

Supplemental Material

More than Just Sex: Affection Mediates the Association between
Sexual Activity and Well-Being

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Supplemental Material A: Stimulus material

Study 1

Sexual frequency. On average, how frequently do you engage in sex with your romantic partner (1 = *less than a once a month*, 2 = *about once a month*, 3 = *2-3 times per month*, 4 = *once a week*, 5 = *multiple times per week*, 6 = *daily*).

Affectionate touch frequency. What is the general frequency of affectionate touch (e.g., cuddling, kissing, caressing) in your relationship? (1 = *never*, 2 = *less than a once a month*, 3 = *about once a month*, 4 = *2-3 times per month*, 5 = *about once a week*, 6 = *multiple times per week*, 7 = *daily*).

Satisfaction with life. Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).

1. In most ways, my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

Items were rated on a 7-point scale from 1 = *strongly disagree* to 7 = *strongly agree*.

Study 2

Sexual frequency. How frequently do you engage in sex with your romantic partner?

1 = *never or almost never*, 2 = *at least once a month*, 3 = *at least once a week*, 4 = *at least two days a week*, 5 = *once a day*, to 6 = *more than once a day*

Affectionate touch frequency. How frequently do you engage in these different affectionate touching behaviors with your romantic partner?

1. holding hands
2. sitting close or laying down close together
3. giving each other neck or back massages (or similar warm touches)
4. hugging
5. kissing

1 = *never or almost never*, 2 = *at least once a month*, 3 = *at least once a week*, 4 = *at least two days a week*, 5 = *once a day*, to 6 = *more than once a day*

Positive emotions. Five scales of the Dispositional Positive Emotion Scale (DPES; Shiota, Keltner, & John, 2006): joy, contentment, pride, amusement, and awe (27 items)

The scale ranged from 1 = *strongly disagree* to 5 = *strongly agree*.

1. I often feel bursts of joy.
2. I am an intensely cheerful person.
3. I am often completely overjoyed when something good happens.
4. On a typical day, many events make me happy.

5. Good things happen to me all the time.
6. My life is always improving.
7. I am generally a contented person.
8. I am at peace with my life.
9. When I think about my life I experience a deep feeling of contentment.
10. I feel satisfied more often than most people.
11. My life is very fulfilling.
12. I feel good about myself.
13. I am proud of myself and my accomplishments.
14. Many people respect me.
15. I always stand up for what I believe.
16. People usually recognize my authority.
17. I find humor in almost everything.
18. I really enjoy teasing people I care about.
19. I am very easily amused.
20. The people around me make a lot of jokes.
21. I make jokes about everything.
22. I often feel awe.
23. I see beauty all around me.
24. I feel wonder almost every day.
25. I often look for patterns in the objects around me.
26. I have many opportunities to see the beauty of nature.
27. I seek out experiences that challenge my understanding of the world.

Study 3

Baseline and Follow-up Measure of Relationship Satisfaction. Five items from the Quality of Marriage Index (QMI; Norton, 1983)

How much do you agree with these statements?

1. We have a good relationship.
2. My relationship with my partner is very stable.
3. Our relationship is strong.
4. The relationship with my partner makes me a happy person.
5. I really feel like part of a team with my partner.

1 = *not at all* to 6 = *absolutely*

Daily Diary Measures

Positive affect. Items from the PANAS-X (Watson & Clark, 1994).

“How do you feel at this moment?”

1. Cheerful
2. Happy
3. Confident

1 = *not at all* to 6 = *extremely*

Sexual activity. Since yesterday morning, I experienced with my partner:

1. Sex
2. Erotic moments

0 = *no*, 1 = *yes*

Affectionate moments. Since yesterday morning, I experienced with my partner:

1. Tender moments
2. Moments of love and security
3. Affectionate or thoughtful gestures from my partner

0 = *no*, 1 = *yes*

Study 4

Daily Diary Measures

Sexual activity. Since the last report, I engaged in sex or erotic interactions with my partner:

0 = *no*, 1 = *yes*

Affectionate moments. Since the last report, I experienced moments of love and affection my partner:

0 = *no*, 1 = *yes*

Supplemental Material B: Design of the experience sampling study (Study 3)

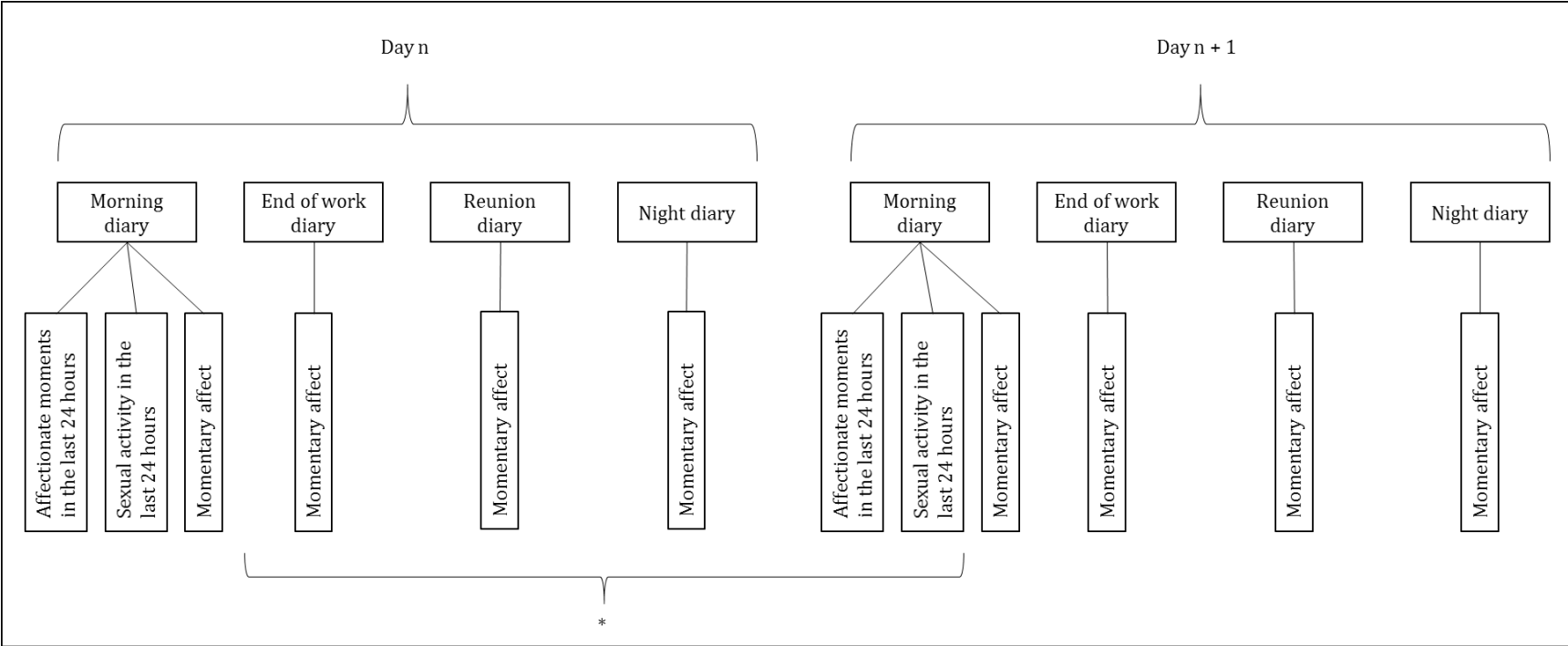


Figure B1. Design of the experience sampling in Study 3: example of two days. *The brackets indicate the time frame the assessment of affectionate moments and sexual activity refers to.

Supplemental Material C: Multilevel Equation of the Mediation Model in Study 3.

Equations for the mediation model in Study 3.

Equation 1 shows the level 1 model for the prediction of changes in an individual's positive affect by sexual activity and affectionate moments.

$$\text{Morning positive affect}_{ij} = b_{0j} + b_{1j} (\text{previous evening positive affect}) + b_{2j} (\text{sexual activity}) + b_{3j} (\text{affectionate moments}) + e_{ij}$$

*Morning positive affect*_{ij} is the current self-reported positive affect in the morning of partner from couple *j* at time *i*. The estimate for *b*_{0j} is the average of the participant's positive affect, adjusted for all predictors in the model. The estimate for *b*₁ reflects the effect of the actor's positive affect at the previous evening report (i.e., the autocorrelation of the positive affect variable). The estimate for *b*_{2j} captures the unique effect of the sexual activity in the last 24 hours, as reported in the morning by the participant, on the positive affect change since the previous evening. The estimate for *b*_{3j} represents the unique effect of affectionate moments in the last 24 hours, as reported in the morning by the participant, on the change in positive affect from evening to morning. The parameter for *e*_{ij} is the level 1 error term.

Equation 2 represents a model for the prediction of changes in affectionate moments by sexual activity.

$$\text{Affectionate moments}_{ij} = b_{0j} + b_{1j} (\text{previous day affectionate moments}) + b_{2j} (\text{sexual activity}) + e_{ij}$$

*Affectionate moments*_{ij} represents the experienced affectionate moments with the partner in the last 24 hours, as reported in the morning by the partner of couple *j* at time *i*. The estimate for *b*_{0j} is the average of the participant's affectionate moments, adjusted for all predictors in the model. The estimate for *b*₁ reflects the effect for the participant's self-reported affectionate moments at the previous day (i.e., the autocorrelation of affectionate moments reports). The estimate for *b*_{2j} captures the effect sexual activity in the last 24 hours, reported in the morning.

Equation 1 and 2 were computed simultaneously in the same multivariate model with one intercepts for men and another intercept for women.

Supplemental Material D: Results of the Mediation Model in Study 3

Table D1

Parameter Estimates for the Dyadic Multilevel Model of Daily Sexual Activity on Positive Affect Mediated by Affectionate Moments in Study 3

	Predicting positive affect						Predicting affectionate moments					
	Estimate	SE	t	p ^b	95% CI		Estimate	SE	t	p	95% CI	
					Lower	Upper					Lower	Upper
Fixed effects (intercepts, slopes) ^a												
Intercept	4.171	0.047	88.745	<.001	4.079	4.263	0.552	0.022	25.091	<.001	0.509	0.595
DV at the last report M	0.193	0.031	6.226	<.001	0.132	0.254	0.039	0.023	1.696	0.090	-0.006	0.084
DV at the last report W	0.311	0.030	10.367	<.001	0.252	0.370	<i>equal as for males</i>					
Sexual activity	0.091	0.045	2.022	<.05	0.003	0.179	0.223	0.020	11.150	<.001	0.184	0.262
Affectionate moments	0.175	0.062	2.823	<.001	0.053	0.297	-	-	-	-	-	-

Note. N = 106 couples, 10 days, M: male partner; F: female partner.

^a All parameters that did not differ across gender were set equal between men and women.

^b All *p*-values are two-tailed

Supplementa Material E: Testing the direction of the association in Study 3

We conducted additional cross-lagged analyses to test the directionality of the effects. In all models, we controlled for the dependent variable at the previous time it was assessed.

Association between sexual activity and positive affect. First, we tested the direction of the association between sexual activity and positive affect. Lending support to our model, sexual activity significantly predicted positive affect for the next day's "end of work" diary ($b = .11, SE = .04, p < .05$, controlling for previous positive affect, $b = .31, SE = .02, p < .001$), and marginally for the next day's "reunion with partner" diary ($b = .08, SE = .04, p < .10$, controlling for previous positive affect, $b = .32, SE = .03, p < .001$). Conversely, the previous morning's positive affect did not predict sex on the following day ($b = .01, SE = .01, p = .16$, controlling for previous day's sexual activity, $b = -.08, SE = .03, p < .01$). From the diaries within the 24-hr time span, only positive affect at the "reunion with the partner" diary predicted sexual activity, $b = .03, SE = .01, p < .05$, controlling for previous day's sexual activity, $b = -.08, SE = .03, p < .01$. This can however be considered a "cross-sectional" association, as it refers to the same time window as the one in which sexual activity is assessed (see Figure B1).

Association between sex and affection. Second, analyses revealed that sex and affection were only associated when assessed simultaneously. Sex predicted increased same day affection, $b = .21, SE = .02, p < .001, r = .78, d = 2.46$, and affection predicted increased probability of having sex, $b = .24, SE = .03, p < .001, r = .67, d = 1.81$. Cohen's d showed thus that the size of the effect for sex predicting affection is higher of more than half a standard deviation. However, neither did sexual activity predict following day's affectionate moments, $b = .03, SE = .03, n.s.$, nor did affectionate moments predict next day's sexual activity, $b = -.02, SE = .03, n.s.$ Additionally, to determine how often sex and affection co-occurred, crosstabs were conducted. They revealed that sexual activity without experiencing affectionate moments was extremely rare (4.2% of all sexual activity reports), whereas affection was often experienced without sex (78.0% of all affectionate moments occurrences), showing that sexual activity is highly interconnected but not redundant with affection within long-term couples.

Association between affection and positive affect. Finally, our cross-lagged analyses revealed that affectionate moments did not predict next diary's positive affect ($b = .07, SE = .06, n.s.$). Conversely, positive affect from previous sessions predicted affection reported the following morning ($bs = .03-.05, ps < .01 - < .001$). However, again, because affectionate moments referred to the last 24 hours, positive affect at the previous diaries was within this period, meaning that the association still referred to the same time frame. Positive affect at the previous morning (i.e. before the 24-hr time span) did not predict following day's affection, $b = .02, SE = .01, n.s.$ Thus, no cross-lagged association was found between affection and positive affect.

Overall, these additional analyses show that the only significant genuinely lagged association was sexual activity predicting next day's positive affect. This lends support to the view that sex promotes emotional well-being, and is highly interconnected with the experience of affection.

Supplemental Material F: Study 4

Table F1

Parameter Estimates for the Cross-lagged Dyadic Multilevel Model of Sexual Activity predicting Affection in Study 4

Fixed effects ^a	Predicting affection					95% CI	
	Estimate	SE	t	p ^b	Odds ratio	Lower	Upper
<u>Level 1</u>							
Intercept	-.437	.110	3.972	<.001	.645	.399	1.045
Previous session's sex	.374	.114	3.272	.002	1.453	1.156	1.872
Previous session's affection	.917	.096	9.600	<.001	2.502	2.066	3.030
<u>Level 2</u>							
Sex	3.394	1.079	3.145	.003	29.768	3.422	58.965

Note. All parameters were tested for gender differences and none of them was significant, $\chi^2 < 1.873, p > .171$. All parameters were thus set equal across gender.

Table F2

Parameter Estimates for the Cross-lagged Dyadic Multilevel Model of Daily Affection predicting Sex in Study 4

Fixed effects ^a	Predicting sex					95% CI	
	Estimate	SE	<i>t</i>	<i>p</i> ^b	Odds ratio	Lower	Upper
<u>Level 1</u>							
Intercept	-2.641	.133	-19.928	<.001	.071	.055	.093
Previous session's affection	.778	.207	3.745	<.001	2.178	1.436	3.304
Previous session's sex	.436	1.547	1.370	.176	1.547	.817	2.929
<u>Level 2</u>							
Affection	.984	.573	1.719	.091	2.677	.849	8.445

Note. All parameters were tested for gender differences and none of them was significant, $\chi^2 < 2.001, p > .157$. All parameters were thus set equal across gender.

References

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