Relationship Problems, Agreement and Bias in Perceptions of Partners'

Parental Responsiveness, and Family Functioning

Online Supplemental Materials

These online supplemental materials include demographic information, procedural information about the in-lab activities, additional measurement information, additional analyses testing alternative explanations, and annotated SPSS syntax for the primary analyses presented in the paper.

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1. Demographic Information

Table SM1 below outlines demographic information for the 192 parents (N = 96 heterosexual couples) who completed the initial in-lab measures for the current paper.

Table SM1.   Demographic Information

Demographic Variable	Demographic Statistics
Parent Married/In a Relationship (%)	Married (86%), Cohabiting (14%)
Relationship Length (Years)	$M = 11.92$, $SD = 4.01$ years
Parent Age (Years)	$M = 36.90$, $SD = 6.35$ years
Biological Parent/Non-Biological Parent	189 Biological Parents, 3 Non-biological Parents
Parent Ethnic Identification	Caucasian (63%), European non-NZ (19%), Māori (8%), Pacific Nations (4%), Asian (8%), Indian (2%).
Parent Education	Postgraduate qualification (35%), University Degree (44%), High School Certificate or less (21%).
Parent Employment	Employed full-time (59%), Part-time (27%), Unemployed (15%)
Parent Income	Less than $40,000 (33%), $41–$60,000 (14%), $61–$80,000 (15%), $81,000–$100,000 (19%), More than $100,000 (19%)
Only Child	No (88%), Yes (11%)
Number of Children in Household	1 Child (13%), 2 Children (60%), 3 Children (18%), 4 or More Children (5%)
Primary Caregiver of Child	Mother (63%), Father (4%), Both (29%), Other (4%).
Child Gender (%)	Girls (45%), Boys (55%)
Child Age (Months)	$M = 59.60$, $SD = 3.73$ Months

Note. Participants could identify with more than one ethnic group. Only 71% of parents responded to the question assessing how many children were in their household.

Additional Sample Information.

The types of triadic studies used to test our predictions are time and resource-intensive, which has two important implications. First, sample sizes are necessarily constrained by funding and participant compliance. A target sample size of 100 families balanced power considerations with the time/resource-intensive nature of the study. One hundred couples provide adequate power (.84) to detect small ($r = .20$) actor and partner effects when variables are correlated across partners at typical levels ($r = .30$; Ackerman et al., 2016).

Second, these studies are designed to examine multiple, independent processes (as is necessary and appropriate; see APA manual). This study was designed to test the predicted associations along with additional aims involving parent-child dynamics and children's emotion regulation competence. We recruited families whose child was in the age range of 4.5-5.5 years to capture children's transition to school as prior research highlights that successful emotion regulation plays a critical role in children's adjustment to school. At this age children also become less reliant on their parents to regulate emotions, and become more independent, and develop a range of cognitive, emotional, and behavioral abilities that contribute to their ability to regulate emotions themselves (e.g., language, inhibitory control, executive functioning, etc.)

One prior published paper used these data. Low and colleagues (2019) examined how emotion regulation during a marital conflict is associated with conflict resolution and in turn family functioning during the family activity. The research questions, and all analyses in the current paper, are distinct from that paper.

2. More Detailed Procedural Information

Initial In-Lab Component

On signing up for the study, mothers and fathers completed an online questionnaire about parenting styles, demographic measures, and other background measures unrelated to the focus of this study. Families then attended a laboratory session with their child. After seeing their child comfortably engaging in experimental tasks, parents were escorted to a private room where they completed questionnaires and engaged in a video-recorded discussion while their children participated in a series of experimental tasks unrelated to the focus of this study. Parents first completed questionnaires assessing relationship problems, attachment insecurity, and then independently identified and ranked in order of importance the two most serious or difficult areas of conflict in their relationship, which they were told could be the basis of a video-recorded discussion with their partner. The most highly ranked issues involved difficulties in spending time together as a couple, financial issues, household management, sex, and disciplining children.

Following a 5-min warm-up discussion about routine events over the past week, couples engaged in a 7-min discussion about the highest-ranked issue shared by both partners. After the discussion, each partner completed a questionnaire that assessed the degree to which they: felt responsiveness from their partner. Independent coders also rated the degree to which each couple member was responsive to the other (see *Additional Measurement Information: Alternative Explanation Variables and Control* below).

On completion of the conflict discussion and post-discussion measures, parents were reunited with their child and asked to engage in a fun family activity. Families were provided with paper materials and stationery and given the following instructions: "*As a family, we would like the three of you to work together to build a free-standing tower. Build the best tower you can—it must stand on its own.*" Families were given 10 minutes to complete the task. After the allotted time, the experimenter returned to the room to take the child to a separate playroom while the parents completed a final set of questionnaires assessing their thoughts, feelings, and behavior during the play activity.

Longitudinal Component.

Parents were then contacted 1 year after there lab visit via email and asked to complete a short online questionnaire (20 minutes in length). The longitudinal component was an addition to the original study as we needed to source additional funding to re-assess families. Families were not informed of the longitudinal component when signing up for initial participation but instead were later invited to participate in an extension of the project. The additional extension may be why the rate of attrition for the 1 year follow up questionnaire is greater than we had hoped, although the rate of attrition is comparable to other longitudinal studies (see Karney & Bradbury, 19995; review of 115 longitudinal studies found an average of 31% attrition for longitudinal assessments). Although a total of 143 parents completed the longitudinal component, we could only use data from participants who completed all required measures in the in-lab session. A total of 131 participants were included in the longitudinal analyses of which 58 mothers and 58 fathers came from the same family, and 13 mothers and 2 fathers whose partners did not participate.

To examine whether the attrition was related to our key variables (and thus data was not missing at random), we compared the primary measures collected at the initial in-lab session across participants who did vs did not complete the longitudinal component. The results are reported in Table SM2. There were no differences across baselines in-lab measures of people who completed the longitudinal component vs. people who did not provide longitudinal data. Accordingly, we maximized power in the longitudinal analyses by including all participants who completed the initial lab session and follow-up questionnaire ($N = 131$ parents: 71 mothers and 60 fathers). The dyadic models applied continue to control for dependence across parents from the same couple (see annotated syntax below).

Table SM2. Comparison of Primary measures across participants who completed the In-Lab *and* Longitudinal Component versus *only* the In-Lab Component (not longitudinal).

	Participants completed In-Lab *and* Longitudinal Component (n= 131)		Participants completed *only* In-Lab Component (n = 61)		Differences across samples	
Variables	M	SD	M	SD	t	p
Relationship and Family Background Measures						
1. Relationship Problems	2.38	0.69	2.31	0.65	-0.72	.48
2. Family Chaos (Time 1)	3.25	0.82	3.29	0.85	0.26	.80
Parental Responsiveness Measures During Family Interaction						
3. Perceptions of Partners' Parental Responsiveness	6.26	0.91	6.11	1.01	-1.03	.31
4. Own Self-Reported Parental Responsiveness	5.93	1.02	5.95	0.94	0.08	.93
5. Partners' Self-Reported Parental Responsiveness	5.90	1.05	6.02	0.88	0.82	.41
6. Observed Partners' Parental Responsiveness	4.21	1.22	4.05	1.20	-0.81	.42
Family Functioning Measures						
7. Family Connection During Family Interaction	6.36	0.82	6.41	0.89	0.34	.73

Note: Test of difference across groups *t* represents a test of whether average levels of each variable significantly differed between participants who completed the In-Lab *and* Longitudinal Component (coded 1) and participants who completed *only* the In-Lab Component (coded 0). No significant differences emerged across these primary measures.

3. Measurement Information

Observational Coding of *Parental* Responsiveness during the Family Interaction.

The following section outlines the coding manual used to code parental responsiveness.

This coding schedule focuses on the degree to which parents are responsive/sensitive toward the child. The ratings of responsiveness described below have been adapted from the emotional availability scales (Biringen, Robinson & Emde, 2000) and the coding schedule from Landry, Smith, Swank, and Guttentag (2008) for assessing parental responsiveness during family interactions. The descriptions and examples have been revised to provide more detail for coders to assess responsiveness within the context of video-recorded family interactions involving a tower building task. This task was designed to capture naturally-occurring parent-child interactions.

What is responsiveness?

Responsiveness reflects the degree to which parents are able to engage and respond to their children in a prompt, warm, and sensitive manner that is contingent to the child's needs/cues. Responsive parents are also encouraging of their child's ideas and actions related to the task at hand. They often use open questions to ask the child's opinions and praise the child's efforts. Parents who are unresponsive do not pay much attention to what the child is doing, and instead, may focus more on what they want to do themselves, or work on the task with minimal input from the child. Parents who are unresponsive may also be intrusive by controlling the interaction (e.g., telling the child what to do) or not allowing the child to do what they want to do with the task.

This coding focuses on the degree to which parents are showing five categories of responsiveness:

(1) Context appropriate warmth/emotional-affective support
(2) Engagement with child
(3) Contingent responding
(4) Respect for the child's autonomy
(5) Intrusiveness

Each behavior will be coded **globally** across the 10-minute family interaction (low = 1-2, moderate = 3-5, high = 6-7) according to the *frequency, duration* and *intensity* of relevant (1) verbal statements and accompanying voice tone, and (2) non-verbal behavior such as facial expressions and body language.

1. Context appropriate warmth/emotional-affective support

This code captures the degree to which parents are warm, affectionate, and emotionally supportive toward the child in ways that are context appropriate. Parents may display affection through verbal statements, facial expressions or through their behavior. Verbal expressions of affection may include positive statements to the child which may or may not be about the task (e.g., "I love you", "You're doing a great job"). This may also be accompanied by positive facial expressions and voice tone, such as smiling or laughing.

Physical affection may include comforting or playful physical behaviors, such as a kiss on the cheek or giving the child a high-five.

Low levels of warmth/emotional affective support may involve verbal statements without accompanying positive facial expressions or tone (e.g., saying "great job" in a flat tone with a forced smile). By contrast, parents displaying high levels of warmth/emotional-affective support may integrate verbal and non-verbal behaviors to convey affection towards the child (e.g., saying "great job!" in an enthusiastic manner, and giving the child a high five").

NOTE: It is important to consider the appropriateness of the parents' behavior in relation to the child. For example, parents who are overly intrusive with physical affection should score lower on the scale.

Specific behaviors to consider include whether:

> Parent displays warmth, affection, and support through verbal and/or non-verbal behaviors
> Parents' warmth and support may or may not be about the task (i.e., could just be positive regard for child)

Low (1 - 2)	Moderate (3 - 5)	High (6 - 7)
Lack of verbal and physical affection that demonstrates warmth, affection, and support towards child	Parent engages in some verbal and/or physical affection (e.g., pats on the child's arm)	Parent often displays warmth through verbal and/or physical affection (e.g., smiling, using a warm tone of voice)
Lack of enthusiasm in the child's actions/ideas	Parent shows some enthusiasm about child's ideas or infrequently throughout the activity	Parent shows high levels of enthusiasm about child's creations or ideas (e.g., high-five, saying "Great job!")

2. Engagement

This code captures the degree to which parents are engaged and involved with the child during the family activity. Parents low on engagement may seem disinterested in what the child is doing, never or rarely initiate interactions, and may appear cold or distant (e.g., sitting back in their seat for the duration of the family activity). Higher levels of engagement include the parent paying attention to and displaying an interest in the child and/or what they are doing, asking questions, and responding to the child, and actively initiates interactions with the child.

Specific behaviors to consider include whether:

> *Parent shows interest in what the child is doing*
> Parent initiates interactions
> The parent is engaged with the child during the activity (e.g., by asking questions or responding to the child's comments)

Low (1 - 2)	Moderate (3 – 5)	High (6 - 7)

Parent seems disinterested in the child	Parent may appear "mixed" – where they are very interested sometimes, but shows less interest other times.	Parent always seem interested in what the child is doing
Parent never/rarely initiates interactions	The parent responds to child's prompts, but may initiate less interactions	Parent often initiates interactions
Parent is not engaged with the child, or may not respond to child's questions or comments	Parent is engaged sometimes, but may be less engaged other times (e.g., focusing on their own task)	When child asks questions or makes comment about the task, parent is always very engaged with their responses

3. Contingent responding

This code reflects the degree to which parents are able to respond to their child promptly (i.e., within 5 seconds) in a way that is contingent on the child's cues/needs. Contingent responding occurs when the parent follows the child's lead by building on the child's focus of attention and activity as opposed to the parent focusing on what she/he would like to attend to and/or do. Thus, parents who are high in contingent responding will demonstrate flexibility in their attention and behavior as they allow the child to guide the activity.

Specific behaviors to consider include whether:

➢ Parent responds promptly to child's focus/questions/suggestions
➢ Parent follows child's lead by building on child's focus of attention
➢ Parent demonstrates flexibility in their attention and/or behavior

Low (1 - 2)	Moderate (3 – 5)	High (6 - 7)
When child tries to engage parent (e.g., by asking a question) parent always take a while to respond and may continue to focus on or work on their own task	Parent may respond very promptly sometimes, but may take a while to respond other times.	Whenever child tries to engage parent, parent always responds within 5 seconds and shows interest in what child is attending to.
When child suggests ideas, parent is unable to follow child's lead and proceeds with own task or idea	When child suggests ideas, parent can sometimes follow child's lead, but may choose to proceed with own idea.	Parent can always follow child's lead and builds upon child's idea without redirecting child's attention
When child tries to pull parent's attention or requires help, parent does not shift his/her attention and focuses on own task	When child tries to pull parent's attention or requires help, parent sometimes respond by shifting attention. OR Parent may shift attention, but not come to child's immediate help.	When child tries to redirect parent, parent is able to easily move away from their own task to follow child's guide.

Note: It is important to differentiate prompts and questions that follow the child's attentional lead, versus directive statements that disrupt the child's perspective and aim to redirect the child's attention (Warren & Brady, 2007).

4. Respect for the child's autonomy

This code reflects the degree to which the parent encourages the child's ideas/perspective to build the tower and/or acknowledges the child's ideas/perspective throughout the family activity. A parent will get a low score on this scale if the parent never or rarely asks the child's ideas or opinion about how to build the tower or how they should proceed. Moderate scores may reflect a parent who asks for the child's opinions, but does not follow what the child suggests. A high score on respect for autonomy indicates that the parent encourages the child to generate ideas, acknowledges the child's perspective, and follows the child's lead about how to build the tower.

Specific behaviors to consider include whether:

➢ Parent encourages child to generate ideas
➢ Parent follows the child's lead on how to build the tower

Low (1 - 2)	Moderate (3 – 5)	High (6 - 7)
Parent never asks child for his/her ideas or opinions	Parent asks for child's ideas sometimes	Parent often asks the child's opinion about how to build/design the tower
Parent ignores child's ideas and may suggest another way to build tower	Parent may ask for the child's opinion, but does not always follow what the child suggests	Parent often proceeds with child's ideas

5. Intrusiveness

This code reflects the degree to which the parent takes over the task and does not allow the child to lead or suggest ideas. Parents who are low on this scale are happy to let the child do what they want during the activity, and never or rarely control the interaction. Parents high on intrusiveness may try to control the interaction by delegating what the child does and may tell them how to do it. Parents high on intrusiveness may also appear to want to do or help the child with whatever the child is doing, instead of letting the child be. Parents high on intrusiveness may also pressure the child to engage in the task, either by asking the child to help even if the child does not want to, or pushing them to have more input in the activity.

➢ Parent controls interaction by telling child what to do or telling child how to do something
➢ Parent interferes by doing everything for the child, or seem to want to help with everything
➢ Parent can be pushy by asking child to do more than they want to do and/or asking them to think of ideas regarding the task when child is not interested

Low (1 - 2)	Moderate (3 – 5)	High (6 - 7)

Parent never or rarely controls the interaction or child's actions	Parent sometimes directs child's behavior by telling them what to do or how to do it	Parent often directs child's behavior
Parent never interferes with child's actions regarding the task	Parent sometimes steps in and does something for child	Parent often interferes by doing everything for child, or constantly offers help when it is not needed (e.g., offering unsolicited help)
If child is disengaged or disinterested, parent never pushes them to engage in the task	Parent is generally happy to let child do what he/she wants to do, but sometimes may push child to be more involved with the task	If child is disengaged or disinterested, parent keeps pushing child to do more, or to have more input regarding the task

NOTE: As noted in the paper the *intrusiveness* category is theoretically distinct from the more general responsiveness we focused on in the current study, and consequently did not correlate well with the other categories of responsiveness, and therefore was not included in the overall responsiveness measure.

4. Additional Measurement Information: Alternative Explanation Variables and Controls.

The following measurement information relates to the measures reported in Tables 4 and 5 of the paper.

4a. Self-Reported Felt Partners' Responsiveness to the Self during Couples' Conflict Discussion *and* during the Family Activity.

Participants rated the degree to which they felt their partner was responsive to them during both the couple and family interaction using seven items derived from measures of perceived partner responsiveness (Reis & Gable, 2015, 1 = *strongly disagree*, 7 = *strongly agree)*, including, "I felt understood/validated by my partner", "I felt accepted/valued by my partner", "I felt supported/helped by my partner", "I felt comforted/reassured by my partner", "I felt cared for/loved by my partner", "I felt close/intimate with my partner", "I felt warm/affectionate towards my partner". These items were averaged to create an overall score (see Table 2).

4b. Observational Coding of Partners' Responsiveness to the Self during Couples' Conflict Discussions.

The following section outlines the coding manual the three trained coders used to rate each partner's responsiveness during couples' conflict discussions.

The ratings of responsiveness described below closely follow the global responsive behaviors coding guide presented by Maisel, Gable, and Strachman (2008) for assessing responsiveness during couples' disclosure-relevant interactions. The descriptions are slightly elaborated to provide more detail for coders, revised in ways that match the context of the discussion, and coder instructions developed to ensure coders are paying attention to both verbal and non-

verbal behavior. Nonetheless, the key elements capture the constructs targeted by Maisel et al. (2008).

This coding focuses on the degree to which individuals are showing three categories of responsiveness: (1) understanding, (2) validation, and (3) caring.

Each person should be rated independently of their partner, but the quality of being understanding, validating, and caring necessarily involves taking into account and responding to the *context* of the discussion and the partner's responses preceding the behavior coded. Nonetheless, the coding of understanding, validating, and caring should reflect the degree to which the person *actually demonstrates these behaviors*, and not whether you think the person might display these behaviors given an appropriate opportunity or a different context, such as if the partner was more upset or disclosing.

Each behavior will be coded for each 30-second of interaction (low = 1-2, moderate = 3-5, high = 6-7) according to the *frequency, duration, and intensity* of relevant (1) verbal statements and accompanying voice tone, and (2) non-verbal behavior, such as gestures toward the partner and facial expressions.

(1) Understanding refers to the person listening and attending to their partner's disclosures, ensuring they accurately comprehend the partner's thoughts and feelings, and demonstrating to the partner that they understand his/her thoughts and feelings.
➢ Listens attentively to the partner, including attending to the partner's disclosures and displaying backchannel utterances (e.g., 'mm-hm', 'yes').
➢ Attempts to clarify and explore the thoughts and feelings of the partner (e.g., asks relevant questions, asks for more information, or directly/indirectly seeks elaboration) and/or appears to be trying to ensure they understand the partner;
➢ Demonstrates comprehension by summarizing, paraphrasing, or reflecting on the partner's thoughts and feelings, voicing understanding (e.g., 'aha', 'I see'), and/or conveying understanding by reciprocal or generative disclosure.

(2) Validation refers to the person accepting and respecting the partner's perspective, and responding to disclosures in ways that reinforce the partner's views and make the partner feel valued and respected.
➢ Agrees with the partner, and communicates acceptance and respect for the partner's thoughts, feelings, and perspective.
➢ Acknowledges the partner's thoughts and feelings, and affirms that the thoughts and feelings are valid and/or valuable.
➢ Expresses that he or she values and respects the partner, and that they are a worthy person they hold in high esteem.

(3) Caring refers to the relational nature of the interaction and includes communication of warmth, regard, and affection for one's partner as well as a relationship focus that conveys the couple is 'in it together'.
➢ Expresses warmth, empathy, and affection toward the partner, including nonverbal expression of caring (nodding, smiling, and maintaining eye contact).

➢ Shows he or she is involved and cares about what the partner is thinking and feeling, including conveying support if appropriate.

➢ Emphasizes the relationship by expressing similarity, referencing the relationship (e.g., using 'we'), conveying shared experiences, and that the couple is 'in it together'.

Note: These behaviors may be correlated as they are generally positive – however, they are *distinct* and are to be coded *independently*. For example: an individual may be warm but not seeking to understand the partner's perspective or validate their point of view. Similarly, a person could be working hard to understand the problem, and their partner's perspective, yet conveys little care towards the partner.

4c. Observational Coding of Partners' Responsiveness to the Self during the Family Activity.

The ratings described below integrates and adapts prior assessments of responsiveness (described above) with assessments of couple dynamics in co-parenting contexts (e.g., Coparenting Behaviour Coding Scales and Coparenting Coding Manual: New Parents Project; Schoppe-Sullivan, 2017, also see Schoppe et al., 2001; 2004). The coding descriptions and examples have been revised to be appropriate for 4- to 5-year-old children within the context of video-recorded family interactions, such as the tower building task used in the current study.

This code reflects the degree to which each parent expresses warmth, affection, and positive regard for their partner. The parent may verbally express warmth by saying positive things to their partner, or through nonverbal expressions, such as smiling and nodding towards one's partner. More subtle expressions of warmth involve open body posture, turning toward the partner, touching, and maintaining eye contact. Warmth also includes being responsive to one's partner, including showing understanding or acknowledging the partner's thoughts and feelings, verbally or non-verbally expressing value and respect for the partner, and showing caring towards the partner. The parent may provide emotional support, reassurance, and encouragement towards their partner in an authentic manner. The parent may demonstrate that they are involved and care about what their partner is thinking and feeling, including providing support. The parent may also emphasize their relationship to their partner by referencing the relationship using words such as "we".

No warmth (1):	No warmth is expressed towards one's partner during the interaction.
Low warmth (2-3):	The parent is relatively restricted in their expressions of warmth towards their partner. There is a limited sense of warmth towards their partner.
Moderate warmth (4):	The parent expresses a reasonable amount of warmth towards their partner. The amount of warmth is apparent but not striking. Warmth is expressed at times, but it is not apparent throughout the episode.
High warmth (5-6):	The parent clearly expresses warmth towards their partner. This warmth may be seen through visible expressions or inferred

	through a feeling that the parent demonstrates towards their partner. The warmth, however, is not as pervasive as a score of 7.
Very high warmth (7):	Continual expressions of warmth towards the partner fill the interaction. If coders see explicit expressions of physical affection a 7 should be considered.

5. Additional Analyses Examining Relationship Satisfaction and Security

As noted in the paper (see 'Additional Analyses Testing Alternative Explanations' in the Results section) we ran a series of additional analyses testing whether the primary associations could be accounted for by alternative explanations. Due to page limits we focused on alternative variables most relevant to our theoretical account. Here we present additional analyses testing other relationship-level alternatives, which we could not detail in the main text. We describe the measures below outline the results from these analyses in Tables SM3 and SM4 below. The analyses follow the same analytic strategy as presented in Tables 4 and 5 of the paper (see table note).

Relationship Satisfaction and Security. Parents completed established measures assessing relationship satisfaction (e.g., "I feel satisfied with our relationship"; Rusbult et al., 1998) and attachment anxiety (e.g., "I often worry that my partners don't really love me") and avoidance (e.g., "I don't like people getting too close to me"; Simpson et al., 1996).

Table SM4 displays results for analyses where each alternative explanation and relationship problems were modeled as simultaneous predictors of perceptions of partners' parental responsiveness. Although greater relationship satisfaction was associated with greater perceptions of partner parenting (see *Effect of Alternative Variable)*, the effect of relationship problems on perceptions of partner parental responsiveness remained unchanged controlling for all relationship-level alternatives (see *Effect of Relationship Problems)*, suggesting that these biases occur because of the problems couples have working together, rather than negative sentiment override or attachment insecurities. Table SM5 reveals a similar pattern of results. Only Attachment Avoidance was associated with less family connection during the family interaction (see *Effect of Alternative Variable)*, and controlling for each alternative did not change the primary associations (see *Effect of Perceptions of Partners' Parental Responsiveness)*: perceptions of partners' parental responsiveness continued to predict (1) greater family connectedness and (2) residual changes in family chaos across time. In sum, these additional analyses reveal that the effects presented in Figure 1, are not due to, global relationship sentiments or insecurities but are specific to couples' problems spilling over to influence perceptions of partners' parental responsiveness and, in turn, family functioning.

Table SM3. Assessing and Controlling for Relationship Satisfaction and Security as Alternative Explanations for the Links between Relationship Problems and Biased Perceptions of Partners' Parental Responsiveness.

	Models Controlling for Alternative Explanations									
	Effect of Alternative Variable					*Effect of Relationship Problems*				
Alternative Variables		95% CI					95% CI			
	B	*LL*	*UL*	*t*	*p*	*B*	*LL*	*UL*	*t*	*p*
Predicting Biased *Perceptions of Partners' Parental Responsiveness.*										
Relationship Satisfaction	.15	.02	.27	2.31*	.02	-.20	-.36	-.03	-2.39*	.02
Attachment Anxiety	-.05	-.16	.06	-0.91	.37	-.27	-.43	-.11	-3.41**	.00
Attachment Avoidance	-.05	-.15	.05	-0.90	.37	-.28	-.43	-.15	-3.61**	.00

Note. These analyses relate to the relationship bias pathway presented in Figure 1. Models are equivalent to those reported in Table 2 but test the effect of each alternative explanation and relationship problems (along with relative agreement and assumed similarity; see Figure 1) as simultaneous predictors of perceptions of partners' parental responsiveness. *p < .05. **p < .01.

Table SM4. Assessing and Controlling for Relationship Satisfaction and Security as Alternative Explanations for the Links between Lower Perceptions of Partners' Parental Responsiveness and Family Connection during the Family Interaction and Family Chaos across Time (1 Year after Lab Visit).

	Models Controlling for Alternative Explanations									
	Effect of Alternative Variable					Effect of Perceptions of Partners' Parental Responsiveness				
Alternative Variables		95% CI					95% CI			
	B	LL	UL	t	p	B	LL	UL	t	p
Predicting Family Connection during the Family Interaction										
Relationship Satisfaction	-.07	-.19	.06	-1.07	.28	.46	.33	.58	7.07**	.00
Attachment Anxiety	.06	-.05	.16	1.08	.28	.45	.32	.57	7.08**	.00
Attachment Avoidance	-.11	-.21	-.02	-2.30*	.02	.43	.30	.55	6.81**	.00
Predicting Family Chaos across Time (1 Year after Lab Visit)										
Relationship Satisfaction	-.04	-.21	.13	-0.46	.64	.25	-.42	-.04	-2.45*	.02
Attachment Anxiety	-.06	-.19	.07	-0.91	.37	-.26	-.45	-.08	-2.78*	.01
Attachment Avoidance	.03	-.10	.16	1.16	.25	-.25	-.43	-.06	-2.62*	.01

Note. These analyses relate to the second pathway presented in Figure 1. Models are equivalent to those reported in Table 3 but test the effect of each alternative explanation and perceptions of partners' parental responsiveness (along with relative agreement, assumed similarity, and relationship problems) as simultaneous predictors of family connection during the family interaction (top section) and family chaos across time (bottom section). *p < .05. **p < .01.

6. Annotated Syntax for Primary Analyses

SPSS 26 was used to estimate the model, but any other multilevel modeling program (e.g., SAS or HLM) could be used. Each record is the data for each individual participant. The syntax follows that provided by Kenny et al. (2006). Upper case words in bold are required SPSS syntax, and the remaining represent variables and specifications that need to be selected. In the following syntax, the variables have been changed to match the variable names used in the paper. For the actual syntax used to run analyses these labels are shortened/abbreviated. For all analyses, we pooled effects across dyad members and modeled the main and interaction effects of gender to test whether the effects significantly differed across mothers and fathers.

Syntax for Analyses present in Table 2 (Upper Section)

MIXED PerceivedPartnerParentalResposiveness **WITH** gender

P_SelfReportedParentalResposiveness SelfReportedParentalResposiveness

RelationshipProblems

/**FIXED**= P_SelfReportedParentalResposiveness SelfReportedParentalResposiveness

RelationshipProblems   Gender Gender*P_SelfReportedParentalResposiveness

Gender*SelfReportedParentalResposiveness Gender*RelationshipProblems

 /**REPEATED**=obs | **SUBJECT**(dyadid) **COVTYPE**(CSH).

This syntax specifies analyses for examining the couple as the unit of analysis or subject (dyadid). The model estimates the equations pooled across men and women but distinguishes couple members by specifying that each unit is made of two sets of observations (the REPEATED statement *obs* variable distinguishes the couple members). This REPEATED statement treats each individual's scores as repeated measures in the dyad, which accounts for within-couple dependence of observations by modeling a heterogeneous compound symmetry error structure (CSH).

The MIXED line specifies the structure of the multilevel model. *PerceivedPartnerParentalResposiveness* represents perceptions of their partners' parental responsiveness during the family interaction and is the dependent variable in this example. All of the remaining variables on the first line (following WITH) are those included in the model to specify the fixed effects of predictors; *gender* is coded as -1 mothers and 1 fathers. *P_SelfReportedParentalResposiveness* is *partners'* self-reported parental responsiveness during the family interaction, *SelfReportedParentalResposiveness* is *individuals'* own self-reported parental responsiveness during the family interaction, and *RelationshipProblems* is the measure of couples' relationship problems (average ratings of problem severity across from 25 common relationship problems assessed before the family interaction).

The FIXED line models all of the effects reported in Table 2. The predictor variables were all mean-centered. The first three variables test the paths in Figure 1.

(1) *P_SelfReportedParentalResposiveness* is the effect of *partners'* self-reported parental responsiveness on perceptions of partners parental responsiveness (testing relative agreement, see Figure 1),

(2) *SelfReportedParentalResposiveness* is the effect of *individuals'* own self-reported parental responsiveness on perceptions of partners' parental responsiveness (testing assumed similarity, see Figure 1), and

(3) *RelationshipProblems* is the effect of individuals' reports of couples' relationship problems on perceptions of partners' parental responsiveness (testing *relationship bias*, see Figure 1).

The remaining variables model the main and interactions effect of parent gender (see gender diff. column in Table 2).

(4) *Gender* test whether there are any differences across mothers and fathers in perceived partner parental responsiveness,

(5) *Gender*P_SelfReportedParentalResposiveness* tests whether the effect of *partners'* self-reported parental responsiveness on perceptions of partners' parental responsiveness (i.e., relative agreement) differs by gender,

(6) *Gender*SelfReportedParentalResposiveness* tests whether the effect of *individuals'* own self-reported parental responsiveness on perceptions of partners' parental responsiveness (i.e., assumed similarity) similarity is different across mothers and fathers, and

(7) *Gender*RelationshipProblems* test whether the effect of individuals' reports of couples' relationship problems on perceptions of partners' parental responsiveness (i.e., *relationship bias*) differs across mothers and fathers.

Syntax for Analyses present in *upper* section of Table 3

MIXED FamilyConnection **WITH** gender RelationshipProblems

PerceivedPartnerParentalResposiveness p_SelfReportedParentalResposiveness

SelfReportedParentalResposiveness

/FIXED= RelationshipProblems PerceivedPartnerParentalResposiveness

p_SelfReportedParentalResposiveness SelfReportedParentalResposiveness Gender

Gender*RelationshipProblems Gender*PerceivedPartnerParentalResposiveness

Gender*p_SelfReportedParentalResposiveness Gender*SelfReportedParentalResposiveness

 /REPEATED=obs | **SUBJECT**(dyadid) **COVTYPE**(CSH).

See above syntax for information on the data structure and the meaning of the repeated statement which treats individuals' scores as repeated measures in the dyad, and accounts for within-couple dependence of observations by modeling a heterogeneous compound symmetry error structure. The MIXED line specifies the structure of the multilevel model. *FamilyConnection* represents individuals' reports of how close and connected individuals felt

as a family and is the dependent variable. All of the remaining variables on the first line (following WITH) are those included in the model to specify the fixed effects of predictors. The FIXED line models all of the effects reported in Table 3. The predictor variables were all mean-centered.

(1) *RelationshipProblems* is the effect of individuals' reports of couples' relationship problems on perceptions of partners' parental responsiveness, which controls for relationship bias (see Figure 1),

(2) *PceivedPartnerParentalResposiveness* is the effect of perceptions of partners' parental responsiveness during the family interaction on family connection during the family interaction, which is the focal effect in these analyses,

(3) *P_SelfReportedParentalResposiveness* is the effect of *partners'* self-reported parental responsiveness on family connection, which controls for relative agreement (see Figure 1),

(4) *SelfReportedParentalResposiveness* is the effect of *individuals'* own parental responsiveness on family connection, which controls for assumed similarity (see Figure 1),

(5) the effect of *gender* tests whether there are differences in family connection across mother and fathers, and

(6) the gender interactions that follow test whether the effect of each predictor on family connection differs by parent gender (see gender diff. column in Table 3).

Syntax for Analyses present in *lower* section of Table 3

MIXED T2_FamilyChoas **WITH** gender T1_FamilyChoas RelationshipProblems

PerceivedPartnerParentalResposiveness p_SelfReportedParentalResposiveness

SelfReportedParentalResposiveness

/**FIXED**= gender RelationshipProblems T1_chaoticHomeEnvironment

PerceivedPartnerParentalResposiveness SelfReportedParentalResposiveness

p_SelfReportedParentalResposiveness

Gender Gender*T1_FamilyChoas Gender*RelationshipProblems

Gender*PerceivedPartnerParentalResposiveness gender*p

_SelfReportedParentalResposiveness

Gender*SelfReportedParentalResposiveness

 /PRINT=SOLUTION TESTCOV COVB

 /**REPEATED**=obs|**SUBJECT**(dyadid) **COVTYPE**(CSH).

See above syntax for information on the data structure and the meaning of the repeated statement which treats individuals' scores as repeated measures in the dyad, and accounts for within-couple dependence of observations by modeling a heterogeneous compound

symmetry error structure. These analyses include all 131 parents who completed the longitudinal component, including 58 mothers and 58 fathers from 58 couples as well as 13 mothers and 2 fathers whose partners did not complete longitudinal assessments. Thus, for 15 couples, there is missing data from one partner. These multi-level models effectively account for missing data by weighting the estimates based on the available data (i.e., only data available for each dyad informs the sample level estimates).

The MIXED line specifies the structure of the multilevel model. *T2_FamilyChaos* represents individuals' reports of how fun and positive the family experience was, and how close and connected individuals felt as a family and is the dependent variable. All of the remaining variables on the first line (following WITH) are those included in the model to specify the fixed effects of predictors. The FIXED line models all of the effects reported in Table 3. The predictor variables were all mean-centered.
(1) *T1_familychaos* represents the initial family chaos scores assessed before the in-lab family interaction, which ensures that prediction of family chaos one year later represents residual change from initial levels,
(1) *RelationshipProblems* is the effect of individuals' reports of couples' relationship problems on residual change in family chaos, which controls for relationship bias (see Figure 1),
(2) *PceivedPartnerParentalResposiveness* is the effect of perceptions of partners' parental responsiveness during the family interaction on residual change in family chaos, which is the focal effect in these analyses,
(3) P_SelfReportedParentalResposiveness is the effect of *partners'* self-reported parental responsiveness on family connection, which controls for relative agreement (see Figure 1),
(4) *SelfReportedParentalResposiveness* is the effect of *individuals'* own parental responsiveness on family connection, which controls for assumed similarity (see Figure 1),
(5) the effect of *gender* tests whether there are differences in family chaos reported at time 1 across mother and fathers, and
(6) the gender interactions that follow test whether the effect of each predictor differs by parent gender (see gender diff. column in Table 3).

(2) *RelationshipProblems* is the effect of *individuals* average relationship problems/problem severity on residual change of family chaos (controlling for relationship bias, see Figure 1),
(2) *PceivedPartnerParentalResposiveness* is the effect of perceptions of their partners' parental responsiveness during the family interaction on residual change of family chaos, *(3) P_SelfReportedParentalResposiveness* is the effect of *partners'* self-reported parental responsiveness on residual change of family chaos (controlling for relative agreement pathway, see Figure 1 and Table 2), and (4) *SelfReportedParentalResposiveness* is the effect of *individuals* self-reported parental responsiveness on residual change of family chaos (controlling for assumed similarity), (5) the effect of *gender* tests whether gender predicts differences in residual change of family chaos. The gender interactions that follow test whether the effect of each predictor on residual change of family chaos differs by gender.