraction. This underscores the importance of nuanced case formulation and individualized treatment planning in couples therapy.

The findings challenge the assumption of psychological homogeneity at both the individual and couple levels. Within individuals, variability in compassion and attraction links was high, with $I^2$ ranging from 63% to 84%. This far exceeds the median $I^2$ of 21% found in Cochrane Library meta-analyses (Ioannidis et al., 2007). Such high variability makes pooled effects unreliable (Lo et al., 2019), undermining the notion of psychological uniformity. At the couple level, the influence of compassion also varied; some couples were significantly affected by compassion, whilst others showed little impact.

Although most researchers acknowledge variability in the relationship between an explanatory variable and its outcome, they often report pooled effects and implicitly downplay unexplained, person-level variations. Such practices lead to general statements like "self-compassionate individuals display more positive relationship behavior (Neff & Beretvas, 2013, p. 78) " or "Self-compassion and forgiveness: Major predictors of Marital Satisfaction in young couples" (Fahimdanesh et al., 2020). While these conclusions may hold on average, they overlook the heterogeneity of effects. For instance, they don't address the possibility that self-compassion could sometimes correlate with lower marital satisfaction (Baker & McNulty, 2011).

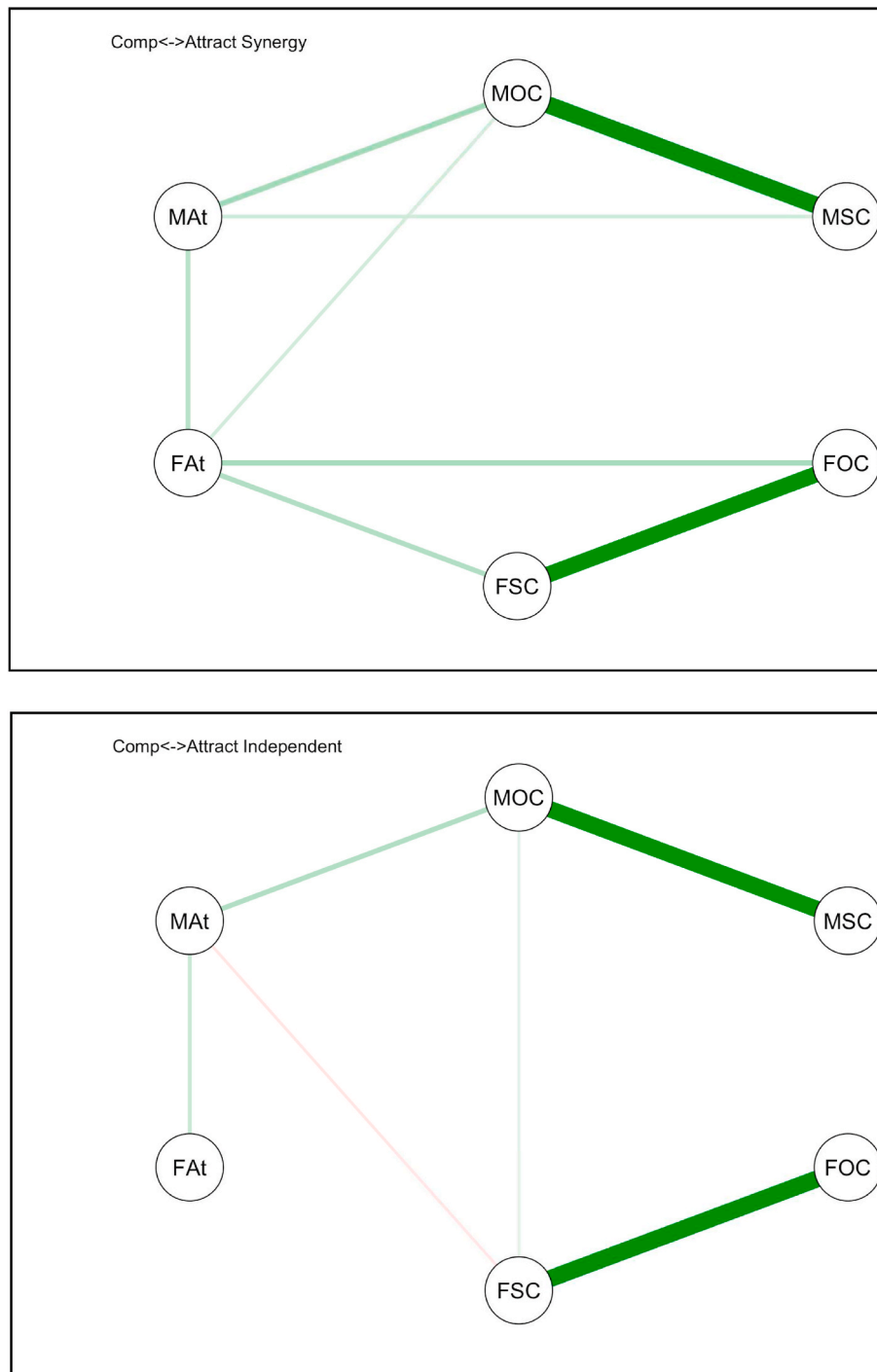We contend that both group-average research and idionomic studies,

**Fig. 4.** Actor-Partner Multi-Level Vector Autoregression models: Contemporaneous relationships between compassion and partner attraction for different groups of couples

Note: MAT, MOC and MSC are male attraction to the partner, male other compassion, and Male self-compassion; FAt, FSC, and FOC are female versions of these variables. Att<−>Comp Group: Compassion linked to contemporaneous attraction; Att || Comp Group: Compassion unlinked to contemporaneous attraction.

like the one presented here, offer valuable insights for couple-related interventions. Group averages highlight processes that are generally useful to many couples, but do not specify for whom the generalization applies. In contrast, individual-level data offer tailored information crucial for personalizing interventions (Ciarrochi et al., n.d.; Hayes et al., 2019, 2022; Sanford et al., 2022). For instance, clinicians might favor a compassion-focused approach for synergistic couples over independent ones.

A range of interesting and possibly clinically meaningful ideas arise

from idionomic data. One avenue worth exploring is why compassion doesn't yield positive outcomes for particular couples. Do they fear self-compassion (Matos et al., 2022; Steindl et al., n.d.)? Is self-compassion in conflict with other compassion (Sahdra et al., 2023), as when a parent's self-care is incompatible with family time? These would be key questions we could ask to help personalize our couple's intervention. Future research is needed to evaluate if idionomic information (synergistic versus independent) can be used to improve intervention outcomes (Ciarrochi et al., n.d.; Hayes et al., 2019, 2022; Sanford et al.,
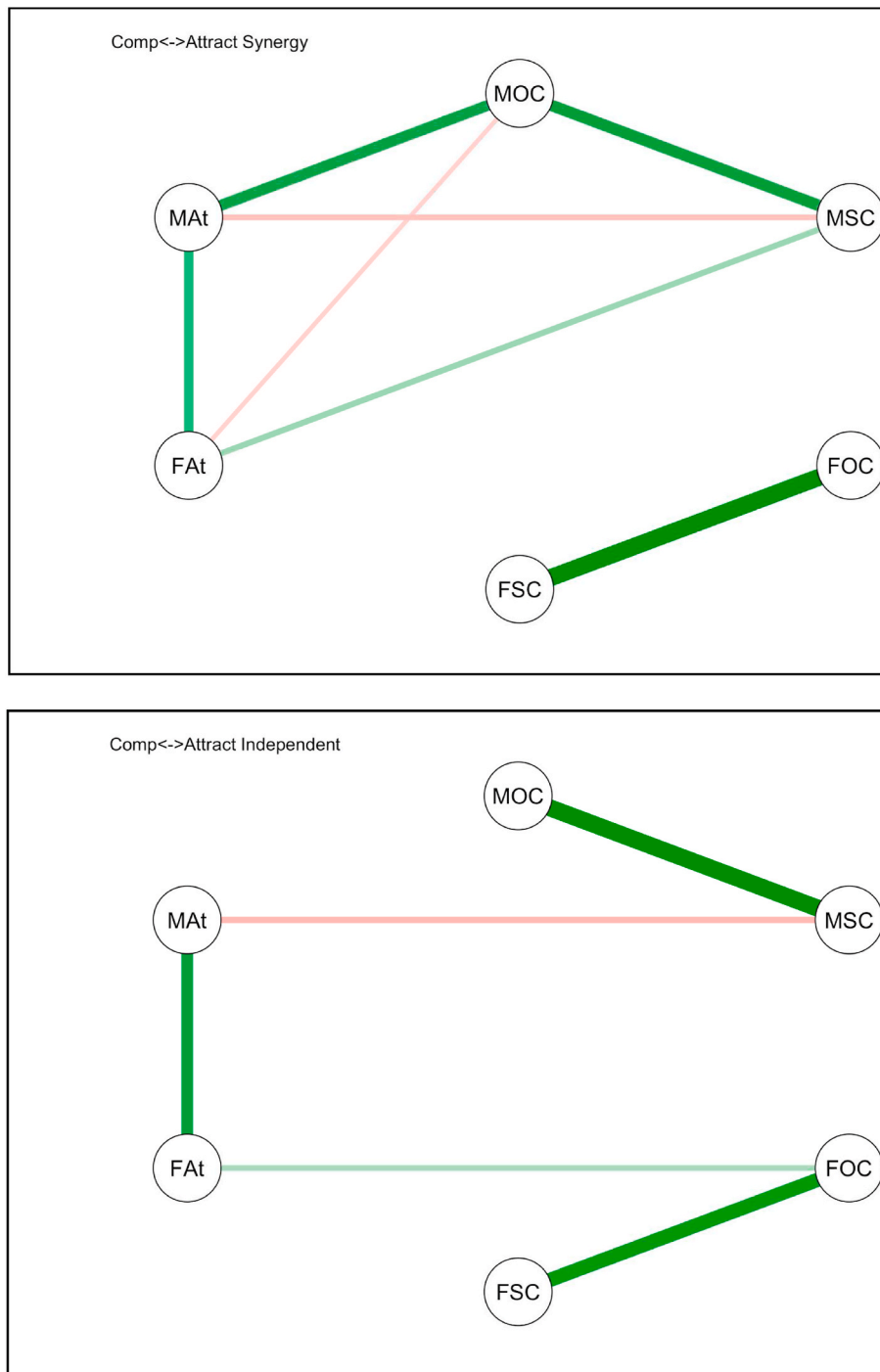
**Fig. 5.** Actor-Partner Multi-Level Vector Autoregression models: Between person relationships between compassion and partner attraction for different groups of couples

**Note:** MAT, MOC and MSC are male attraction to the partner, male other compassion, and Male self-compassion; FAt, FSC, and FOC are female versions of these variables.Att<−>Comp Group: Compassion linked to contemporaneous attraction; Att || Comp Group: Compassion unlinked to contemporaneous attraction.

2022)

Our previous discussions have focused on within-person changes in compassion and attraction. We were also able to examine between-person relationships. The correlational analysis replicated previous research (Denckla et al., 2017; Jacobson et al., 2018; Kaya et al., 2022; Lathren et al., 2021; Neff & Beretvas, 2013; Shahabi et al., 2019; Tandler & Petersen, 2020), indicating a positive link between higher levels of compassion and favorable emotional bonds within couples, exemplified here by attraction.

However, our network analysis revealed a somewhat more complex picture. Specifically, in both synergistic and independent couples, men with above-average levels of self-compassion were, counterintuitively, less attracted to their partners. This finding appears to be at odds with our own correlational analysis, which demonstrated a positive association between compassion and attraction, as well as with prior research that highlights the positive impacts of self-compassion (Collins et al., 2014; Fehr et al., 2014; Jiang et al., 2020; Sprecher & Fehr, 2005). One possible explanation for the observed discrepancy may lie in the distinct
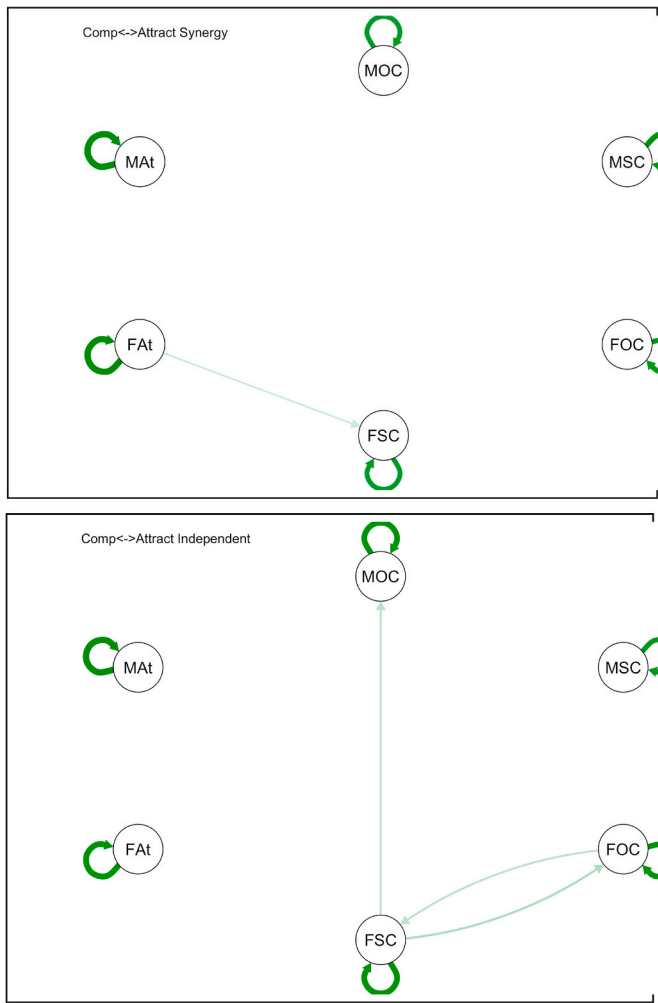
**Fig. 6.** Actor-Partner Multi-Level Vector Autoregression models: Temporal (lag 1) relationships between compassion and partner attraction for different groups of couples

**Note:** MAT, MOC and MSC are male attraction to the partner, male other compassion, and Male self-compassion; FAt, FSC, and FOC are female versions of these variables. Att<−>Comp Group: Compassion linked to contemporaneous attraction; Att || Comp Group: Compassion unlinked to contemporaneous attraction.

**Table 5**

Tests for differences between couples high in compassion-attraction synergy and those low in such synergy.

| Females | Compassion Synergy Couples | | Compassion Independent Couples | | Mean difference | |
|---|---|---|---|---|---|---|
| *Variable* | *Mean* | *SD* | *Mean* | *SD* | *t_value* | *p_value* |
| RelatDisSat | 1.56 | 0.35 | 1.58 | 0.4 | −0.22 | 0.82 |
| RelatLength | 88.00 | 100.4 | 114.56 | 126.37 | −0.99 | 0.33 |
| Contact | 2.21 | 1.43 | 2.26 | 1.37 | −0.14 | 0.89 |
| PartAtt | 85.47 | 10.62 | 88.43 | 9.7 | −1.24 | 0.22 |
| SelfComp | 78.15 | 12.82 | 74.92 | 17.96 | 0.89 | 0.38 |
| OtherComp | 80.05 | 10.82 | 75.14 | 18.37 | 1.4 | 0.17 |
| NA_Mean | 19.2 | 9.71 | 19.71 | 14.78 | −0.17 | 0.86 |
| PA_Mean | 74.11 | 10.46 | 71.68 | 16.09 | 0.77 | 0.44 |
| Cor.SC_PA | 0.51 | 0.21 | 0.36 | 0.28 | 2.52 | 0.01 |
| Cor.SC_NA | −0.35 | 0.3 | −0.27 | 0.32 | −1.1 | 0.27 |
| Cor.OC_NA | −0.31 | 0.32 | −0.22 | 0.3 | −1.27 | 0.21 |
| Cor.OC_PA | 0.50 | 0.22 | 0.32 | 0.27 | 3.07 | 0.001 |
| Cor.Self_Other | 0.58 | 0.24 | 0.58 | 0.31 | −0.07 | 0.95 |

| **Males** | | | | | | |
|---|---|---|---|---|---|---|
| *Variable* | *Mean* | *SD* | *Mean* | *SD* | *t_value* | *p_value* |
| RelatSat | 1.54 | 0.44 | 1.66 | 0.49 | −1.14 | 0.26 |
| RelatLength | 87.19 | 100.67 | 117.69 | 134.09 | −1.09 | 0.28 |
| Contact | 2.13 | 1.38 | 2.2 | 1.46 | −0.21 | 0.84 |
| PartAtt | 85.6 | 9.13 | 83.47 | 10.47 | 0.93 | 0.36 |
| SelfComp | 74.38 | 18.12 | 72.07 | 17.11 | 0.56 | 0.58 |
| OtherComp | 80.12 | 12.55 | 75.04 | 15.56 | 1.54 | 0.13 |
| NA_Mean | 20.21 | 11.48 | 21.9 | 12.31 | −0.61 | 0.55 |
| PA_Mean | 74.5 | 13.28 | 71.61 | 13.3 | 0.93 | 0.36 |
| Cor.SC_PA | 0.53 | 0.26 | 0.37 | 0.24 | 2.68 | 0.01 |
| Cor.SC_NA | −0.43 | 0.29 | −0.27 | 0.28 | −2.44 | 0.02 |
| Cor.OC_NA | −0.42 | 0.25 | −0.28 | 0.25 | −2.36 | 0.02 |
| Cor.OC_PA | 0.50 | 0.25 | 0.39 | 0.25 | 1.83 | 0.07 |
| Cor.Self_Other | 0.59 | 0.31 | 0.5 | 0.34 | 1.23 | 0.22 |

**Notes:** RelatDissat = Baseline relationship Dis-satisfaction. RelatLength = Relationship length in months; Contact = Amount of contact with partner. NA= Negative affect. PA= Positive affect. OC=Other compassion. SC= Self. Cor = Correlation between variables, as in correlation between self-compassion and negative affect (Cor.SC_NA) or correlation between Self and Other compassion (Cor.Slf_Other).

methodologies employed in the two types of analysis. Whereas the correlational method is univariate, examining one variable in isolation, the network analysis is multivariate and considers multiple significant variables simultaneously. Only after controlling for other-compassion did we discover a negative correlation between male self-compassion and male attraction. This implies that self-compassion in men, when devoid of other compassion, could adversely affect attraction. This is consistent with Baker and McNulty (2011), who found that if men did not have the motivation to correct interpersonal mistakes, then higher self-compassion was associated with worse marital outcomes for them.

We also analyzed the temporal relationships between variables. In the synergistic group, the female's attraction to the partner predicted later female self-compassion, whereas in the independent group, there was no link between female attraction and compassion. Instead, female self-compassion in the independent group appeared to precede male other-compassion and female other-compassion. In other words, when a female was being kind to herself, this promoted other compassion in both herself and her partner.

The temporal analysis discussed above is common in research aimed at uncovering causal relationships, based on the assumption that variables predicting others are likely causally linked (Ciarrochi, et al., 2020; Donald et al., 2022; Marshall et al., 2014). However, the value of idiographic data extends beyond causal inference. Such data might have treatment utility (Hayes, et al., 2020,2023), even when it includes contemporaneous effects (two variables that change together). For example, if a therapist observes that self-compassion and lower attraction co-occur in a particular couple, this may lead the therapist to explore the issue with the couple. Thus, contemporaneous information may orient the therapist toward potential causal processes. Future treatment utility studies are needed to investigate this possibility.

In our final analysis, we sought to identify any important differences between couples characterized as "compassion synergistic" and those termed "compassion independent." We detected no differences in relationship satisfaction, frequency of contact, general levels of attraction or compassion, or the prevalence of positive and negative moods. In other words, there were no statistically significant mean differences between the two types of couples. However, we did observe dynamic differences. Specifically, the influence of compassion on daily positive and negative emotions was markedly stronger in compassion synergistic couples compared to their independent counterparts. This suggests synergistic couples showed a greater dependency between compassion and their couple-level feelings (e.g., attraction) and individual-level emotional states (e.g., positive affect). These findings are especially noteworthy, considering that positive feelings were not employed as criteria for categorizing the couples.

## Limitations and future directions

When a synergistic couple experiences low compassion, they are less attracted to each other; when an independent couple experiences low compassion, their attraction is unaffected. This prompts questions for future research: if not compassion, what drives attraction in independent couples? One critical takeaway from our study is that general, normative effects may not universally apply to individuals or couples. The reasons behind the differences between synergistic and independent couples may vary considerably. For instance, some couples might be compassion-independent due to focusing on physical attraction, while others may maintain independence because their emotional bonds don't necessarily intersect with their psychological states.

This sample consisted of predominantly content couples who were not seeking therapy for marital distress. The tendency of past compassion research to not acknowledge the heterogeneity of effects has important implications for psychological treatments given that the couples presenting for therapeutic intervention may be more likely to belong to the "independent" couple type rather than the "synergistic" group. Future research is needed to determine if help-seeking couples generate different patterns. It would also be interesting to assess other psychosocial dependent variables or markers of healthy, positive romantic relationships. Romantic attraction served as a discrete, clear outcome and marker of a healthy romantic relationship in the current study. However other psychosocial outcomes such as loyalty, strong communication, awareness and responsiveness to partner needs, trust, and emotional attunement would also be informative directions for future research.

In previous studies using meta-analytic tools, we have found that analyses based on idiographic longitudinal data often far exceed acceptable levels of homogeneity (Ciarrochi et al., n.d.; Sahdra et al., 2023). This is the first study to extend that finding to couples, further opening up a new avenue of research. The present study illustrates a method to identify dynamic relationships between process (compassion) and outcome (attraction) at the idiographic level. This could be important since it is the level at which clinical intervention commonly occurs.

Further research will be needed to determine how these findings can be effectively communicated to practitioners to enhance therapeutic outcomes (Ciarrochi et al., n.d.; Hayes et al., 2019, 2022; Sanford et al., 2022). Achieving this has long been considered the "holy grail" of assessment and process research (Hayes, Nelson, & Jarrett, 1987). Our current data indicate that the personalization of treatment may hinge on careful attention to intra-individual analyses of critical change processes.

## Author note

## Declaration of competing interest

none.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jcbs.2024.100749.

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