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# Nurturance, Eroticism, and Relationship Satisfaction Among People in Monogamous and Consensually Non-Monogamous Relationships

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## ABSTRACT

Satisfying romantic relationships often feature high levels of nurturance and eroticism. Consensually non-monogamous (CNM) individuals may experience these with additional partners, potentially reducing the need for both to be present in a primary relationship to achieve satisfaction. We assessed how nurturance and eroticism relate to relationship satisfaction in single-partnered ( $n = 289$ ) and multi-partnered ( $n = 335$ ) individuals. We also compared relationship behavior (single vs multiple current partners) and identity (monogamous,  $n = 217$  vs CNM,  $n = 399$ ). Compared to multi-partnered individuals' reports of their primary relationship, single-partnered individuals reported similar satisfaction and nurturance, and higher eroticism. Across single- and multi-partnered individuals, nurturance and eroticism were positively associated with relationship satisfaction, with no upper level interactions. Instead, interactions emerged when assessing relationship identity. Among monogamous individuals, nurturance and eroticism also did not interact, meaning the positive association of one was consistent across levels of the other. For CNM-identified individuals, however, nurturance and eroticism interacted; nurturance was more strongly linked to satisfaction when eroticism was low, while eroticism was only linked to satisfaction when nurturance was low. When nurturance was high, there was no association between eroticism and satisfaction. Longer relationship durations were linked to lower eroticism and higher nurturance, regardless of partner number or age. Findings suggest that nurturance and eroticism contribute to satisfaction differently for monogamous and CNM individuals, with CNM individuals fostering highly satisfying relationships even when eroticism is low. This study provides a nuanced understanding of how these factors contribute to satisfaction across diverse relationship forms.

Satisfying intimate relationships often involve sexual (i.e., erotic) and nurturant elements. Eroticism refers to concepts such as sexual passion, bodily pleasure, arousal, and tantalization, whereas nurturance refers to warm loving feelings, closeness, and caring (van Anders, 2015). Relationship science theories generally point to both nurturance and eroticism as necessary components of fulfilling romantic relationships. For example, Sternberg's triangular theory of love (Sorokowski et al., 2021; Sternberg, 1986) distinguishes commitment and emotional intimacy from passion, and Sexual Configurations Theory (van Anders, 2015) asserts that eroticism and nurturance are distinct but interconnected components of partner attraction. Thus, people who find both qualities in a single partner will presumably be more satisfied in that relationship. Those who are in consensually non-monogamous (CNM; e.g., polyamorous, swinging, and open) relationships, however, may have additional partners with whom they may experience nurturance and/or eroticism, or may consider levels of eroticism and nurturance differently in their relationship satisfaction; however, it is not yet known how the context of consensual non-monogamy may alter the roles of nurturance and eroticism in evaluating how satisfying they find their relationships.

Research specifically exploring nurturance and eroticism in intimate relationships is still in its early stages, but decades of

research has consistently documented strong links between both sexual (i.e., eroticism-related) and intimate (i.e., nurturance-related) relationship factors and relationship satisfaction and quality (for reviews see, Christopher & Sprecher, 2000; Righetti et al., 2022; Sprecher et al., 2018). Sexual passion and desire can be defined as intense physical attraction accompanied by strong emotional and sexual arousal (Davis et al., 2004), and "the sum of the forces that incline us towards and away from sexual behavior" (Levine, 2002, p. 47), and both are positively related to relationship satisfaction (Beaudoin et al., 2021; Busby et al., 2019, 2020; Philippe et al., 2017, 2019; Ratelle et al., 2013; Sprecher, 2002; Yeh et al., 2006). Prior evidence suggests that concepts related to nurturance are also positively linked to satisfaction in romantic relationships. For example, several studies have shown that interpersonal/couple closeness and perceived interconnectedness (Aron et al., 1992; Croyley & Reid, 2008; Józefacka et al., 2023), stronger relationship commitment (e.g., Landis et al., 2014), and felt security in daily interactions between partners (e.g., Sadikaj et al., 2015) are associated with greater satisfaction in romantic relationships.

Nurturance and eroticism may also coincide in intimate relationships, with high levels of sexual passion and desire often corresponding with high levels of intimacy and closeness

(Balzarini, Dharma, Muise, et al., 2019; Bergeron et al., 2024; Blumenstock et al., 2020; Rubin & Campbell, 2012; van Lankveld et al., 2018). However, it is unclear whether eroticism and nurturance are both required to cultivate relationship satisfaction. In some cases, nurturance and eroticism may interact to detract from relationship quality depending on the influence of other personal or relationship characteristics (see Muise & Goss, 2024). For example, Blumenstock (2023) found that discomfort with intimacy (attachment avoidance) was associated with lower desire toward romantic partners but higher desire toward attractive strangers and acquaintances, suggesting a complex interplay of sexual and intimate factors that have implications for later relationship satisfaction. Likewise, Muise and Goss (2024) suggested that greater closeness within a relationship may only enhance eroticism when partners are able to maintain distinct, individual identities and achieve personal growth. Therefore, how eroticism and nurturance interact to contribute to relationship satisfaction may depend on other features of the relationship.

Nurturance and eroticism can likewise evolve across the duration of a relationship (Balzarini, Dharma, Muise, et al., 2019), and this may change the link of each to relationship satisfaction. The intimacy-desire paradox (Perel, 2006; Schnarch, 1991; Sims & Meana, 2010) describes how the intimacy that develops across the span of a committed relationship may dampen sexual passion. According to this paradox, the familiarity, emotional security, and closeness which are built up by couples over time can stifle their sexual desire, as this conversely thrives under curiosity, distance, and autonomy. Providing support for this paradox, in a focus group of married women explaining why their sexual desire has waned, one major theme in women's descriptions focused on over-familiarity, and how the growing closeness and intimacy between the couple came at a sexual cost (Sims & Meana, 2010). Further, in presumably monogamous couples, Sprecher and Regan (1998) found that sexual passion was lower among people in longer relationships and among people who described their relationship as married or living together compared to those who were exclusively dating. However, some couples can maintain high levels of sexual passion and satisfaction, along with high levels of emotional satisfaction and intimacy throughout their relationships (Blumenstock et al., 2020; Ferreira et al., 2012; Muise et al., 2013; Muise & Goss, 2024). For example, although Muise et al. (2013) found that sexual passion decreased in long-term couples over a 4-month period, this was not true for couples reporting higher motivation to respond to a partner's sexual needs. This suggests that eroticism tends to decrease slightly as relationships persist – as found by Balzarini, Dharma, Muise, et al. (2019) for both monogamous and polyamorous relationships, but that partners may adopt behaviors to buffer against this decline.

### **Experiencing Nurturance and Eroticism Across Multiple Relationships**

Nurturance and eroticism differ across partners in non-monogamous relationships (Balzarini, Dharma, Muise, et al., 2019), with individuals in polyamorous relationships reporting

higher levels of nurturance with their primary partners and higher levels of eroticism with their secondary partners compared to those in monogamous relationships. Yet, the relationship satisfaction of individuals with multiple partners is comparable to those with one partner (Moors et al., [under review](#)). Therefore, nurturance and eroticism may contribute differently to satisfaction among people who form multiple intimate relationships compared to those who only form one intimate relationship at a time. Whereas those with only one partner experience eroticism and nurturance from a single source, those with additional partners may derive eroticism and nurturance from multiple sources (Balzarini et al., 2017, 2019b). Hence, for multi-partnered individuals, relationship satisfaction with a primary partner may be less dependent upon their eroticism or nurturance with that specific partner. That is, if they are not sexually or romantically exclusive, partners can potentially find adequate levels of nurturance and/or eroticism across multiple relationships. Our first aim was to assess the roles of eroticism and nurturance in relationship satisfaction and whether these associations differed across individuals with one versus multiple partners.

Notably, not all individuals who identify as CNM (as opposed to monogamous) are in relationships with multiple people at any given time. Thus, it may be important to distinguish those who have more than one partner (i.e., their partner number) from those who identify with a particular relationship style (i.e., their relationship identity or relationship orientation). It is possible that differences observed between monogamous and CNM relationships are not explained by the mere presence of additional partners – and therefore sources of eroticism and nurturance – but rather by how monogamous- and CNM-identified people approach, form, and manage their relationships. In other words, a CNM relationship identity could represent much more than simply additional partners; having the freedom to pursue additional partners to fulfill nurturant or erotic needs, or even the understanding that these needs are unlikely to be met by a single partner, may allow people in CNM relationships to foster and maintain highly satisfying primary relationships despite low levels of eroticism or nurturance with that partner. Thus, our second aim was to compare these associations when differentiating between current number of partners versus relationship identity.

### **Relationship Length**

Balzarini, Dharma, Muise, et al. (2019) observed that among people in monogamous and polyamorous relationships, eroticism with a partner is lower and nurturance is higher among those in longer relationships. However, whether single- and multi-partnered individuals experience similar shifts in eroticism and nurturance has yet to be empirically observed. People who form multiple intimate relationships may buffer against declines in sexual passion over time within an established, long-term relationship by forming additional romantic and sexual relationships. One possibility is that having additional sexual relationships detracts from the eroticism in a primary relationship, and therefore eroticism would be lower in the primary relationships of those who have multiple partners. However, experiences of eroticism outside the primary

relationship may also contribute to eroticism in that relationship. For example, shared sex with the additional partners could provide mutual opportunity for partners to explore their sexuality, buffering against declines in eroticism. People who open an existing relationship report higher sexual satisfaction (Murphy et al., 2021), and men – though not women – in CNM relationships who report greater sexual satisfaction with a secondary partner also report more relationship satisfaction with a primary partner (Muisse, Laughton, et al., 2019). Therefore, our third aim was to examine how the links between eroticism, nurturance, and relationship satisfaction differ across relationship lengths, as this may reveal differences in how satisfaction is maintained among individuals with one versus multiple partners.

### Current Study

The overarching aim of the current study was to explore the roles that eroticism and nurturance play in relationship satisfaction and how they may vary at ranging relationship durations across different relationship contexts (i.e., single- versus multi-partnered, monogamous versus CNM). By integrating Sternberg's theory of love with sexual configurations theory, we can infer that individuals who seek both nurturance and eroticism within a single relationship – typically in monogamous relationships – will experience greater satisfaction when sufficient amounts of both elements are provided by their partner. Conversely, individuals with more flexible relational configurations, who can fulfill these needs across multiple partners, may not require both nurturance and eroticism from a single partner to feel satisfied with them. The central question, therefore, is whether this variation in relational satisfaction is driven by one's current sources of eroticism and nurturance (i.e., current number of partners) or by how one approaches relationships (i.e., relationship identity as monogamous or non-monogamous).

Research questions, planned analyses, and hypotheses were preregistered via OSF [<https://osf.io/hz93r/>]. Preliminary analyses first assessed differences in relationship satisfaction, nurturance, and eroticism between single- and multi-partnered individuals. For the primary analyses, we first assessed whether people in only one versus more than one relationship differ in how eroticism and nurturance interact to predict satisfaction in their relationships (RQ1). We predicted that both nurturance and eroticism would be positively associated with relationship satisfaction, but that relationship satisfaction in single-partnered individuals would be more dependent on both components being present. If multi-partnered individuals have the option of diversifying their fulfillment for nurturance and eroticism from more than just one partner, they might experience high levels of relationship satisfaction with one partner without high levels of either nurturance or eroticism in that relationship.

We then examined whether these associations were similar in monogamous versus CNM relationships (RQ2). For example, if we observe larger differences in how nurturance and eroticism interact among people who are monogamous and CNM than people who are single- and multi-partnered, it is possible that any observed differences are better attributed to

participants' relationship identity (i.e., polyamorous, open, swinging) than how many partners they have.

Lastly, we tested whether relationship length was related to eroticism and nurturance differently for individuals in single-versus multi-partner relationships (RQ3). Based on previous research (Balzarini, Dharma, Muise, et al., 2019), we predicted for both relationship types that relationship length would be positively associated with nurturance, yet negatively associated with eroticism. Additionally, we predicted the effect of relationship length on eroticism and nurturance to be stronger among multi- than single-partnered individuals. Monogamous individuals may be more likely to dissolve long-term relationships that lack in either nurturance or eroticism in order to find these elsewhere, whereas people with multiple partners may continue to maintain relationships because they can pursue new relationships to fulfill emotional or sexual deficits. That is, if desire discrepancies within long-term couples are a motivation for engaging in CNM (Arenella et al., 2024), people who maintain multiple relationships may preserve longer primary relationships that are either low in nurturance or eroticism.

## Method

### Participants

Data for this study came from the Multiple Relationships Project (Mogilski et al., *under review*). The project was an international, collaborative data collection effort between 2019 and 2023 aimed at studying the relationship maintenance strategies of individuals engaged in multiple, simultaneous intimate relationships. Ethics approval was obtained from the University of South Carolina Salkehatchie institutional review board and then from country-specific ethics review boards if participants were recruited from a local university. Individuals from the United States, Brazil, Portugal, Italy, Poland, and Finland were recruited to participate in three online surveys using snowball and convenience sampling methods (e.g., CNM-focused social media groups, promotional advertisement, researchers' personal networks). Survey eligibility required participants to be at least 18 years old and in an intimate sexual and/or romantic relationship with at least one person. The surveys were completed in English, Portuguese, Italian, Polish, and Finnish; the original survey was in English and was translated with native-speaking professional translator, researcher, and non-researcher input.

A sample of 1,888 people began the survey. Participants were included in the analytical sample if they had no missing variables of interest and had been in a relationship for at least 1 month, yielding a sample of 624 participants ( $N = 624$ ; 33% of survey respondents). Given that participants were engaged via various internet-based methods, recruited from a relationship minority population (consensually non-monogamous individuals) from various countries, and that the survey included a large set of questions (approximately 200), this response rate is not a suitable indicator of the appropriateness of the sample (see Holtom et al., 2022). Participant characteristics are reported in Tables 1 (current number of partners) and 2 (relationship identity).

**Table 1.** Participant characteristics by number of partners (#P).

Characteristics	Single-partnered		Multi-partnered		Full sample	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Country data set						
United States	150	44.8	235	81.3	385	61.7
Portugal	1	0.3	0	0	1	0.2
Italy	39	11.6	5	1.7	44	7.1
Poland	42	12.5	9	3.1	51	8.2
Brazil	92	27.5	22	7.6	114	18.3
Finland	11	3.3	18	6.23	29	4.7
Gender						
Male	120	35.8	97	33.8	217	34.9
Female	188	56.1	148	51.6	336	54
Non-binary	15	4.5	16	5.6	31	5
Other <sup>a</sup>	12	3.6	26	9	38	6.1
Sexual orientation						
Heteosexual	180	53.9	108	37.4	288	46.2
Homosexual	23	6.9	10	3.5	32	5.3
Bisexual	82	24.6	86	29.8	168	27
Pansexual	18	5.4	50	17.3	68	10.9
Queer	15	4.5	19	6.6	34	5.5
Other <sup>b</sup>	16	2.6	16	2.6	32	5.1
Relationship identity (RI)						
Monogamous	204	61.6	13	4.6	211	35.2
CNM	127	38.4	272	96.2	399	64.8
Polyamorous	53	16	190	66.7	240	39.5
Open relationship	42	12.7	53	18.6	92	15.4
Swinging	32	9.7	29	10.9	61	9.9

*N* = 624. Percentages reflect within-column proportions. <sup>a</sup> "Other" gender identity includes Transgender, Genderqueer, Agender, Genderfluid, Other. <sup>b</sup> "Other" sexual orientation includes Asexual, Fluid, I don't know, and Other.

**Table 2.** Participant characteristics by relationship identity (RI).

Characteristics	Monogamous		CNM		Full sample	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Country data set						
United States	65	30	314	78.7	379	61.5
Portugal	1	0.5	0	0	1	0.2
Italy	38	17.5	5	1.3	43	7
Poland	40	18.4	11	2.8	51	8.3
Brazil	68	31.3	45	11.3	113	18.3
Finland	5	2.3	24	6	29	4.7
Gender						
Male	66	30.4	147	37	213	34.7
Female	142	65.4	190	47.7	332	54.1
Non-binary	3	1.4	28	7.1	31	5.1
Other <sup>a</sup>	6	2.8	34	8.1	40	10.9
Sexual orientation						
Heteosexual	152	70.1	132	33.2	284	46.2
Homosexual	11	5.1	21	5.3	32	5.2
Bisexual	39	18	127	31.9	166	27
Pansexual	7	3.2	60	15.1	67	10.1
Queer	2	0.9	32	8	34	5.5
Other <sup>b</sup>	6	2.8	26	6.5	32	5.2
Number of partners (#P)						
One partner	204	94	127	31.8	331	53.7
More than one partner	13	6	272	68.2	285	46.3

*N* = 624. Percentages reflect within column proportions. <sup>a</sup> "Other" gender identity includes Transgender, Genderqueer, Agender, Genderfluid, Other. <sup>b</sup> "Other" sexual orientation includes Asexual, Fluid, I don't know, and Other.

## Measures

### Eroticism and Nurturance

Eroticism and nurturance were measured with the Eroticism and Nurturance Scales (Balzarini, Dharma, Muise, et al., 2019) which ask participants how well erotic statements (e.g., "My relationship with my partner is characterized by desire and lust;" 4 items;  $\alpha = .95$ ) and nurturant statements (e.g., "My relationship with my partner is characterized by warmth and comfort;" 5 items;  $\alpha = .89$ )

described their relationship with their partner (1 = Not true at all; 7 = Definitely true).

### Relationship Satisfaction

Relationship satisfaction was measured by the 3-item satisfaction subscale of the Perceived Relationship Quality Components scale (PRQC; Fletcher et al., 2000) ( $\alpha = .96$ ) (e.g., "How satisfied are you with your relationship?;" 1 = not at all; 7 = extremely).

### Relationship Length

Relationship length was measured in years.

### Number of Partners (#P) and Relationship Identity (RI)

Participants indicated the number of individuals with whom they currently had a romantic and/or physical relationship. This response was also coded as a dichotomous factor variable, Number of Partners (i.e., #P) with one partner = 1, and more than one partner/relationship = 2. If participants entered an ambiguous value, such as 1.5, they were coded as multi-partnered if they completed measures about a second partner. Some participants did not report the number of relationships they had, but provided names or pseudonyms of partners for purposes of filling out the partner-specific items of the survey. Participants with missing data for the number of relationships were also coded as single- or multi-partnered according to whether they provided names/pseudonyms for one or additional partners. The sample included 335 (53.69%) single-partnered and 289 (46.31%) multi-partnered participants.

Separately, we assessed self-identified Relationship Identity (i.e., RI) with the item, “Which relationship orientation do you identify with the most?” to which participants could respond monogamous, polyamorous, open relationship, or swinging, with descriptions provided for each type. Participants could also select “Other.” For analysis, participants were dichotomized into monogamous = 1 if they chose “monogamous” ( $n = 217$ ; 34.8%) and CNM = 2 ( $n = 399$ ; 63.9%) if they chose “polyamorous,” “open relationship,” or “swinging.” “Other” were coded as missing for the dichotomous RI variable. Of those who identified as consensually non-monogamous, 127 (31.8%) reported currently having only one partner at the time of the survey, and the rest had more than one partner.<sup>1</sup>

Participants with one partner completed eroticism, nurturance, and relationship satisfaction measures based on their one relationship, and those with multiple partners completed these measures for up to two partners. Individuals with multiple intimate partners employ a variety of relationship configurations (e.g., hierarchical and nonhierarchical, or primary – secondary; Balzarini, Dharma, Kohut, et al., 2019). When asked to report their primary partner if applicable, most (74.6%) participants with additional partners tended to label the first partner they identified (partner 1) as a primary partner or one of many primary partners. Others (17.6%) indicated that none of their partners were considered primary (e.g. in nonhierarchical polyamory, relationship anarchy), and only 3.9% responded that partner 1 was not primary while another 3.9% responded “none of the above.” Given our interest in comparing single- and multi-partnered individuals, we wanted to compare relationships with partners who most closely resemble each other (Balzarini, Dharma, Kohut, et al., 2019; Balzarini, Dharma, Muise et al., 2019, i.e., established dyads). Therefore, we used partner 1 data from all participants for each of the above

measures and will hereafter refer to this partner as the *primary* partner for the sake of parsimony.

### Statistical Analysis

For preliminary analyses, we ran Bonferroni-corrected, unpaired t-tests ( $\alpha_{adj} = 0.05/6 = 0.0083$ ) to assess whether eroticism, nurturance, and relationship satisfaction differ among individuals in single and multi-partner relationships, or among monogamous versus CNM individuals. For the primary analyses, linear regressions were performed using Stata, Version 17. To test RQ1, we assessed eroticism and nurturance as predictors of relationship satisfaction. Using a standard model-building procedure to assess the addition of upper-level interaction variables, we started with main effects only, worked up to the 3-way interaction, and then included control variables:

Relationship Satisfaction =

Eroticism + Nurturance + #P (Model 1)

Eroticism\*Nurturance + #P (Model 2)

Eroticism\*Nurturance\*#P (Model 3)

Eroticism\*Nurturance\*#P + Relationship Length + Age (Model 4)

To assess RQ2, we ran the same models as for RQ1, but with RI instead of #P.

For RQ3, we planned to assess relationship length as a predictor of both eroticism and nurturance through multivariate regression modeling, yet amended this plan following tests of assumptions (described in detail in the results section). Three models were tested:

Eroticism + Nurturance =

Relationship length + #P (Model 1)

Relationship length + #P + Age (Model 2)

Relationship length \* #P + Age (Model 3)

### Results

Descriptive statistics for key variables are provided in Table 3. Data were examined to check the assumptions prior to conducting statistical analyses. Scores on eroticism, nurturance, and relationship satisfaction were skewed toward higher values. Data did not meet the linear regression assumptions regarding multivariate normality and heteroskedasticity; however, linear regression models of this sample size are robust to violations of normality (Knief & Forstmeier, 2021; Schmidt & Finan, 2018). To address heteroskedasticity in the data, we applied robust standard errors to each of the regression models (Knief & Forstmeier, 2021; Schmidt & Finan, 2018).

Eroticism ( $r = 0.34$ ,  $p < .001$ ) and nurturance ( $r = 0.64$ ,  $p < .001$ ) were positively correlated with relationship satisfaction. Pairwise correlations showed small positive associations between nurturance and eroticism ( $r = 0.148$ ,  $p < .001$ ). Relationship length was negatively correlated with eroticism ( $r = -0.117$ ,  $p < .01$ ) and positively correlated with nurturance ( $r = 0.124$ ,  $p < .01$ ).

### Group-Level Differences

Eroticism scores were significantly higher in individuals with one partner compared to those with multiple partners

<sup>1</sup>13 individuals in our sample indicated that they had more than one partner and that their relationship identity was monogamous. We cannot conclude from the two variables alone (RI and P#) that these 13 individuals were engaging in extradyadic relationships without consent of or forgoing disclosure to their partners (i.e., were cheating or committing infidelity). It simply means that, at the time of the survey, these 13 individuals identified as monogamous yet also reported more than one sexual and/or romantic partner.

**Table 3.** Descriptive statistics for model variables.

Variables	Mean	SD	Min-Max	Skewness	Kurtosis
Relationship satisfaction	5.872	1.3	1–7	–1.43	4.74
Eroticism	5.161	1.784	1–7	–0.76	2.5
Nurturance	6.257	1.067	1–7	–2.15	8.26
Age (years)	32.782	12.663	18–83	1.26	4.23
Relationship length (years)	7.435	9.692	.083–63.41	2.52	10.77

( $t$  [565] = 3.342,  $p$  = .0009,  $d$  = 0.286). However, single- and multi-partnered individuals did not significantly differ in nurturance ( $t$  [564] = 2.29,  $p$  = .022,  $d$  = 0.181) or relationship satisfaction ( $t$  [622] = –0.30,  $p$  = .767,  $d$  = –0.014). Similarly, the result of the t-test for eroticism scores was marginally significant, with monogamous individuals scoring higher than those who were CNM ( $t$  [515] = 2.64,  $p$  = .0085,  $d$  = 0.215). Monogamous and CNM individuals did not significantly differ in nurturance ( $t$  [614] = 0.20,  $p$  = .838,  $d$  = 0.031) or relationship satisfaction ( $t$  [388] = –1.20,  $p$  = .210,  $d$  = –0.119) scores.

### RQ1: Eroticism, Nurturance, and #P Predicting Relationship Satisfaction

Regression results are presented in Table 4. In Model 1, eroticism and nurturance were both positively associated with relationship satisfaction, and the regression coefficient was greater for nurturance than eroticism. Relationship satisfaction was higher for multi-partnered than single-partnered individuals. In model 2, the two-way interaction term between eroticism and nurturance was not significant ( $p$  = .076) yet yielded improved model fit. In model 3, the three-way interaction between eroticism, nurturance, and #P again was not significant ( $p$  = .077), yet the model fit was further improved. In model 4, the covariates age and relationship length did not alter the pattern of results from model 3. To visualize the associations, Figure 1 presents the three-way interaction from the final model (model 4) in two different ways, first with nurturance on the x-axis (a) and then with eroticism on the x-axis (b).

### RQ2: Eroticism, Nurturance, and RI Predicting Relationship Satisfaction

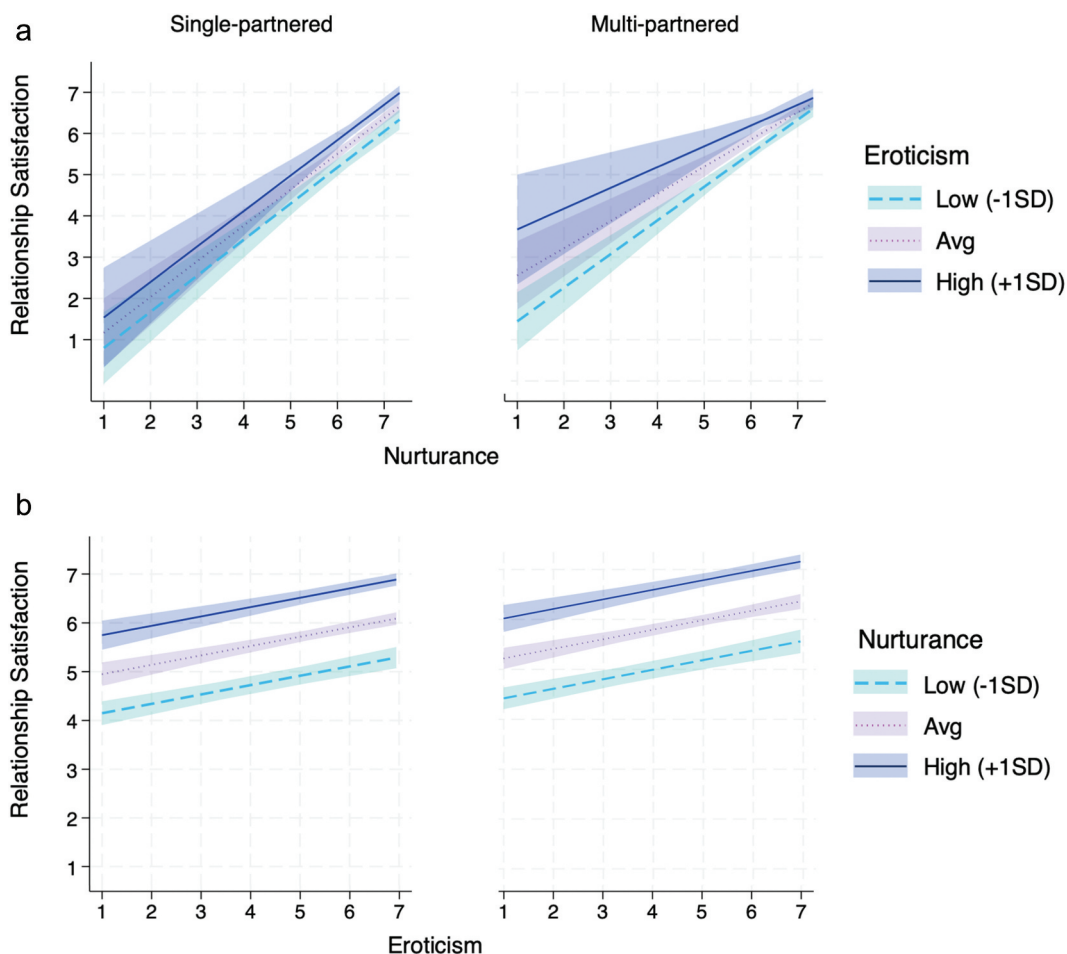
Regression results are presented in Table 5. The overall pattern of results for the first two models was the same as those for RQ1 with #P, with the two-way interaction term again not significant ( $p$  = .09). However, the three-way interaction terms were statistically significant (model 3 and 4). Simple slopes analyses probed the three-way interaction, assessing slopes of nurturance at different levels of eroticism and slopes of eroticism at different levels of nurturance. Among monogamous individuals, the association between nurturance and relationship satisfaction did not vary with differing levels of eroticism (high eroticism: slope = 1.013,  $p$  < .001; medium: slope = 0.919,  $p$  < .001; low: slope = 0.826,  $p$  < .001; slope differences ranged 0.093 to 0.187, with  $ps$  = 0.186). Similarly, the association between eroticism and relationship satisfaction did not vary with differing levels of nurturance (high nurturance: slope = 0.239,  $p$  < .001; medium: slope = 0.182,  $p$  < .001; low: slope = 0.124,  $p$  = .087; slope differences ranged from 0.057 to 0.114, with  $ps$  = 0.186).

For CNM individuals, the association between nurturance and relationship satisfaction became stronger as eroticism decreased (high eroticism: slope = 0.513,  $p$  < .001; medium: slope = 0.682,  $p$  < .001; low: slope = 0.851,  $p$  < .001; slope differences ranged from 0.17 to 0.34 with significant differences between slopes,  $ps$  = 0.002). Similarly, eroticism became a slightly stronger predictor of relationship satisfaction at lower levels of nurturance; in Figure 2(b), the slope for CNM individuals with high nurturance is relatively flat with a  $p$ -value > .05, indicating no association between eroticism and relationship

**Table 4.** Eroticism, nurturance, and number of partners predicting relationship satisfaction: results from linear regression models (RQ1).

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>
Intercept	0.11(0.35)	.766	–1.27(0.74)	.085	–0.73(1.05)	.488	–0.76(1.06)	.470
Nurturance (N)	0.74(0.06)	<.001	0.97(0.11)	<.001	0.88(0.16)	<.001	0.89(0.16)	<.001
Eroticism (E)	0.19(0.03)	<.001	0.47(0.17)	.006	0.21(0.21)	.325	0.21(0.21)	.329
Number of partners (#P) (ref: single-partnered)	0.27(0.08)	<.001	0.26(0.08)	.001	–0.97(1.43)	.498	–0.97(1.42)	.496
N*E			–0.05(0.03)	.076	–0.00(0.03)	.919	–0.00(0.03)	.900
N*#P					0.22(0.22)	.330	0.22(0.22)	.325
E*#P					0.50(0.31)	.106	0.50(0.31)	.108
N*E*#P					–0.08(0.05)	.077	–0.08(0.05)	.080
Relationship length							–0.01(0.01)	.098
Age							0.00(0.0)	.712
R <sup>2</sup>	0.481		0.487		0.499		0.502	
R <sup>2</sup> <sub>adj</sub>	0.479		0.484		0.493		0.494	
AIC	1695.3		1690.4		1681.8		1682.3	
BIC	1713.1		1712.6		1717.3		1726.7	
LL	–843.7		–840.2		–832.9		–831.2	
RMSE	0.938		0.934		0.925		0.924	

Note. AIC = Akaike Information Criterion. BIC = Bayesian Information Criterion. LL = Log-Likelihood. RMSEA = Root Mean Square Error of Approximation. SE = Standard error. Unstandardized coefficients.  $N$  = 335 single-partnered and 289 multi-partnered individuals.



**Figure 1.** Nurturance (a) and eroticism (b) predicting relationship satisfaction by number of partners (#P): 3-way interaction results (RQ1, model 4) 3-way interaction between eroticism, nurturance, and #P, presented in two different ways. (a) Nurturance on the x-axis, presenting the association between nurturance and relationship satisfaction by level of eroticism and (b) eroticism on the x-axis, presenting the association between eroticism and relationship satisfaction by level of nurturance. SD = standard deviation.

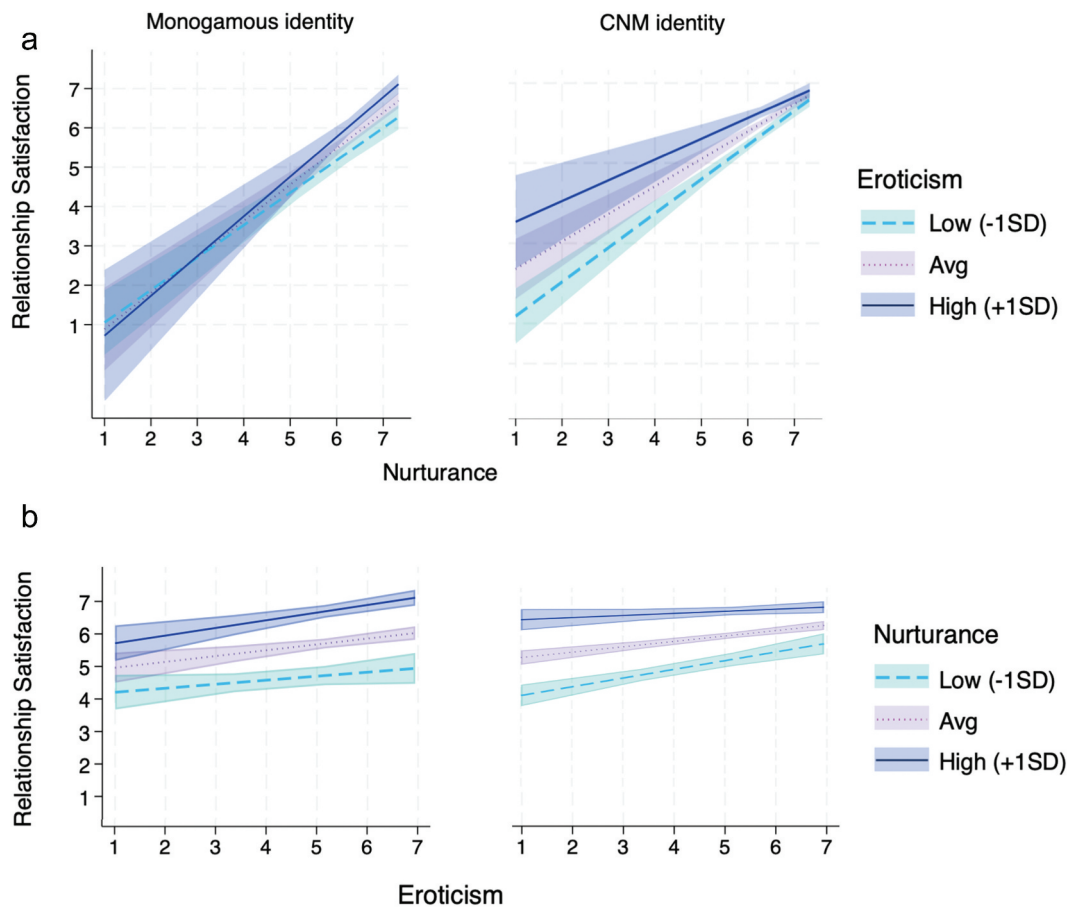
**Table 5.** Eroticness, nurturance, and relationship identity predicting relationship satisfaction: results from linear regression models (RQ2).

Variable	Model 1		Model 2		Model 3		Model 4	
	B(SE)	p	B(SE)	p	B(SE)	p	B(SE)	p
Intercept	0.14(0.36)	.693	-1.21(0.75)	.108	0.76(1.07)	.478	0.70(1.07)	.510
Nurturance (N)	0.74(0.06)	<.001	0.97(0.12)	<.001	0.64(0.17)	<.001	0.65(0.16)	<.001
Eroticism (E)	0.18(0.03)	<.001	0.46(0.17)	.009	-0.14(0.26)	.591	-0.15(0.26)	.580
Relationship identity (RI) (ref: monogamous)	0.22(0.08)	.008	0.21(0.08)	.013	-2.87(1.40)	.040	-2.92(1.40)	.038
N*E			-0.04(0.03)	.090	0.05(0.04)	.185	0.05(0.04)	.186
N*RI					0.51(0.22)	.018	0.52(0.22)	.017
E*RI					0.89(0.33)	.007	0.90(0.33)	.007
N*E*RI					-0.15(0.05)	.004	-0.15(0.05)	.004
Relationship length							-0.01(0.00)	.062
Age							0.00(0.00)	.495
R <sup>2</sup>	0.481		0.486		0.505		0.508	
R <sup>2</sup> <sub>adj</sub>	0.478		0.483		0.499		0.500	
AIC	1677.3		1672.8		1656.0		1656.5	
BIC	1695.0		1694.9		1691.3		1700.8	
LL	-834.7		-831.4		-820.0		-818.3	
RMSE	0.941		0.937		0.922		0.921	

AIC = Akaike Information Criterion. BIC = Bayesian Information Criterion. LL = Log-Likelihood. RMSEA = Root Mean Square Error of Approximation. SE = Standard error. Unstandardized coefficients. N = 217 monogamous and 399 consensually non-monogamous individuals.

satisfaction when nurturance is high (high nurturance: slope = 0.058,  $p = .131$ ; medium: slope = 0.161,  $p < .001$ ; low: slope = 0.264,  $p < .001$ ; slope differences ranged from 0.10 to 0.21,  $ps = 0.002$ ).

Figure 2 presents the three-way interaction from the final RI model (model 4) in two different ways, first with nurturance on the x-axis (a) and then with eroticism on the x-axis (b).



**Figure 2.** 3-way interaction between eroticism, nurturance, and relationship identity (RI) (RQ2, model 4) 3- way interaction between eroticism, nurturance, and relationship identity, presented in two different ways. (a) Nurturance on the x-axis, presenting the association between nurturance and relationship satisfaction by level of eroticism and (b) Eroticness on the x-axis, presenting the association between eroticness and relationship satisfaction by level of nurturance. CNM = consensual non-monogamy. SD = standard deviation.

### RQ3: Relationship Length Predicting Eroticness and Nurturance

Multivariate regression was deemed unsuitable due to the presence of heteroskedasticity. To address this, we initially explored whether logarithmic or square root transformations of the variables could improve model fit. However, these transformations fundamentally alter the interpretation of the variables, and skewness and kurtosis persisted in the transformed data. As a result, transformations did not effectively resolve heteroskedasticity. Instead, we employed Seemingly Unrelated Regression (SUR) with robust standard errors. This approach not only accounts for correlation between the dependent variables but also enables adjusting the standard errors for heteroskedasticity (Cameron & Trivedi, 2022). The Breusch-Pagan test further supported the use of SUR, indicating significant correlation between the residuals across the equations. Therefore, SUR with robust standard errors was deemed the appropriate method for our analysis. Regression results are presented in Table 6.

In all three models, relationship length had a small, negative association with eroticness and a small, positive association with nurturance. Multi-partnered individuals reported lower eroticness and lower nurturance compared to single-partnered individuals. In model 2, which included age as a covariate, there was no longer a significant difference between multi- and

single-partnered individuals in nurturance, yet the negative association between relationship length and eroticness remained. Age was unrelated to eroticness, yet negatively associated with nurturance. Finally, in model 3, the interaction between relationship length and #P was not significant for eroticness nor nurturance. However, as in model 1, multi-partnered individuals scored slightly lower on both nurturance and eroticness compared to single-partnered individuals. The overall variances explained were small and improved from 2.8% in model 1 for both nurturance and eroticness, to 5.8% in nurturance and 3.2% of the variance explained in eroticness in model 3.

We then tested whether the above results would be replicated with RI replacing #P as a predictive variable. These results are displayed in Table 7. The results of the RI models were consistent with those of the #P models apart from two key differences. First, CNM-oriented individuals did not significantly differ from monogamous individuals in nurturance across all three models. Second, neither the main effect of RI nor its interaction with relationship length were significant in the third model for eroticness, showing that those who identify as CNM reported lower scores on eroticness in models 1 and 2, but neither RI, relationship length, nor their interaction explained variability in eroticness in model 3.

**Table 6.** Relationship length and number of partners predicting eroticism and nurturance: results from SUR model (RQ3).

Variable	Model 1		Model 2		Model 3	
	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>
DV: Nurturance						
Constant	6.25(0.06)	<.001	6.72(0.13)	<.001	6.76(0.13)	<.001
Relationship length (years)	0.02(0.00)	<.001	0.03(0.01)	<.001	0.03(0.01)	<.001
Number of partners (#P) (ref: single-partnered)	-0.25(0.09)	.006	-0.16(0.09)	.072	-0.24(0.11)	.039
Relationship length * #P					0.01(0.01)	.177
Age			-0.02(0.01)	<.001	-0.02(0.01)	<.001
DV: Eroticness						
Constant	5.49(0.10)	<.001	5.21(0.21)	<.001	5.24(0.21)	<.001
Relationship length (years)	-0.02(0.01)	.021	-0.03(0.01)	.004	-0.03(0.01)	.010
Number of partners (#P) (ref: single-partnered)	-0.43(0.15)	.003	-0.48(0.15)	.002	-0.56(0.19)	.003
Relationship length * #P					0.01(0.02)	.499
Age			0.01(0.01)	.118	0.01(0.01)	.113
R <sup>2</sup> (Nurturance)	0.028		0.055		0.058	
RMSE (Nurturance)	1.051		1.037		1.035	
R <sup>2</sup> (Eroticism)	0.028		0.031		0.032	
RMSE (Eroticism)	1.759		1.755		1.755	
Breusch – Pagan test( $\chi^2$ )	14.680	<.001	17.220	<.001	16.990	<.001

DV = Dependent variable. RMSEA = Root Mean Square Error of Approximation. *SE* = Standard error. Unstandardized coefficients. All model equations for both nurturance and eroticism were significant ( $p < .001$ ).  $N = 335$  single-partnered and 289 multi-partnered individuals.

**Table 7.** Relationship length and relationship identity predicting eroticism and nurturance: results from SUR model (RQ3).

Variable	Model 1		Model 2		Model 3	
	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>	<i>B</i> ( <i>SE</i> )	<i>p</i>
DV: Nurturance						
Constant	6.18(0.08)	.001	6.69(0.14)	<.001	6.71(0.14)	<.001
Relationship length (years)	0.01(0.00)	.001	0.03(0.01)	<.001	0.03(0.01)	<.001
Relationship identity (RI) (ref: monogamous)	-0.03(0.09)	.722	0.06(0.09)	.505	0.00(0.11)	.988
Relationship length * RI					0.01(0.01)	.34
Age			-0.02(0.01)	<.001	-0.02(0.01)	<.001
DV: Eroticness						
Constant	5.55(0.11)	<.001	5.31(0.21)	<.001	5.27(0.21)	<.001
Relationship length (years)	-0.02(0.01)	.010	-0.03(0.01)	.004	-0.02(0.01)	.088
Relationship identity (RI) (ref: monogamous)	-0.35(0.14)	.012	-0.40(0.15)	.007	-0.27(0.19)	.137
Relationship length * RI					-0.02(0.01)	.227
Age			0.01(0.01)	.176	0.01(0.01)	.205
R <sup>2</sup> (Nurturance)	0.015		0.049		0.050	
RMSE (Nurturance)	1.057		1.038		1.038	
R <sup>2</sup> (Eroticism)	0.022		0.025		0.027	
RMSE (Eroticism)	1.756		1.753		1.751	
Breusch – Pagan test( $\chi^2$ )	18.822	<.001	21.837	<.001	22.321	<.001

DV = Dependent variable. RMSEA = Root Mean Square Error of Approximation. *SE* = Standard error. Unstandardized coefficients. All model equations for both nurturance and eroticism were significant ( $p < .05$ ).  $N = 217$  monogamous and 399 consensually non-monogamous individuals.

## Discussion

This study explored how two elements of intimate relationships – nurturance and eroticism – relate to relationship satisfaction across monogamous and consensually non-monogamous (CNM) relationship structures and identities, differentiating between current available sources of eroticism and nurturance (i.e., number of partners; single- vs multi-partnered) and approaches to relationships (relationship identity; monogamous vs CNM). We also assessed the role of relationship length in these associations. Our findings, based on individuals in relatively satisfying intimate partnerships, shed light on the ways in which eroticism and nurturance interact to contribute to relationship satisfaction differently based on how individuals approach their relationships.

In our preliminary analyses, individuals with one partner reported higher levels of eroticism with their partner

compared to multi-partnered individuals' reports of their primary partner. This difference was not observed when comparing monogamous to CNM primary partner eroticism, suggesting that the presence of additional partners is a better predictor of lower primary partner eroticism than relationship identity. This partially replicates findings from Balzarini, Dharma, Muise, et al. (2019), who showed that polyamorous primary partners were rated lower on eroticism than monogamous partners. Contrary to Balzarini, Dharma, Muise, et al. (2019), we did not observe differences in nurturance between those with one versus additional partners, nor for monogamous versus CNM individuals. We also found no differences in relationship satisfaction between single- and multi-partnered individuals, nor those identifying as monogamous and CNM, which supports prior work (Moors et al., [under review](#)). These similarities across relationship structures suggest that

while eroticism may vary between individuals in generally satisfying relationships with one versus multiple partners, the emotional dimensions of nurturance and satisfaction are comparable across these different contexts.

For our main analyses, we first investigated whether receiving nurturance and eroticism from a single partner is equally important for relationship satisfaction among people with one or more than one intimate relationship. In this international sample of single- and multi-partnered individuals, we found that eroticism and nurturance overall tended to coincide with satisfaction in intimate relationships. This is consistent with previously documented connections between sexual and passionate aspects of relationships and relationship satisfaction (e.g., sexual desire: Breznsnyak & Whisman, 2004; Mark, 2012; Muise, Harasymchuk, et al., 2019) and nurturance (e.g., emotional intimacy and closeness: Dandurand & Lafontaine, 2013; Greeff & Malherbe, 2001). Furthermore, nurturance was a substantially better predictor of relationship satisfaction than eroticism.

Our expectations that eroticism and nurturance would play distinct roles in relationship satisfaction based on relationship type was only supported when assessing relationship identity (RQ2); no differences in these associations were found when assessing the current number of partners. This suggests that the current available sources of eroticism and nurturance may matter less than the orientations used to approach and manage partnerships. For monogamous individuals, the degree to which either eroticism or nurturance was associated with relationship satisfaction did not vary with differing levels of the other. In other words, both were consistently, positively linked to satisfaction, regardless of how much the other element was present. It may be typical and ideal for monogamous individuals to seek both sexual passion and secure companionship from their partner. For example, people who report better communication about sex with a romantic partner, which may require the presence or pursuit of nurturance *and* eroticism, report higher overall relationship satisfaction (Roels & Janssen, 2020). Deep, emotional attachment and commitment with a romantic partner may also contribute toward relationship maintenance behaviors that not only foster sexual desire but also have a compounding effect on sexual and relationship satisfaction (Blumenstock et al., 2020; Muise et al., 2013; Štulhofer et al., 2014). Thus, the two may often function together for monogamous individuals.

In contrast, for those who identified as CNM, the relationship between eroticism, nurturance, and relationship satisfaction differed depending on the level of the other component. The positive association between nurturance and relationship satisfaction strengthened as eroticism decreased. In other words, nurturance was more strongly associated with relationship satisfaction when eroticism was low. Similarly, eroticism was more strongly associated with relationship satisfaction when nurturance was low. In fact, when nurturance was high among CNM individuals, eroticism was *unrelated* to relationship satisfaction. This suggests that eroticism may not be as crucial to CNM individuals' satisfaction in their primary relationships compared to nurturance. Similarly, CNM individuals in relationships characterized by lower nurturance may still feel generally satisfied if sufficient eroticism is present. This pattern could stem from CNM individuals' perceived freedom

to seek eroticism or nurturance elsewhere, or to diversify their sources of relationship fulfillment (Balzarini, Dharma, Muise, et al., 2019; Moors et al., 2019). Additionally, CNM individuals may generally be less likely to expect their primary partner to fulfill all of their relationship needs, and this may reduce dissatisfaction if the relationship is lacking in one of those needs. In other words, people in CNM relationships may tend to have lower expectations of receiving high levels of both eroticism and nurturance from any single partner, and therefore their happiness with a primary partner may be less tied to what is missing, even if they are not currently receiving that from another partner. They may allow each relationship to fulfill specific functions or needs, which could explain the weaker link between one element (nurturance or eroticism) and satisfaction when the other is high. Alternatively, it might reflect a reduced emphasis on eroticism in primary CNM relationships, where a strong sense of nurturance from a primary partner is sufficient for satisfaction.

CNM relationships are often stigmatized as hedonistic and lacking in commitment or companionship (Mogilski et al., 2020; Moors & Ramos, 2022), yet our data suggest that many CNM relationships are characterized by high levels of nurturance and are not dependent solely upon sexual passion to be satisfying. Moreover, Moskowitz (2024) recently found in a sample of monogamous and CNM individuals that the motives for maintaining a relationship, combined with how well specific needs are being satisfied, play a crucial role in predicting relationship satisfaction. This self-deterministic perspective suggests that individuals' motivations to pursue and maintain relationships influences how their needs are satisfied, which in turn impacts their overall satisfaction and outcomes (Moskowitz, 2024; Wood et al., 2018). The differing relationship motivations between monogamous and CNM individuals may help explain why CNM individuals experience satisfaction in their relationships in distinct ways.

Our predictions regarding relationship length (RQ3) were unsupported, apart from the predicted positive association with nurturance and negative association with eroticism. We partially replicated the findings from Balzarini, Dharma, Muise, et al. (2019), who documented that controlling for age, nurturance increased with relationship length while eroticism decreased with relationship length, though both were small effects. Our prediction that these associations would be stronger in multi-partnered or CNM-oriented individuals was unsupported. This suggests that nurturance and eroticism vary across the duration of a relationship similarly for single- and multi-partnered people.

In an international sample of CNM individuals, Paccagnella et al. (2024) found that commitment, which is related to nurturance in a relationship, was positively associated with relationship duration, and that passion was similar across durations of CNM relationships. Our findings echo this study, as we found that eroticism appeared to be relatively stable over relationship durations. This is contrary to previous studies that described a progressive waning of passion as the relationship progressed, particularly in women (Acker & Davis, 1992; Hatfield et al., 1984, 2008; Klusmann, 2002; Murray & Milhausen, 2012; Tucker & Aron, 1993). Long-term

relationships have been theorized to sustain sexual desire when a strong sense of closeness is paired with a strong sense of individuality and opportunity for self-expansion within the relationship (Muise & Goss, 2024). Individuals in monogamous and CNM relationships may require equivalent effort to perceive themselves as distinct individuals from their partner(s) or find opportunities for novelty, growth, and surprise across the lifespan(s) of their relationship(s). That is, they may experience the same fluctuations in desire for sexual intimacy with their romantic partners – though, how they resolve partner desire discrepancies and cope with these temporal fluctuations may vary to some extent (Arenella et al., 2024).

Our findings align with Sternberg's theory and Sexual Configurations theory by demonstrating that nurturance and eroticism are distinct elements within romantic relationships, whose roles in relationship satisfaction can vary depending on how individuals prioritize or integrate these elements. Additionally, the results suggest subtle shifts in eroticism and nurturance throughout a relationship's lifespan. Although the findings do not provide direct evidence for the intimacy-desire paradox, they do indicate a trend where nurturance tends to increase while eroticism decreases as a relationship progresses, applying to both monogamous, CNM, single-partnered, and multi-partnered alike. Longitudinal studies are of course needed to test this speculation more directly.

### Limitations and Future Directions

This study was not without limitations, which could be addressed in future research. Firstly, highly satisfied individuals in relationships were overrepresented in our sample, potentially biasing our results toward more positive relationship dynamics and limiting our ability to generalize these findings to a wider population of varying relationship satisfaction. Secondly, although there is considerable diversity in the types of CNM relationships people engage in, our analyses focused solely on group-level distinctions between CNM and monogamous relationships, as well as single-versus multi-partnered individuals. This broader categorization may have overlooked potential variations in nurturance and eroticism within specific types of CNM relationships. Thirdly, given previously observed associations between gender, cohabitation, marriage, and declines in sexual passion (Murray & Milhausen, 2012; Sprecher & Regan, 1998), our analyses would have benefited from incorporating these factors – something future studies may consider. Moreover, the use of cross-sectional data limits the extent to which conclusions about causality or directionality can be drawn. In particular, the issue of the intimacy-desire paradox would best be assessed using repeated, longitudinal methods.

Given these limitations, it would be prudent for future research to further investigate the intimacy-desire paradox in both monogamous and non-monogamous relationship contexts. Autonomy, independence, and differentiation from intimate partners are commonly-reported motivations for pursuing – and represent unique benefits from engaging in – CNM relationships (Moors et al., 2017; Wood et al., 2021). If these pursuits encourage CNM individuals to sustain their otherness (Muise & Goss, 2024), it may buffer them against declining sexual satisfaction within long-term relationships. On the other hand, this differentiation could also be over-applied in

long-term CNM relationships; research by Carswell et al. (2021) suggests that individuals who consistently prioritize personal growth outside of their relationships experience decreased closeness and passion with their partners. This trade-off may partially explain why we found similarities in the levels of nurturance and eroticism in monogamous and CNM relationships across different relationship lengths, but future research should further explore the relationships between relationship duration and nurturance and eroticism using longitudinal data.

Finally, the current study focused on relationship satisfaction from a single, primary relationship. Future research might distinguish between a multi-partnered individual's satisfaction experienced with each individual partner and overall satisfaction experienced across all their relationships. A person's total satisfaction across all of their relationships may be greater than the sum of their satisfaction in each relationship. This may particularly be true when a multi-partnered individual experiences relatively low satisfaction in each unique relationship, yet is overall highly satisfied through the combined contributions of each relationship. This represents a likely fruitful direction of future investigations into what contributes to highly satisfying romantic relationships.

### Conclusion

Our study documents the distinct, interacting roles that eroticism and nurturance play in the satisfaction of CNM compared to monogamous relationships, highlighting the more powerful role of nurturance, but also how the relevance of eroticism in relationship satisfaction is contingent upon conceptualizations and expectations of that relationship. The current study is also the first of its kind to categorize relationship type comparisons between monogamous and consensually non-monogamous contexts using both relationship structure (single versus multiple current partners) and relationship identity (monogamous versus CNM, regardless of current partner number). That the results differed between these two distinctions is a notable finding with obvious implications for how consensual non-monogamy is conceptualized and interpreted in future relationship research, and our findings suggest that the ways in which people approach their relationships may tell us more about how they evaluate those relationships than their current number of partners.

### Disclosure Statement

No potential conflict of interest was reported by the author(s).

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## Data Availability Statement

The data that support the findings of this study are openly available on OSF at <https://osf.io/hz93r/>.

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