



CARDIAC VAGAL CONTROL AND ATTACHMENT IN COLLEGE COUPLES: DOES GENDER PLAY A ROLE?

Anya V. Kogan & John J.B. Allen
The University of Arizona



Abstract / Introduction

- Polyvagal theory (Porges, 1995) suggests that cardiac vagal control, measured by respiratory sinus arrhythmia (RSA), may play a role in adult pair bond formation.
- Despite the growing interest in the field, the literature on vagal control and adult attachment style is scarce.
- The present study examined the association between respiratory sinus arrhythmia and attachment anxiety and avoidance measured by the Experiences in Close Relationships Revised questionnaire (ECR-R) in 20 college couples in romantic relationships.
- In female participants, lower RSA was associated with greater attachment anxiety and greater attachment avoidance, whereas in males attachment anxiety and avoidance were associated with higher RSA at baseline.
- The findings of the present study suggest that vagal correlates of adult attachment may differ in males and females. The study design, however, leaves open the possibility that this pattern is a selection effect, as only males who agreed to join their female partners were assessed.

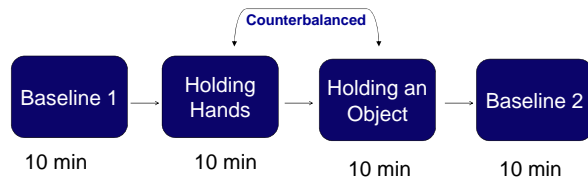
Method

Participants

- 20 female participants and their romantic partners in a romantic relationship for at least 2 months participated in the study.
 - Mean age of females = 20 years, SD = 1.3 years, Range of 18.6 – 23.5 years; Mean age of partners = 21.1 years, SD = 2.5 years, Range of 19 – 28.3 years; Mean relationship duration = 19 months, SD = 13 months, Range of 2 – 48 months.

Procedure

- Participants filled out a self-report measure of attachment (The Experiences in Close Relationships-Revised Questionnaire, ECR-R).



ECG Data Reduction

- The raw digitized ECG signals from each 10-minute segment were analyzed off-line. Interbeat interval (IBI) series from the raw ECG recording were extracted by using QRSTool Software (Allen, Chambers, & Towers, 2007). The extracted interbeat series was hand-corrected for artifacts such as missed, erroneous, or ectopic beats.
- The interbeat interval series for each partner and each ECG segment was transformed to a time series sampled at 10 Hz. To derive a time-varying estimate of RSA, this signal was digitally filtered in the .12-.40 Hz band, and the log of the variance of the filtered signal was obtained as an estimate of RSA

The authors are grateful to Emily Wei and Meghana Gorur for data collection and for their work on the ECG data reduction. Thanks also to Worth Publishing for their generous support.

Results

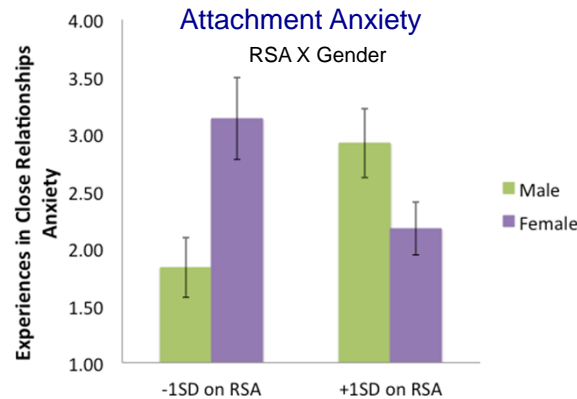


Figure 1. In females, lower RSA at baseline was associated with greater attachment anxiety, whereas in males this relationship was reversed. This pattern was observed across all conditions.

Effect	Num DF	Den DF	F	p
Gender	1	17	0.76	0.40
LogRSA at baseline	1	17	0.05	0.83
LogRSA at baseline * Gender	1	17	11.93	0.003

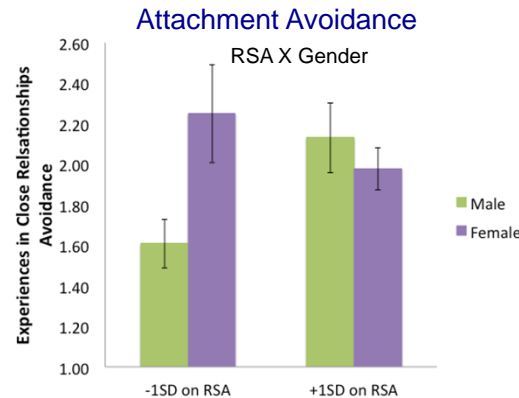


Figure 2. In females, lower RSA at baseline was associated with greater attachment avoidance, whereas in males this relationship was reversed. This pattern was observed across all conditions.

Effect	Num DF	Den DF	F	p
Gender	1	17	1.54	0.23
LogRSA at baseline	1	17	0.50	0.49
LogRSA at baseline * Gender	1	17	10.29	0.005

Results (Cont'd)

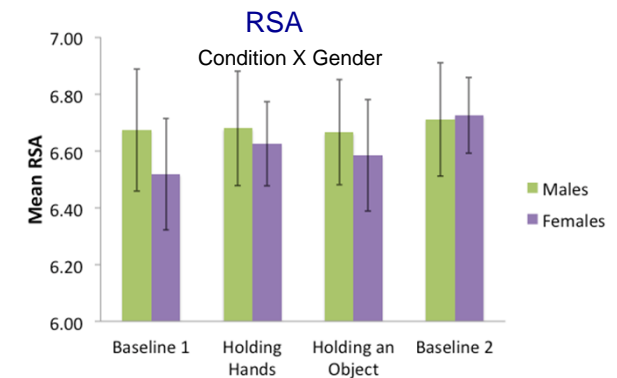


Figure 3. There was a main effect of Condition on RSA, $F(4, 133) = 63.8, p < .001$, but no main effect of Gender, $F(1, 133) = 0.13, p > .05$, or Condition X Gender interaction, $F(3, 133) = 0.59, p > .05$.

Discussion

- While the negative association between RSA and attachment anxiety and avoidance in females was consistent with the predictions based on Polyvagal theory, the inverse association between RSA and these two dimensions of attachment in males was puzzling.
- This pattern of results may suggest gender differences in vagal correlates of adult attachment. However, this explanation would contradict the study by Diamond and Hicks (2005), in which they found a negative association between resting RSA and attachment anxiety in young males.
- An alternative explanation is that the observed gender differences were inadvertently created by the study design. Given that female participants were the ones who enrolled themselves into the study:
 - Males who chose to attend the session may not have been a representative sample of males
 - Females were better informed about all aspects of the study prior to their laboratory visit, and thus male participants could have been experiencing stress in response to the laboratory environment and study demands. In this case, increased RSA among less securely attached males might be reflective of their emotion regulation efforts.
- An examination of within-person patterns of variability in RSA over time in males and females during the study would help elucidate whether males engaged in emotion regulatory efforts whereas females did not.

References

Allen, J.J.B., Chambers, A.S., & Towers, D.N. (2007). The many metrics of cardiac chronotropy: A pragmatic primer and a brief comparison of metrics. *Biological Psychology, 74*, 243–262.

Diamond & Hicks (2005). Attachment style, current relationship security, and negative emotions: The mediating role of psychological regulation. *Journal of Personal and Social Relationships, 22*(4), 499–518. DOI: 10.1177/0265407505054520

Porges, S.W. (1995). Orienting in a defensive world: Mammalian modifications of our evolutionary heritage. A polyvagal theory. *Psychophysiology, 32*, 301–318.

Handouts available: www.psychofizz.org

