Introduction

• High heart rate variability (HRV), a measure of the parasympathetic nervous system (PNS, Porges, 1991), has been linked to better emotional regulation (Thayer & Lane, 2000) and relationship quality (Smith et al., 2011).

• Conversely, rejection sensitivity (RS), a tendency to expect and perceive social rejection, has been linked to poorer relationship quality (Downey & Feldman, 1996).

• Prior research has shown that high RS individuals who have low HRV are more hostile during lab-based conflict (Gyurak & Ayduk, 2008).

• No studies to date have examined how HRV in everyday life co-varies with relationship distress in low and high RS individuals.

• In contrast to prior research, which uses in-lab, retrospective measurement, the current study utilizes real-time heart rate measurements in daily life.

Hypotheses

H1: HRV will increase during periods of relationship distress as individuals contend with emotionally salient events.

H2: This association will only occur in individuals with low RS.

Participants

• 40 heterosexual young adult couples

• Age: M = 22.8 years; Range 18-25 years old

• Relationship length: M = 32.9 months; SD = 24.6 months

• Couples came into the lab at 10:00 am and were outfitted with mobile physiological equipment. Ambulatory heart rate monitors were used to measure ECG signals continuously until bedtime.

• The following day, couples returned to the lab and reported which hours of the day they experienced any relationship distress—this was reported in 67% of couples.

• HRV for each hour of the day was calculated as the variance of the interbeat intervals. HRV was analyzed only for waking hours.

Methods

Participants also completed an online questionnaire assessing RS (Downey & Feldman, 1996).

Results

• Multilevel models were used to assess changes in HRV during periods of relationship distress, controlling for activity level, body temperature, and whether partners were together.

• Results showed no direct associations between HRV and periods of relationship distress.

• Consistent with our hypothesis, there was a moderation effect of RS for males (b = -2.3, p < .001).

• Results for the female models were not significant.

Discussion

• These findings suggest that people with low RS are more likely to have a PNS that adaptively changes with their environment compared to those with high RS.

• Having flexible HRV may enable cognitive and emotional regulation (Thayer & Lane, 2000), help reduce distress (Gabes, Eisenberg, & Eisenbud, 1993), and improve social competence (Fabes et al., 1993).

• To our knowledge, this is the first study to examine the effects of RS on real-time HRV during everyday relationship distress.

• Studies of within-person changes in HRV during relationship distress can illuminate how physiology and social sensitivity interact in daily life.

• Further prospective studies could elucidate directional effects of social sensitivity and physiological processes.

Selected References


Introduction

• Research indicates that the language we use when speaking to our romantic partners is associated with the quality of our relationships.

• Specifically, overall first person pronoun use (FPPU or "I" words) is associated with decreased relationship satisfaction (Zimmermann et. al. 2013) but increased relationship satisfaction during conflict discussions (Simmons, Gordon, & Chambless, 2005).

• However, previous work has primarily been limited to laboratory-based conflict and has not captured FPPU among couples in their daily lives.

• The purpose of the present study is to examine the relationship between FPPU and everyday relationship distress among young adult dating couples at home over one day.

• The study also examined whether overall relationship satisfaction in couples moderates the relationship between FPPU and everyday relationship distress.

Method

Participants

• Thirty couples were recruited from the greater Los Angeles area.
  - M age = 22.7; SD = 3.3
  - M months together = 37.6; SD = 26.3
  - 23.3% Asian, 26.7% Black/African American, 40% Caucasian, 46.7% Multiracial, 63.3% Hispanic/Latino

Procedure

• Participants came into the lab at 10am and were each given a smartphone

• Participants were instructed to go about their daily lives, spend a minimum of five hours together, and fill out short surveys on their phone once every hour.

Measurements and Instruments

• Smartphones sampled 3-minute conversations every 12 minutes, from 10am until bedtime.

• Participants were unaware when they were being recorded but could mute the microphone at anytime.

Results

Table 1. Descriptive statistics of main study variables

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female FPPU</td>
<td>.03</td>
<td>.15</td>
<td>.06</td>
<td>.03</td>
</tr>
<tr>
<td>Male FPPU</td>
<td>.02</td>
<td>.14</td>
<td>.05</td>
<td>.03</td>
</tr>
<tr>
<td>Female QMI</td>
<td>14.00</td>
<td>45.00</td>
<td>36.78</td>
<td>9.25</td>
</tr>
<tr>
<td>Male QMI</td>
<td>25.00</td>
<td>45.00</td>
<td>39.74</td>
<td>5.21</td>
</tr>
<tr>
<td>Female Annoyance</td>
<td>.00</td>
<td>44.29</td>
<td>8.28</td>
<td>10.22</td>
</tr>
<tr>
<td>Male Annoyance</td>
<td>.00</td>
<td>25.15</td>
<td>4.39</td>
<td>6.99</td>
</tr>
</tbody>
</table>

• 97% of couple’s endorsed feelings of annoyance at least once.

• For females, the overall ratio of FPPU throughout the day was associated with less relationship satisfaction ($r = - .49, p < .05$).

Discussion

• To our knowledge, this study is the first to examine the dynamics of FPPU in couples’ everyday lives during relationship distress and to test how these dynamics are linked to overall relationship functioning.

• In a global context, the use of “I” words may be indicative of poor relationship functioning, as “I” words may reflect a self-centeredness and self-focus.

• However, the use of “I” in a time of conflict can be an adaptive relationship process and may signify better problem solving and communication.

• Results from this study could be used to inform interventions for improving couple functioning and also highlight the importance of examining language use in couples’ daily lives.

• Future research could look at the use of other pronouns among dating couples daily lives, such as “we” and “you.”

Examples of High and Low FPPU for Two Couples

Low FPPU

• Male: “No, it shouldn’t bother you.”
• Female: “Right, it shouldn’t bother me, but with all the [expletive] you’ve done, it does bother me.”

High FPPU

• Female: “It sucks. It really sucks. It’s like I don’t have a home. I don’t have like any idea what my dad’s doing with his wife or like what’s going on because he like never tells me.
• Male: “I know.”

• Multilevel models showed that the association between everyday relationship distress and FPPU was moderated by relationship satisfaction ($b = .08, p < .05$).

• Females switched to more FPPU during periods of everyday relationship distress.

• This association was especially high among females with high relationship satisfaction (low satisfaction: $b = 2.51, p < .05$; high satisfaction: $b = 3.99, p < .05$).

• Results for the male models were not significant.

References


Attachment Style, Romantic Partner Presence, and Physiological Arousal in Daily Life
Laura Vitale, M.F.A., Adela C. Timmons, M.A., Sohyun C. Han, M.A., Laura Perrone, B.A., Megan Murphy & Gayla Margolin, Ph.D.
University of Southern California

Introduction
• Positive close relationships, particularly romantic relationships, are good for health. Research has linked marriage to positive health outcomes, such as lower risk of cardiovascular disease and cancer (Burman & Margolin, 1992; Kiesler-Glaser & Newton, 2001).
• Romantic relationships may lead to positive health by buffering physiological responding during stress (Ditzen et al., 2007).
• Research suggests that insecurely attached partners have a higher stress response during conflict than securely attached partners, and that partners of insecurely attached individuals also show a higher stress response (Feeney, 1996; Powers, Pietromonaco, Gunlicks & Sayer, 2006). Few studies have examined this process in daily life.
• The goal of this study was to examine the relationship between physiological arousal and partner presence in daily life, and whether attachment style moderates that association.

Hypothesis
• H01: Overall, romantic partners will have lower skin conductance level (SCL) when together versus apart.
• H02: Partners higher in anxious attachment will not have lower SCL when in the presence of a romantic partner.

Participants
• Forty young-adult, opposite-sex couples were recruited from the greater LA community (M age = 22.8; SD = 3.0; M months together = 32.9; SD = 24.6).
• 23.3% Asian, 26.7% Black/African American, 40% Caucasian, 46.7% Multiracial, 63.3% Hispanic/Latino.
• Family income: 8% less than $25,000; 18% $25,000 - $50,000; 23% $50,000 - $100,000; 30% over $100,000; 21% didn’t know.

Methods
• Physiological Arousal: Partners wore a Q-sensor on a wrist. The Q-sensor is an ambulatory device that measures skin conductance level (SCL). SCL is a measure of sympathetic nervous system activity, or the “fight or flight” response.
• Together vs. Apart: Participants reported in an exit interview whether they were together or apart for every hour of the data collection day.
• Romantic Attachment: Prior to home data collection, dating partners completed the experience in close relationships: revised questionnaire (ECR-R; Fraley, Waller, & Brennan, 2000), a widely-used measure of adult romantic attachment.

Results
Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Daily SCL</td>
<td>.49</td>
<td>24.97</td>
<td>6.07</td>
<td>6.64</td>
</tr>
<tr>
<td>Male Daily SCL</td>
<td>.24</td>
<td>32.21</td>
<td>10.1</td>
<td>7.56</td>
</tr>
<tr>
<td>Female Anxiety Score</td>
<td>1</td>
<td>6.5</td>
<td>3.11</td>
<td>1.39</td>
</tr>
<tr>
<td>Male Anxiety Score</td>
<td>1</td>
<td>4.44</td>
<td>2.16</td>
<td>.84</td>
</tr>
<tr>
<td>Male Avoidance Score</td>
<td>1</td>
<td>5.28</td>
<td>2.63</td>
<td>1.23</td>
</tr>
<tr>
<td>Male Avoidance Score</td>
<td>1</td>
<td>4.11</td>
<td>2.22</td>
<td>0.93</td>
</tr>
</tbody>
</table>

• On average, couples spent 81% of the day together.
• Multilevel models showed that, among females, partner presence was associated with decreased SCL, controlling for physical activity, body temperature, and whether the participants were with other people (b = -.30, p < .05).
• Attachment style moderated the association between partner presence and SCL (b = 3.07, p < .05). Females with partners low in avoidance showed no association between presence of their partner and SCL (b = .32, ns). Models for males were not significant.

Discussion
• This study is the first, to our knowledge, to examine the effect of partner presence on physiological arousal in daily life.
• Overall, couples show lower SCL levels when together versus apart. This supports existing findings that close relationships buffer stress.
• In couples where the male is high in avoidant attachment, the female partner does not show a decrease in SCL when in his presence.
• The findings reflect a cross-partner effect: one partner’s attachment style is associated with the other partner’s physiology.
• Results highlight that attachment style may have a significant impact on the physiological experience of being in a relationship.
• Females with avoidant partners may not experience their relationship as stress-buffering. One explanation for why these female partners do not show lower SCL in their partner’s presence is that they may be reacting to certain behaviors in their partner that inhibit communication, such as emotional distancing.
• One limitation of this study is that, although we can identify their activities in daily life, it is not yet clear exactly how what participants are responding physiologically.
• Future research should identify specific behaviors associated with avoidant attachment in daily life, and with partner responses to these behaviors, to determine potential points of intervention.

References

• Gunlicks & Sayer, 2006. Few studies have examined that association.

Acknowledgements
• Thank you to all of the lab collaborators and research assistants for their work on this project.
• This material is based on work supported by grants: SCCTI (NIH/NHDRS BILX)000331 SE (Margolin, Pl); NHMHC Y21 HD07170-4 (Margolin, Pl), and NSF GRFP DGE-0993742 (Timmons, Pl).
MEASURES

HYPOTHESES

H1: Higher levels of cumulative adversity will be associated with blunted levels of daily EDA.
H2: During moments of stress, the relationship between cumulative adversity and EDA will be heightened for those with high psychopathology but blunted for those with low psychopathology.

METHODS

PARTICIPANTS

• 17 target participants (53% female) in a longitudinal, multi-wave research study on the effects of family conflict on parent and child outcomes (Margolin, Vickerman, Oliver, & Gordis, 2010).

• Age: Mean age = 22.29 years (Range 18-25 years)

• Ethnicity/Race: 30% Hispanic/Latino; 35% African American; 29% multi-racial; 24% Caucasian; 11% Asian; 11% Pacific Islander

PROCEDURE

• Participants completed 3 – 5 lab visits with their parents and filled out measures of adversity. At the most recent wave (Wave 6), they participated in an at-home study with their dating partner. Couples were outfitted with mobile physiological equipment and asked to fill out hourly surveys on smart phones.

• MEASURES: DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure (Narrow et al., 2013), 23 items of psychopathology measured in the past 2 weeks (0 = None to 4 = Severe, nearly every day). Example item: “Feeling down, depressed or hopeless”.

• Psychopathology: DSMS-5 Self-Rated Level 1 Cross-Cutting Symptom Measure (Narrow et al., 2013), 23 items of psychopathology measured in the past 2 weeks (0 = None to 4 = Severe, nearly every day). Example item: “Feeling down, depressed or hopeless”.

RESULTS

• H1: Cumulative adversity was negatively associated with daily EDA (β = -0.615, p < .001).

• H2: The association between cumulative adversity and EDA was heightened for those with high psychopathology but blunted for those with low psychopathology.

DISCUSSION

Table 1. Categories of Cumulative Adversity

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child physical abuse</td>
<td>None</td>
</tr>
<tr>
<td>Child emotional abuse</td>
<td>None</td>
</tr>
<tr>
<td>Child neglect</td>
<td>None</td>
</tr>
<tr>
<td>Child sexual abuse</td>
<td>None</td>
</tr>
<tr>
<td>Parent-to-parent abuse</td>
<td>None</td>
</tr>
<tr>
<td>Parent-to-parent emotional</td>
<td>None</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>None</td>
</tr>
<tr>
<td>Financial hardship</td>
<td>None</td>
</tr>
<tr>
<td>Feeling unloved</td>
<td>None</td>
</tr>
<tr>
<td>Parental separation/divorce</td>
<td>None</td>
</tr>
<tr>
<td>Parent in prison</td>
<td>None</td>
</tr>
<tr>
<td>Parent’s mental illness</td>
<td>None</td>
</tr>
<tr>
<td>Social isolation</td>
<td>None</td>
</tr>
</tbody>
</table>

Table 2. Associations Between Cumulative Adversity and Electrodermal Activity During Times of Stress

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>β/SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.755</td>
<td>0.612</td>
<td>1.267</td>
<td>.205</td>
</tr>
<tr>
<td>Cumulative Adversity</td>
<td>-0.716</td>
<td>0.126</td>
<td>1.866</td>
<td>.000**</td>
</tr>
<tr>
<td>Psychopathology</td>
<td>-0.377</td>
<td>0.435</td>
<td>0.866</td>
<td>.386</td>
</tr>
<tr>
<td>Cumulative Adversity x Psychopathology</td>
<td>0.822</td>
<td>0.409</td>
<td>2.008</td>
<td>.045*</td>
</tr>
</tbody>
</table>

Figure 1. Ambulatory Q-sensors were used to acquire EDA continuously during a 24-hour period.

Figure 2. Smart phones were used to collect hourly surveys of stress and covariates (e.g., caffeine intake).

Figure 3. Electrodermal Activity During Times of Stress Moderated by Psychopathology

Note: Slopes are significant for low psychopathology (β = 1.17, p < .001) and high psychopathology (β = 3.69, p < .048).

SELECT REFERENCES
Victimization and Perpetration in Couples: Associations between Dating Violence and Electrodermal Activity in Daily Life
Laura Perrone, Adela C. Timmons, Sohyun C. Han, Laura Vitale, and Gayla Margolin
University of Southern California

Introduction
- 32.9% of women and 28.2% of men in the United States have been victims of physical intimate partner violence (National Center for Injury Prevention and Control, 2010).
- Physical intimate partner violence victimization is associated with negative outcomes, including poor health, depressive symptoms, and substance use (Coker et al., 2002).
- Past studies have found that aggressive individuals exhibit different physiological patterns, including higher autonomic reactivity to stressors (Patrick, 2008).
- In romantic couples with low relationship quality, relational aggression has been found to be associated with lower resting sympathetic arousal and, for females, to be marginally associated with higher sympathetic reactivity to stressors (Murray-Close, Holland, & Roisman, 2012).
- The present study examines the associations between romantic partners’ physical dating violence and levels of physiological reactivity in daily life.

Hypotheses
- H01: Individuals who experience high physical dating violence will have lower overall levels of electrodermal activity (EDA).
- H02: Perpetrators of physical dating violence will have higher increases in EDA during periods of irritation with their partners.

Participants
- 34 opposite-sex couples
- 18-40 years old (M = 22.71 years)
- In a relationship for at least 2 months (M = 2.96 years)
- Family income: 8% less than $25,000; 18% $25,000 - $50,000; 23% $50,000 - $100,000; 30% over $100,000; 21% didn’t know
- Ethnicity/Race: 41% Hispanic/Latino; 32% Caucasian, 25% multi-racial, 10% African American, 10% Asian, 13% other, 9% did not report

Methods
- Prior to home data collection, participants completed a version of the How Friends Treat Each Other scale (HFTEO, Bennett et al., 2011) adapted for dating partners, including 9 items assessing physical violence.
- Physical dating violence was perpetrated by 62% of females and 47% of males.
- Couples participated in at-home monitoring for 24 hours, spending at least 5 waking hours together and eating at least one meal at home together.
- Couples wore ambulatory biosensors, including Q-sensors to measure EDA.

Results

<table>
<thead>
<tr>
<th>Associations between Physical Dating Violence and Electrodermal Activity across the 24 Hours</th>
<th></th>
<th></th>
<th></th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Perpetrators</td>
<td>-0.20</td>
<td>0.08</td>
<td>-2.48</td>
<td>0.01</td>
</tr>
<tr>
<td>Male Victims</td>
<td>-0.18</td>
<td>0.07</td>
<td>-2.79</td>
<td>0.01</td>
</tr>
<tr>
<td>Female Perpetrators</td>
<td>-0.11</td>
<td>0.08</td>
<td>-1.42</td>
<td>0.16</td>
</tr>
<tr>
<td>Female Victims</td>
<td>-0.11</td>
<td>0.08</td>
<td>-1.40</td>
<td>0.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associations between Physical Dating Violence and Electrodermal Activity in Males during Periods of Irritation towards One’s Partner</th>
<th></th>
<th></th>
<th></th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>9.60</td>
<td>1.21</td>
<td>7.95</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Physical Violence</td>
<td>-4.98</td>
<td>2.32</td>
<td>-2.14</td>
<td>0.03</td>
</tr>
<tr>
<td>Irritation</td>
<td>-0.03</td>
<td>0.03</td>
<td>-1.04</td>
<td>0.30</td>
</tr>
<tr>
<td>Physical Violence x Irritation</td>
<td>0.14</td>
<td>0.06</td>
<td>2.36</td>
<td>0.02</td>
</tr>
</tbody>
</table>


Discussion
- Male perpetrators and victims of dating violence displayed lower overall levels of EDA, suggesting that dating violence may be related to dampened overall levels of physiological arousal in daily life.
- Although male perpetrators of physical dating violence displayed lower overall levels of EDA, they showed greater increases in EDA during periods of irritation with their partners.
- Heightened EDA in moments of irritation may indicate difficulties coping with interpersonal stressors among males who perpetrate physical dating violence.
- Given gender differences in this and previous studies, future work should continue to explore whether processes relating physiological reactivity and dating violence differ for males and females.
- Future studies should also examine whether physiological reactivity is a mechanism through which irritation with one’s partner leads to dating violence perpetration.
- Future work should replicate these findings with a larger sample size.
- This study builds on previous work by identifying different patterns of physiological responding in daily life in physically violent dating partners.

Selected References

This material is based on work supported by grants: SC CTSI (NIH/NCATS) 8UL1TR000130 (Margolin, PI), NIH-NICHHD R21HD072170-A1 (Margolin, PI), and NSF GRFP DGE-0937362 (Han, PI; Timmons, PI)