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ORIGINAL PAPER

Mediators of the associations between parents' conditional regard and the quality of their adult-children's peer-relationships

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Abstract

Parental conditional regard (PCR) involves parents providing or withdrawing affection to motivate children to do what the parents want. Numerous studies have demonstrated that PCR has harmful consequences for children. The present research examines associations between PCR and children's later relationships with young-adult peers. We conducted two cross-sectional studies (Study 1: 118 participants, 73 women; Study 2: 120 participants, 89 women). Study 3 involved collecting data from both members of a romantic heterosexual dyad (109 couples). Study 4 involved participants interacting with a neutral accomplice (73 participants, 56 women). We found support for several mediators of the association between PCR and young-adults' relationship quality: psychological need satisfaction (Studies 1 and 2), and projection of one's own conditional regard onto a partner (Studies 3 and 4). Although longitudinal data are needed to establish causality, these findings suggest that exposure to PCR is negatively associated with adult-children's peer relationship quality, and offers clues for disrupting this inimical association.

Keywords Parental conditional regard (PCR) · Peer relationships · Romantic relationships · Projection · Partner selection

The use of contingent affection as a parenting strategy for socializing children has long been discussed with endorsements by several experts (e.g., Aronfreed 1968; Sears et al. 1957; Gerwitz and Pelaez-Nogueras 1991; McDowell 1988). This socializing practice, known as parental conditional regard (PCR), involves parents providing affection and attention to children when children display desired behaviors or attributes, and withholding affection and attention when they do not. In the eyes of many researchers, as well as parents, the use of such psychological forms of socializing seemed effective in changing behavior while being far less harmful to children than socializing through physical punishment.

During the period when some psychologists endorsed the effectiveness of PCR, others expressed concern about its emotional consequences. For example, Rogers (1951) championed the importance of receiving *unconditional* positive regard to promote optimal growth, arguing that using PCR could undermine children's self-esteem and inhibit their personal exploration and self-regulation. Consistent with this, Hoffman (1970) speculated that, in the long run, PCR might be even more harmful than physical punishments.

A self-determination theory account of PCR

Self-determination theory (SDT; Ryan and Deci 2000) provides one account for the negative psychological and behavioral consequences of PCR (e.g., Assor et al. 2004; Roth et al. 2009). SDT posits that, in addition to having basic physiological needs which are essential for somatic wellness, human beings have basic psychological needs that are essential for psychological wellness. The psychological needs for autonomy, competence, and relatedness are posited to be evolved and thus universal, and studies have found that they operate regardless of age, gender, culture, and socioeconomic status (e.g., Chirkov et al. 2003). Most central to

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the issue of PCR are the psychological needs for autonomy and relatedness. Autonomy is characterized by a sense of volition and choice as people fully endorse their actions or decisions (Ryan et al. 1995). As such, this basic need is thwarted when people feel coerced into thinking or behaving in certain ways, either because of external or internal contingencies that are not fully integrated with one's sense of self. Relatedness is characterized by feelings of connectedness and belongingness with other people or groups (Ryan et al. 1995). Various studies have shown that satisfaction of the autonomy and relatedness needs are often positively correlated (Reis et al. 2000) and are generally complementary in contributing to both well-being and relationship quality (Blais et al. 1990; Deci et al. 2006; Hodgins et al. 1996; La Guardia et al. (2000). However, in spite of the general complementarity in satisfaction of the autonomy and relatedness needs, the structure of PCR essentially pits children's needs for autonomy and relatedness against each other. PCR conveys to children that to get parental relatedness they must give up some of their autonomy. Unfortunately, the relatedness that comes from PCR is likely to be degraded, as the children tend to feel loved for "what they do" rather than "whom they are." As such, when experiencing PCR, neither of the basic needs for autonomy or relatedness would be optimally fulfilled. Interestingly when participants experience low satisfaction of the autonomy and relatedness needs in close relationships, they also tend to experience low competence need satisfaction in those relationships (La Guardia et al. 2000). Accordingly, SDT researchers have predicted that experiencing higher levels of PCR will lead to experiencing less satisfaction of all three basic psychological needs satisfaction (autonomous, relatedness, and competence), poorer relationship quality, and poorer psychological health.

Several studies have found support for this SDT account. For instance, Assor et al. (2004) found that children who perceived their parents as more conditionally regarding experienced less autonomy and relatedness need satisfaction, expressed greater resentment toward their parents, and had poorer overall well-being later in life. In short, the perceived use of PCR led both to lower psychological well-being in children and to poorer quality relationships with their parents. Roth et al. (2009) found that PCR, when used to socialize emotional regulation, resulted in children's maladaptive regulation of anger and fear. Research by Roth and Assor (2010) found a linkage between parents' own reports of being higher in using PCR to their young children's impaired capacities to respond to sad feelings. Specifically they found that higher PCR predicted deficiencies in children's abilities to recognize sadness in facial expressions of other children, to be aware of sad feelings in themselves, and to respond empathically to others' sad feelings. Roth and Assor (2012) extended this literature by examine whether experiencing PCR might also impair children's intimacy capacity with peers. They found that PCR was negatively related to children's disclosure of personal difficulties to a close partner and to providing support when the partner was expressing difficulty, an association that was mediated by maladaptive emotion regulation. However, research has not yet explored important follow up questions, such as: (a) whether negative associations between PCR and the quality of peer relationships is still present later in life (i.e., among adult/grown children), or (b) whether additional mediators (other than maladaptive emotion regulation) might further elucidate these associations (e.g., psychological need satisfaction within peer relationships, the process of selecting peer relationship partners, or biases in perceiving peers' behavior).[1]

Security of attachment and need satisfaction

Substantial research spanning more than half a century has focused on attachment security. Initially discussed by Bowlby (1969/1982), Ainsworth et al. developed paradigms for investigating attachment security of infants with their primary caregivers (Ainsworth et al. 1978). More recently, social psychologists have used the concept of attachment security to examine adult relationships (e.g., Mikulincer and Shaver 2007).

The core idea in the attachment research is that caregiver responsiveness to infants' feelings and initiations facilitates the children's developing secure attachments to the caregivers, and the degree of security is expected to generalize to other, later attachment relationships. Indeed, substantial research has supported this idea, including for example that early attachments can predict the quality of later attachments with romantic partners (e.g., Berlin and Cassidy 1999; Cowan et al. 1996; Feeney and Noller 1990; Kerns et al. 1996; Teti and Ablard 1989; Volling and Belsky 1992).

From the SDT perspective, the concept of responsiveness, also referred to as sensitivity, is understood as the caregivers being supportive of the children's basic psychological needs for autonomy, relatedness, and competence (La Guardia et al. 2000). Many discussions by attachment theorists are consistent with this view. For example, Bretherton (1987) emphasized the importance of supporting the self-initiation and agency of children, ideas that are central to the concept of autonomy. Similarly, Sroufe and Waters (1977) pointed

[1] Consistent with prior studies (e.g., Roth et al. 2009), conditional positive regard and conditional negative regard were significantly correlated in all four studies (e.g., in Study 1, mothers conditional positive and negative regard were correlated, $r = .79$, $p < .001$; fathers conditional positive and negative regard were correlated, $r = .81$, $p < .001$). The pattern of effects were equivalent for conditional positive and negative regard. In the interest of parsimony, we reported findings using only combined (positive and negative) CR.

out that sensitive responsiveness supports children's competence and confidence; and responsive parenting is frequently discussed in terms of providing ample love and affection.

The present investigations

To review, a number of studies have now documented a range of deleterious outcomes associated with using PCR to socialize children. SDT maintains that these inimical associations result from the fact that PCR is fundamentally a manipulative strategy that is likely to thwart satisfaction of children's basic psychological needs. In the present investigations we are extending the previous work to examine intergenerational associations by linking retrospective reports of PCR experienced during childhood with young adults' current peer-to-peer relationships (romantic partners, best friends, and new friends), and by testing several novel mediators of this hypothesized association between past PCR and current peer relationship quality.

Selecting CR as mediator

Prior research suggests that selecting conditionally regarding peers might be driven by a preference for familiarity (Reis et al. 2011) or an implicit desire for self-validation through contingent self-esteem (i.e., self-validation theory; Katz and Beach 2000).

Projecting CR as mediator

Prior research from the attachment tradition has demonstrated the potential for transference or projection of attachment patterns from a former romantic partner to a future dating partner (Brumbaugh and Fraley 2006). However, projection has to the best of our knowledge never been studied with respect to the more concrete (and potentially controllable) provision of conditional regard.

Psychological need satisfaction as mediator

Earlier, we reviewed evidence linking PCR to psychological need thwarting (e.g., Assor et al. 2004). In regard to need satisfaction and relationship quality, research by La Guardia et al. (2000) indicated that, at the between-person level of analysis, individuals who experienced greater need satisfaction had more secure attachments across multiple partners, including mothers, fathers, best friend, and romantic partners. Further, however, the degree of attachment security with their different relational partners varied significantly, and this within-person variance in attachment security was explained by the amount of basic psychological need satisfaction the individuals experienced with the particular partners. Thus, basic psychological need satisfaction predicted attachment security at both the between-person level across relationships and the within-person level within specific relationships.

The present endeavor involves four studies. In the first two studies we used cross-sectional surveys to test two hypotheses. We hypothesized that (H1) psychological need satisfaction with parents and romantic partners would each mediate the links from perceived PCR to relationship quality with partners (parents and peers). We also hypothesized (H2) that parental CR would generalize to peer CR, and that perceived CR from a close peer would mediate the relation between PCR and relationship quality with that peer. Studies 3 and 4 used more sophisticated designs (collecting dyadic data in Study 3, and using a confederate in Study 4) to test additional mediators of the association between PCR and young adults peer relationship quality; specifically, (H3) partner selection (choosing partners who are more conditionally regarding) and (H4) projection (perceiving neutral behaviors as more conditionally regarding). In Studies 1–3, we operationalized relationship quality in terms of security of attachment with different intimate partners (parents and peers); in Study 4, relationship quality was operationalized in terms of satisfaction, vitality, and emotional reliance experienced during an interaction with a new partner (an accomplice).

Study 1

We hypothesized that PCR would be associated with college students feeling less securely attached to parents (H1a) and romantic partners (H1b). Second, we hypothesized that the predicted association between PCR and adult relationships would be mediated by perceived satisfaction of the autonomy, relatedness, and competence needs within those adult relationships (H2). Consistent with evidence that the satisfaction of these three needs is complimentary, mutually supportive, and positively correlated in relationships (Hodgins et al. 1996; Reis et al. 2000), we tested H2 with a composite of overall need satisfaction. To test the above-specified hypotheses, we invited college-aged adults in romantic relationships to retrospectively report on the degree of CR they received from their parents as they were growing up, and then to report on their current relationships with both their parents and their romantic partners.

Method

Participants

Data were collected anonymously and confidentially from 118 undergraduate students (45 males; 73 females) during

a single 45–60 min large-group session. Ages in years are shown here in the following categorical ranges, reported in percentages: 18–19 (37.8%), 20–21 (51.3%), 22–23 (5.9%), > 23 years (4.2%). Ethnic makeup: 66.4% Caucasian/White, 16.8% Asian, 6.7% Multiracial, 5% Hispanic, and 4.2% African American/Black. Participation was restricted to individuals who were in a romantic relationship of at least 3 months. 67.2% of the relationships were between 3 months and 1 year; 31.1% were 1–2 years; and 1 relationship (0.8%) was 3–4 years. All participants received extra credit in a psychology course for their involvement in the study.

Measures

Demographics

Participants reported their age, gender, ethnicity, and length of current romantic relationship.

Parental conditional regard (PCR)

Participants' retrospective reports of the CR they received from their parents were assessed using the Domain-Specific Parental Conditional Regard Scale (Assor et al. 2004). This 12-item scale measures CR experienced from each parent in four domains: emotional-control, academics, prosocial, and sports. Approximately half of the questions involve parents' showing greater affection, esteem, and attention than usual when children displayed desired behaviors or attributes, and the other half included parents' providing less affection, esteem, and attention than usual when children failed to display desired behaviors or attributes. Participants rated their agreement with each statement using a 7-point Likert-type scale ranging from strongly disagree (1) to strongly agree (7). Participants' scores were calculated by combining across the four domains. The internal consistency was strong for each parent-specific scale (mother CR, $\alpha = 0.91$; father CR, $\alpha = 0.91$). Importantly, past research has found that adolescents' reports of PCR (received) correlate with parallel reports made by parents of PCR (given), and further that reports of PCR received and given are psychometrically distinguishable from more general affective assessments of relationship quality, e.g., parental warmth (Assor et al. 2007; Israeli-Halevi et al. 2011, 2015).

Adult attachment with parents

Participants' current attachment to their parents was assessed using the Bartholomew and Horowitz (1991) Attachment Questionnaire. This scale includes four subscales: secure attachment, dismissive-avoidant attachment, preoccupied attachment, and fearful-avoidant attachment. Participants were given four paragraph-long vignettes that describe different approaches to and feelings about relationships with each parent, and they were asked to rate, on a 7-point Likert scale, how well each style pertains to their current relationships with their mother and father. Following La Guardia et al. (2000), we calculated overall security of attachment scores by subtracting the average of the three insecure attachment items from the one secure attachment item.

Romantic relationship attachment

The Experiences of Close Relationship Revised Scale was used to assess attachment in the participants' adult romantic relationships by directing participants to respond to items with their romantic partner in mind (ECR-R; Brennan et al. 1998; Fraley et al. 2000). The 36-item ECR-R scale includes two subscales: anxious attachment (18 items) and avoidant attachment (18 items), and these items were also combined and reverse scored to estimate overall security of attachment. Participants rated their agreement with statements using a 7-point Likert-style scale (1 = *disagree strongly;* 7 = *agree strongly*). The internal consistency was strong for the overall scale ($\alpha = 0.95$).

Basic psychological needs satisfaction (BPNS)

Basic psychological need satisfaction within each relationship was assessed as a potential mediator of the predicted relations between PCR and relationship quality. A 9-item BPNS scale adapted from LaGuardia et al. (2000) was used to measure the degree to which participants felt satisfaction of the autonomy, competence, and relatedness needs when with their romantic partner, mother, and father. Participants rated their agreement with statements using a 7-point Likert-style scale (1 = *disagree strongly;* 7 = *agree strongly)*. Composite need satisfaction was calculated for each relationship, and internal consistency was strong for each relationship-specific subscale: need satisfaction when with mother ($\alpha = .91$), need satisfaction when with father ($\alpha = .94$), and need satisfaction when with romantic partner ($\alpha = .88$).

Results

Hypothesis 1 (PCR → adult relationship quality) Hypothesis 1 was that the amount of parental conditional regard (PCR) a child received while growing up would be associated with poorer relationship quality when the child was in early adulthood with parents (H1a) and romantic partner (H1b). Inspection of the statistics presented in Table 1 reveal that the retrospective reports of having received PCR were negatively associated with security of attachment to parents, for both mothers, $r = -.51$, $p < .01$, and fathers, $r = -.37$, $p < .01$; in each case, more PCR was associated with less

Table 1 Descriptive statistics and correlations of Study 1's variables

		M	SD	1	2	3	4	5	6	7
1	PCR mother	2.79	1.22	–						
2	PCR father	2.94	1.32	.72**	–					
3	NS mother	5.35	1.41	−.60**	−.39**	–				
4	NS father	5.10	1.44	−.35**	−.50**	.58**	–			
5	NS partner	5.88	0.99	−.34**	−.35**	.32**	.26**	–		
6	Attach mother	3.14	2.48	−.51**	−.32**	.75**	.48**	.25**	–	
7	Attach father	2.85	2.37	−.20*	−.37**	.36**	.73**	.17^{+}	.38**	–
8	Attach partner	2.47	0.98	−.39**	−.31**	.43**	.37**	.76**	.21*	.29**

PCR stands for parental conditional regard; NS stands for need satisfaction; Attach stands for attachment. Security of attachment is used as an indicator of relationship quality

$^{+}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

secure attachment with parents. Retrospective reports of having received PCR was also negatively associated with romantic relationship quality. Mother's CR was negatively associated with security of attachment to romantic partner, r = − .39, $p < .01$; as was father's CR, r = − .31, $p < .01$.

Hypothesis 2 (PCR → need satisfaction → relationship quality) Hypothesis 2 was that the predicted relation between PCR and poor relationship quality in adulthood would be mediated by less basic psychological need satisfaction within those relationships. To test the significance of the mediation effect, we used Preacher and Hayes' (2008; Hayes 2013) method and calculated 5000 bootstrapped samples to estimate the 95% bias corrected and accelerated confidence intervals of the indirect effect. We also conducted the traditional mediation significance test (i.e., Sobel test). This analysis was conducted for mothers and fathers and with regards to relationship quality with parents (H2a) and relationship quality with romantic partner (H2b). In this study, power of an indirect effect was determined using the PowMedR (Kenny 2013) routine in R. Assuming a medium effect size of .30 in a correlation metric for *a* and *b* paths, $n = 118$, and $\alpha = .05$, yielded a post-hoc power of .86. Thus, there was more than adequate power (i.e., above .80) to detect a significant indirect effect.

PCR → need satisfaction with parents → relationship quality with parents (H2a) Regression analyses indicated that mothers' CR negatively predicted psychological need satisfaction when with mother, $\beta = -.62$, $p < .01$, which in turn predicted attachment security, $\beta = .66$, $p < .01$. The 95% confidence intervals of this indirect effect did not contain zero which indicates a significant indirect effect (indirect $\beta = -.41$, 95% *CI* −.56, −.28). Similar findings were obtained with the Sobel test (Sobel's $z = 5.76$, $p < .01$). Fathers' CR negatively predicted psychological need satisfaction when with father, $\beta = -.48$, $p < .01$, which in turn predicted attachment security, $\beta = .74$, $p < .01$. The 95% *CI* and the Sobel test indicated the significance of this indirect effect (indirect $\beta = -.39$, 95% *CI* −.54, −.26, Sobel's $z = 4.87$, $p < .01$).

PCR → need satisfaction with parents or partner → relationship quality with romantic partner Here we tested two different mediation processes. The first was to explore whether PCR predicts low quality relationships with partners through low needs satisfaction with parents (H2b), and the second tested the hypothesis that this relation would also be mediated through needs satisfaction when with partner (H2c). As reported above, the relation between mothers and fathers CR (IV) to need-satisfaction with parent were significant. Next, we tested whether need satisfaction with parent predict quality of relationship with partner. Results of regression analyses indicated that need satisfaction with mother significantly predicted secure attachment to romantic partners ($\beta = .28$, $p < .01$). Similarly, need satisfaction with father predicted secure attachment to romantic partners ($\beta = .27$, $p < .01$). Tests of the indirect effects of CR on secure attachment with partner through need satisfaction with parent were significant for mothers (indirect $\beta = -.17$, 95% *CI* −.36, −.02, Sobel's $z = 2.22$, $p < .05$) and fathers (indirect $\beta = -.16$, 95% *CI* −.32, −.01, Sobel's $z = 1.99$, $p < .05$). Results of regression analyses indicated that both maternal and paternal CR were inversely related to need satisfaction by partner ($\beta = -.32$, $p < .01$ and $\beta = -.318$, $p < .01$, respectively). Need satisfaction by partner was in turn related with secure attachment with partner ($\beta = .71$, $p < .01$). The indirect effect of maternal CR on secure attachment with partner through need support by partner was found significant (indirect $\beta = -.22$, 95% *CI* −.37, −.10, Sobel's $z = 3.04$, $p < .01$). Similar findings were found for paternal CR (indirect $\beta = -.23$, 95% *CI* −.38, −.10, Sobel's $z = 2.81$, $p < .01$).

Brief discussion

The results from Study 1 supported our hypotheses using a cross-sectional design. Retrospectively reported PCR

experienced during childhood was inversely associated with adult relationship satisfaction with parents (H1a) and adult relationship satisfaction with romantic partners (H1b). Further, these inverse associations were mediated by need satisfaction experienced within those relationships (H2). Need satisfaction when with parents mediated the inverse association between PCR and relationship satisfaction with parents (H2a). Need satisfaction when with parents also mediated the inverse association between PCR and romantic relationship satisfaction (H2b), as did need satisfaction when with one's romantic partners (H2c).

Study 2

The next study examined this issue at the between- and within-person levels of analysis with students' perceptions of the degrees to which their mothers, fathers, best friends, and romantic partners were (and/or currently are) conditionally regarding of them. Study 2 included perceptions of participants' romantic partners and best friends as conditionally regarding. We expected participants to perceive their close peers as being more conditionally regarding if their parents were. Further, we hypothesized that CR within relationships would predict lower need satisfaction, which would predict lower relationship quality. Specifically, we hypothesized that PCR would predict adult attachment to romantic partners and best friends through need satisfaction within the relationships. To examine our hypotheses we used a path analysis or structural equation modeling (SEM) approach.

Method

Participants

Data were collected anonymously and confidentially from 120 undergraduate students (31 males; 89 females) during a single 45–60 min large-group session. Ages in years were reported in the following categorical ranges, with percentages appearing parenthetically: 18 (13.3%); 19 (24.2%); 20 (24.2%); 21 (27.5%); 22 (10.0%); > 22 years (0.8%). Ethnic makeup: 80.8% Caucasian/White, 10.0% Asian, 5.0% Hispanic, 1.7% African American/Black, and 1.7% Multiracial. Participation was restricted to individuals who were in romantic relationships of at least 3 months. 35.0% of the romantic relationships were between 3 months and 1 year; 27.5% were 1–2 years; 20.0% were 2–3 years; 10.0% were 3–4 years; 5.8% were 4–5 years; 0.8% were 5–6 years;, and 0.8% were > 6 years. The frequency distribution for length of relationship with best friends was: 5.8% < 1 year; 10.8% 1–2 years; 6.7% 2–3 years; 11.7% 3–4 years; 5.8% 4–5 years; 10% 5–6 years; and 49.2% > 6 years.

Measures

Demographics

Participants were asked to report their age, sex, ethnicity, and length of their relationships with romantic partners and best friends.

Parental conditional regard (PCR)

PCR was measured using the 12-item Domain-Specific Parental Conditional Regard Scale (Assor et al. 2004). The internal consistency was strong for each parent-specific scale (mother CR, $\alpha = 0.85$; father CR, $\alpha = 0.91$).

Needs satisfaction

As in Study 1, need satisfaction was measured using the 9-item BPNS adopted from La Guardia et al. (2000). Internal consistency: mothers ($\alpha = .89$), fathers ($\alpha = .92$), romantic partners ($\alpha = .91$), and best friends ($\alpha = .83$).

Adult attachment

Bartholomew and Horowitz's (1991) Attachment Questionnaire was used to assess adult attachment to parents and to romantic partner and best friend. It tests four categories: secure, dismissive-avoidant, preoccupied, and fearful-avoidant. Similar to Study 1 and in line with La Guardia et al. (2000), we calculated security of attachment by subtracting the average of dismissive, preoccupied, and avoidant scores from security scores.

Results

Because the patterns observed for mothers and fathers were comparable in Study 1, parsimony suggested that we created composite measures of "parents" CR, need satisfaction, and relationship quality, and we reported these composite parent findings in Study 2.

Table 2 presents descriptive and correlation statistics of the study's variables. The pattern of correlations regarding PCR, need satisfaction, and attachment security for parents and romantic partners replicated the results of Study 1. The pattern of correlations also generalized to best friends with negative relations between PCR, need satisfaction with best friends, and attachment security to best friends. Correlations among perceptions of CR by parents, romantic partners, and best friends were high and ranged from $r = .55$ ($p < .01$) to $r = .68$ ($p < .01$).

To examine our hypotheses we used a path analysis approach in AMOS 21 (Arbuckle 2012). Path analysis was more suitable for our study than using a series of regressions

Table 2 Descriptive statistics and correlations of Study 2's variables

	M	SD	1	2	3	4	5	6
1. PCR	2.39	1.01						
2. CR partner	1.84	0.78	.60**					
3. CR bf	1.74	0.83	.55**	.67**				
4. NS partner	6.15	0.84	− .22*	− .30**	− .23*			
5. NS friend	6.10	0.93	− .20*	− .23*	− .30**	.13		
6. Attachment partner	3.82	2.12	− .17	− .27**	− .21*	.58**	.07	
7. Attachment friend	3.62	1.95	− .18	− .20*	− .20*	.03	.65**	.06

PCR stands for parental conditional regard; CR stands for conditional regard; NS stands for need satisfaction; partner stands for romantic partner; bf stands for best friend. Security of attachment is used as an indicator of relationship quality

$^{+}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

because of its can simultaneously test multiple hypotheses, including indirect effects and multiple dependent variables. A further advantage is that the fit of alternative models can be quantitatively compared. A model fit with NFI, CFI, and TLI equal to or greater than .95 and RMSEA equal to or less than .06 is indicative of an adequate fit to the data (Kline 2016).

We first examined the goodness of fit indices of a full-mediation model, as it represents a more parsimonious model (James et al. 2006). Next, we added the direct paths between the predictors and outcomes and estimated the fit of a partial-mediation model. We used the Chi square difference to test fit differences between the models. In all models, the mediators and outcomes variables were allowed to covary.

We began by examining examined a full mediation model in which PCR predicted perceived CR with best friend and romantic partner which were then linked with best friend and romantic partner need-satisfaction which in turn predicted attachment within the target relationship. Goodness-of-fit indices indicated a good fit, with $\chi^2(12) = 8.08$, $p = .779$, $NFI = .97$, $CFI = 1.00$, $TLI = 1.04$, and $RMSEA < .01$. The next step was to examine an alternative and less parsimonious model that included all the direct paths between the predictor, mediators and outcomes. This partial-mediation model had good fit indices, with $\chi^2(6) = 4.68$, $p = .586$, $NFI = .98$, $CFI = 1.00$, $TLI = 1.03$, and $RMSEA < .01$. A comparison of these models indicated that the full-mediation model fitted the data better than the partial-mediation model, $\Delta\chi^2(6) = 3.4$, $p = .757$. Although the full-mediation model had good fit indices, the covariances between best friend need satisfaction and romantic partner need satisfaction (r = .08, $p = .365$) and between best friend attachment and romantic partner attachment (r = .09, $p = .358$) were non-significant and therefore trimmed from the model. The final model, presented in Fig. 1, fitted the data well $\chi^2(14) = 9.78$, $p = .778$, $NFI = .96$, $CFI = 1.00$, $TLI = 1.04$, and $RMSEA < .01$.

The results indicated that PCR was positively linked with both best friend and romantic partner CR. Perceived CR in each relationship was then negatively associated with need-satisfaction in the respective relationship which in turn was positively linked attachment within that relationship. To test the significance of the indirect effects of PCR on best friend and romantic partner attachment trough CR and need-satisfaction in each relationship we used the bootstrapping approach and calculated the 95% CI for the indirect effects in 5000 resamples. Results indicated that the 95% CI for the indirect effects were − .19 to − .05 for romantic partner and − .17 to − .03 for best friend. These CIs did not contain zero and thus indicate that the indirect effects are statistically significant.

Brief discussion

Important findings from this study were that young adults who perceived their parents as having been conditionally regarding of them while they were growing up tended also to perceive both their best friends and their romantic partners as being conditionally regarding, and this related to having less secure relations with those peers. These findings raised two interesting questions. First, might these young

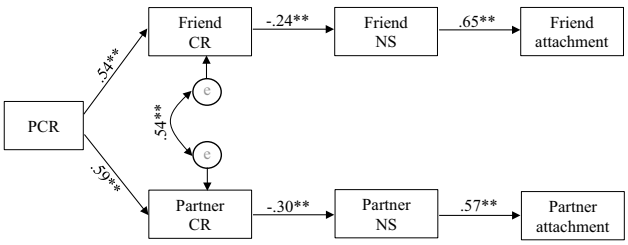

Fig. 1 PCR as predictor of best friend and romantic partner CR, need-satisfaction, and attachment: path model (Study 2). PCR stands for parental conditional regard; *CR* conditional regard; *NS* need satisfaction; *attachment* security of attachment; security of attachment is used as an indicator of relationship quality

adults have selected best friends and romantic partners who reminded them of their parents in that their relational partners were similarly conditionally regarding? Second, might these young adults have internalized from their parents the mental representation that close others are conditionally regarding of them and then essentially projected that representation onto their two closest peers? The next two studies address these issues.

Study 3: romantic couples' dyadic reports of CR and relationship quality

Studies 1 and 2 relied on self-reported data from a single source, the target participant. In Study 3, we collected data from two sources, the target and the target's romantic partner. Having established in Study 2 parallel patterns of findings for relationships with best friends and romantic partners, in Study 3, in the interest of parsimony, we collected peer data only on relationships with romantic partners. We hypothesized (H1) that PCR would be related to both the target participants' reported receiving CR from their romantic partner (H1a) and to partner reported giving CR to the target participant (H1b). This would suggest that the targets may have *selected* romantic partners who were similar to their parents regarding giving CR. Our second hypothesis (H2) was that the predicted association between PCR and adult romantic relationship quality would be mediated by both the participants' reports of receiving CR (H2a) and the romantic partners' reports of giving CR within those romantic relationships (H2b). Our third hypothesis (H3) was that, in addition to target participants selecting partners similar to their parents regarding giving CR (H1a and b), participants may also be *projecting* CR onto those romantic partners. We tested this by regressing participants' receiving CR onto PCR, controlling for romantic partners reports of giving CR.

Method

Participants

Data were collected from 109 romantic couples (218 participants), all heterosexual, during a single 45–60 min session per couple in two countries: Israel (n = 122), U.S. (n = 96). Ages in years were reported in the following categorical ranges, with frequencies appearing parenthetically: younger than 18 (0.5%); 18 (5.0%); 19 (8.6%); 20 (12.3%); 21 (13.2%); 22 (7.3%), > 22 years (52.3%). Ethnic makeup: 55.5% Caucasian/White, 19.5% Multiracial, 10.0% Asian, 4.5% Hispanic, 4.1% African American/Black, and 5% Other. Participation was restricted to individuals who were in a romantic relationships of at least 3 months. 36.8% of the relationships were between 3 months and 1 year; 34.5% were 1–2 years; 13.2% were 2–3 years; 6.8% were 3–4 years; 5.5% were 4–5 years; 0.0% were 5–6 years; and 2.3% were > 6 years.

Procedure

Participants completed measures in group settings ranging in size from 1 to 5 couples. Couples were seated apart from each other with sufficient space to preserve privacy and eliminate the potential for discussion during data collection. Prior to filling out questionnaires, participants were told that their answers would remain anonymous and confidential.

Measures

Demographics

Participants were asked to report their age, sex, ethnicity, and the length of their relationship with their romantic partners.

Parental conditional regard (PCR)

PCR was measured using the 10-item Domain-Specific Parental Conditional Regard Scale, specific to the emotion regulation domain (Assor et al. 2004).

Romantic partner conditional regard (receiving and giving)

Targets and romantic partners each reported the degree to which they give and receive conditional regard (CR) in the context of that romantic relationship. The targets' receiving CR and the partners' giving CR were measured using slightly modified versions of a CR scale specific to negative emotion regulation and consisting of 5-items related to fulfilling and 5-items related to failing to fulfill expectations (Kanat-Maymon et al. 2015; Roth et al. 2009); this resulted in a 10-item measure of receiving CR from romantic partner and a 10-items measure of giving CR to romantic partner. Responses ranged from 1 (not at all true) to 7 (very true).

Romantic relationship attachment

Bartholomew and Horowitz's (1991) Relational Questionnaire (RQ) was used to assess attachment in participants' current romantic relationships. We combined the three items reflecting insecure attachment, reversing the items to represent secure attachment with romantic partners.

Results

Descriptive statistics

Table 3 displays the means, standard deviations, and correlations among the research variables. Consistent with Study

Table 3 Descriptive statistics and correlations of Study 3's variables

	M	SD	1	2	3	4
1. PCR	2.38	1.02	–			
2. Participants' perceptions of partners' CR	2.15	0.97	.57**	–		
3. Partners' reports of giving CR to participants	2.37	1.01	.18**	.17**	–	
4. Participants' secure attachment to partners	5.72	1.10	−.16*	−.15*	−.02	–
5. Gender	–	–	−.07	−.09	.13	.04

PCR stands for parental conditional regard; CR stands for conditional regard. Security of attachment is used as an indicator of relationship quality

$^{+}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

2, target participants' perceptions of PCR were positively related to their perceptions of getting CR from their romantic partners (H1a) and inversely to their attachment security to the partners. Moreover, Table 3 reveals that participants' perceptions of PCR were positively related to the partners' reports of giving CR to the participants (H1b). Finally, participants' reports of getting CR from their partners but not the partners' reports of giving CR to the participants was negatively related to attachment security with the partners.

Mediation hypotheses—analytical strategy

The participants were grouped within dyads. Ignoring such dyadic dependencies might bias significance tests, increase type I errors, and undermine statistical power (Kenny 1996). Therefore, we used the Actor–Partner Interdependence Model (APIM; Kenny et al. 2006) to control for dyadic data dependency. Following Kenny et al. (2006) we treated couples as distinguishable dyads (i.e., men can be distinguished from women). In these analyses, an *actor effect* occurs when a target participant's own independent variable predicts his or her own outcome variable, and a *partner effect* is noted when the partner's independent variable predicts the target's score on the outcome variable. Thus, for instance, we were able to test whether targets' perceptions of receiving CR from partners significantly predicted the targets' reported relationship quality to the partners, while simultaneously testing the same pathways from the partners' reports of giving CR to the targets' outcome. Gender was included to control for potential variation between men and women. The APIM was conducted by using the MIXED procedure in SPSS (Heck et al. 2010) with restricted likelihood estimation to estimate the coefficients (Kenny et al. 2006). Prior to analyses, gender was "effect" coded (men = −1, women = 1) and the predictor and mediators were grand-mean centered. To test for mediation effects within the framework of the dyadic analysis, we conducted a mediation analysis (Baron and Kenny 1986; Hayes 2013; MacKinnon 2012). The levels of significance of the mediation effects were estimated using the Monte Carlo 95% C.I.

To determine power in an APIM design, post hoc power was calculated using the APIMPowerR interactive application (Ackerman and Kenny 2016). Power analysis indicated that a sample of 109 couples would have sufficient power (92%) to detect a medium effect size of .30 (in a correlation metric) at the $\alpha = .05$ for direct effects. This sample size is, however, not sufficiently powered to detect indirect effects.

Figure 2 presents the results of the dyadic analyses testing whether the relation between targets' PCR to targets' relationship quality with partners was mediated by the targets' perception of CR from partners and the partners' reports of giving CR to targets. If so, this would suggest that the targets may have actually selected partners who are like their parents because the partners' reports of their own behavior converge with the participants' perceptions of them. First, we entered PCR and gender as predictors of the target participants' attachment security to their partners. The results replicate the previous studies and reveal that the more the targets perceived their parents as high on CR, the lower the

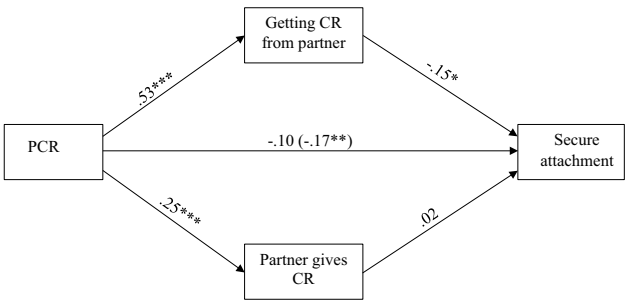

Fig. 2 PCR as a predictor of getting CR, giving CR, and attachment: unstandardized dyadic analysis coefficients (Study 3). PCR stands for parental conditional regard reported by targets; CR = conditional regard in the emotional regulation domain; "Getting CR from partner" stands for targets' reports of getting conditional regard from partner; "Partner gives CR" stands are partners' reports of giving conditional regard to targets; "Secure attachment" = Security of attachment reported by targets; security of attachment is used as an indicator of relationship quality. For reasons of clear presentation, gender effects are not presented, although were included in the analyses. Value in parentheses is "total effect" prior to inclusion of the mediators

Table 4 Total, direct, and indirect effects of PCR on relationship quality through perceiving and giving CR: Dyadic analysis (Study 3)

Predictors	DV: secure attachment			
	B	*SE*	*t*	*p*
Actor's PCR	−.17	.07	2.41	.008
Gender	.04	.06	.57	.285
	DV: perceiving CR			
	B	*SE*	*t*	*p*
Actor's PCR	.53	.05	10.13	< .001
Gender	−.05	.05	1.03	.152
	DV: partner gives CR			
	B	*SE*	*t*	*p*
Actor's PCR	.25	.06	3.87	< .001
Gender	.14	.07	2.09	.020
	DV: secure attachment			
	B	*SE*	*t*	*p*
Actor's PCR	−.10	.08	1.15	.126
Actor's perceived CR	−.15	.09	1.68	.047
Partner gives CR	.02	.07	.25	.402
Gender	.02	.06	.32	.375

PCR stands for parental conditional regard; CR stands for conditional regard. Insecurity of attachment is used as an indicator of relationship quality. P-values reported reflect one-tailed tests of significance

quality of relationships the targets have with their partners. In the next step of the dyadic analyses, we tested the relation between PCR and the hypothesized mediators, namely, the targets' perceiving getting CR from partners and the partners' reporting giving CR to the targets. Figure 2 reveals that the more the targets' perceived PCR the more they perceived their partners to use CR and the more partners' reported giving CR to the targets. The last step of the dyadic mediation analyses was to test the relation between PCR and attachment security in the romantic relationships while controlling for the hypothesized mediators. While the relations between the mediators and relationship quality were significant when controlling for PCR, the relation between PCR and relationship quality became non-significant while controlling for the mediators. Using the Monte Carlo C.I. to assess the significance of the indirect effects indicated that the indirect effect through targets' perceiving CR was significant (−.16, −.01) but the path through partners' giving CR was not (−.02, .04). To further support the projection hypothesis (H3), we controlled for partner's reports on giving CR when estimating the effect of PCR on targets' perceiving CR, thus the association between PCR and perceived CR cannot be attributed to partner's use of CR. Results indicated a significant projection effect ($B = .52$, SE = .05, $t = 9.88$, $p < .001$). Total, direct, and indirect effects for Study 3 are reported in Table 4.

We tested an alternative model that incorporate the possibility that partner's reports on giving CR indirectly affect targets' relationship quality through perceived CR. This model is based on the assumption that partner-reported CR is important factor to relationship quality to the extent that partners' CR is detected or perceived by that targets. Thus, a sequential mediation model was examined testing the indirect effect of parental CR on relationship quality through partner-reported giving CR and target-reported perceiving CR. Results indicated that PCR predicted partner-reported giving CR (see Table 4). However, partner-reported giving CR in turn did not significantly predict target-reported perceiving CR ($B = .06$, SE = .05, $t = 1.10$, $p = .135$) nor relationship quality ($B = .02$, SE = .07, $t = 0.25$, $p = .402$). Thus, this model was not statistically supported.

Brief discussion

To summarize, the data from Study 3 supported the previous studies' findings that PCR related negatively to children's attachment security with romantic partners when the children were young adults in college. The results extended the previous findings by revealing positive relations between targets' perceptions of PCR and targets' perceiving CR from the partners (H1a) and partners' reporting giving CR to the targets (H1b). The relation between PCR and romantic-relationship

quality was mediated by targets' perceptions of receiving CR from their partners (H2a), but not partners' reports of giving CR to the targets (H2b). Thus, Study 3 provides support for the projection, but only partial support for the partner selection hypothesis. Specifically, partners' reports of giving CR was not significantly related to romantic-relationship quality when controlling for targets' perceptions of receiving CR.

Two limiting factors made it challenging to test the partner selection hypothesis. First, social desirability concerns likely make it difficult for some partners to acknowledge giving CR. Second, in our model testing these two mediators simultaneously, targets' reports are advantaged by shared reporter variance (whereas partners' reports are disadvantaged). Nevertheless, Study 3 provided robust support for the projection hypothesis.

In order to test the projection hypothesis more rigorously, we next conducted a laboratory study in which the participants were asked to interact with new relationship partners (actually an experimental accomplice trained to treat each participant the same), and then report their perceptions of the CR of those new acquaintances.

Study 4: conditional regard from an accomplice

Study 4 was designed to test a series of hypotheses in the context of a more controlled setting that included interactions between participants and new relationship partners, namely accomplices whom they did not know, who did not know the hypotheses of the study, and who were trained to treat all participants the same. Using this paradigm, Study 4 was designed to test three primary hypotheses. First, we hypothesized that (H1) participants' PCR would be negatively related to relationship satisfaction, even within the context of interactions with these new acquaintances. Second, we hypothesized that (H2a) more PCR would be positively related to the participants' perceiving the new relationship partners as more conditionally regarding, which would imply projection of CR, and that (H2b) PCR would be negatively related to perceiving the new relationship partners as supporting psychological need satisfaction, implying parallel projection of need thwarting. Finally, we hypothesized that (H3a) the projected experience of CR onto the accomplice, and (H3b) the projected need satisfaction, would each mediate the relation between PCR and relational satisfaction derived from interacting with the new acquaintance.

Method

Participants and procedure

Participants were 73 undergraduates (56 female, 17 male; ages 18–28 years) at the University of Rochester who received extra course credit for attending the study. Most were Caucasian (67.2%), and the rest were Asian (15.1%), African American (6.8%), Hispanic or Latino (2.7%), Native American (1.4%), or other (6.8%).

Upon their arrival at the laboratory, participants were told that they would complete the study with another student, who unknown to the participants was actually an experimental accomplice. This accomplice was blind to the study purpose and hypotheses, and reported to the laboratory after the participant had arrived to reduce any suspicion of association with the experimenter. All three accomplices were female, Caucasian, and in their early-to-mid 20s (20, 25, and 26 years old); the accomplices were instructed to behave consistently, i.e., striving to treat each participant the same. The experimenter informed the participant and accomplice that the study examined how personality styles affect experiences in interactions with new acquaintances, and inquired whether the participant and accomplice knew each other. After a negative response, the experimenter asked both members of the dyad to complete measures of personality traits to maintain the cover story. Following the completion of these measures, the experimenter explained that the study involved both individuals' asking and answering questions that were designed to generate mutual self-disclosure between strangers. This task was based on Aron et al.'s (1997) closeness-generating procedure, and lasted for a total of 20 min. After the closeness-generating procedure, the experimenter asked the dyad members to complete follow-up questionnaires on the feelings and perceptions they experienced during the task. Unless otherwise noted, responses to all measures were made on a 9-point scale from 1 (*strongly disagree*) to 9 (*strongly agree*).

In Studies 1–3, we operationalized relationship quality in terms of security of attachment with different intimate partners (parents and peers); however, security of attachment is not applicable to a new relationship partner. Therefore, in Study 4, relationship quality was operationalized in terms of satisfaction, vitality, and emotional reliance experienced during the structured closeness-generating interaction.

Measures

Parental conditional regard

The Parental Conditional Regard Scale (Assor et al. 2004) was used in this study. The reliability for this measure, which was completed before the closeness-generating procedure, was $\alpha = .98$ for mothers and $\alpha = .98$ for fathers. Data for perceptions of CR from mothers and fathers ($r = .54$, $p < .001$) were combined to form a composite of PCR.

The next set of measures was completed after the closeness-generating procedure, and referred to participants'

experiences of the accomplice during the mutual self-disclosure task.

Participants' perceived conditional regard of accomplice

A modified version of the Parental Conditional Regard Scale (Assor et al. 2004) assessed participants' perceptions of CR from the accomplices during the mutual self-disclosure task. The internal consistency was strong for the overall scale (α = 0.81). While it would be unreasonable to expect that a stranger (the accomplice) could be entirely unconditionally regarding, this scale was designed to assess the perception of *relative* CR.

Basic psychological need satisfaction of participants

The Basic Psychological Need Satisfaction Scale (La Guardia et al. 2000) assessed satisfaction of autonomy, competence, and relatedness during the mutual self-disclosure task. The reliability for this measure was α = .74 for autonomy, α = .74 for competence, and α = .76 for relatedness. Data for satisfaction of autonomy, competence, and relatedness were combined to form a composite measure of basic psychological need satisfactions for participants (α = .87).

Satisfaction with the interaction

Participants responded to the question, "In general, how satisfied were you with your interaction with the other participant?"

Vitality

The Subjective Vitality Scale (Ryan and Frederick 1997) assessed vitality during the mutual self-disclosure task. The internal consistency was strong (α = 0.92).

Emotional reliance

The Emotional Reliance Questionnaire (Ryan et al. 2005) assessed willingness to turn to the accomplice in the future if the participant were to have an on-going friendship with the accomplice. The internal consistency was strong for the overall scale (α = 0.96).

Intentions for further interaction

Participants read the question, "Would you like to get together with the other participant in the near future?" Those who answered "yes" were asked to (1) list some days and times during which you could have such a meeting, and (2) indicate the length of time (in minutes) that you would like such a meeting to last.

Results and brief discussion

Preliminary analyses

Separate multivariate analyses of variance (MANOVAs; Hotelling's Trace) revealed a significant multivariate difference between men and women [F (6, 65) = 3.14, $p < .01$], and no significant multivariate difference between Caucasians and other ethnicities [F (6, 65) = 2.18, *ns*], on the measures that were completed after the closeness-generating procedure. Females reported higher emotional reliance [M (SD) = 5.23 (1.49)] than males [M (SD) = 4.29 (1.70)], F(1, 70) = 4.57, $p < .05$. Accordingly, gender was controlled in testing the unconditional indirect effect models that included emotional reliance as the dependent variable.

Primary analyses

Table 5 presents descriptive statistics, intercorrelations, and scale reliabilities (α) for the study measures. There was a significant positive correlation between participants' PCR and their perceptions of the accomplices' CR and significant (or marginal) negative correlations between perceived accomplice CR and each of the measures of participants' experiences of relational quality with the accomplice. PCR was also significantly negatively correlated with participants' basic psychological need satisfaction while interacting with the accomplice.

Testing the mediational hypotheses

We used the analytic methods discussed in Preacher and Hayes (2008) to examine the unconditional indirect effects of PCR on the four outcome measures through perceived accomplice CR: (i) satisfaction with the interaction, (ii) vitality experienced during the interaction, (iii) willingness to turn to the accomplice in the future, and (iv) intentions to have future interaction with the accomplice. Power of an unconditional indirect effect was determined using the PowMedR (Kenny 2013) routine in R. Assuming a medium to high effect size of .30–.50 in a correlation metric for a and b paths, $n = 73$, and α = .05 yielded a post hoc power of .53–.98. Thus, there was more than adequate power (i.e., above .80) to detect a high indirect effect size.

The unconditional indirect effects through perceived accomplice CR were significant for each of the four measures of participant' experience of relational quality with the accomplice during the mutual self-disclosure task: (i) satisfaction with the interaction [indirect effect: M (SE) = − 0.26 (0.75); 95% BCa CI − 0.47, − 0.15], (ii) vitality experienced during the interaction [indirect effect: M (SE) = − 0.25 (0.08); 95% BCa CI − 0.40, − 0.08], (iii) willingness to turn to the accomplice in the future [emotional reliance; indirect

Table 5 Descriptive statistics, intercorrelations, and scale reliabilities (α) for the Study 4 measures

		1	2	3	4	5	6	7
1	PCR	–						
2	Perceived Accomplice CR	.56***	–					
3	Participant needs satisfaction	−.35**	−.60**	–				
4	Interaction satisfaction	−.14	−.51**	.65**	–			
5	Vitality	−.13	−.47**	.70**	.61**	–		
6	Emotional Reliance	−.21^{+}	−.32**	.40***	.46**	.35**	–	
7	Intentions for Further Interaction	−.06	−.21^{+}	.33**	.36**	.32**	.47**	–
	α	.91	.81	.87	–n/a	.92	.96	–
	M	3.78	3.15	6.81	7.39	5.79	5.04	28.19
	SD	1.75	1.36	1.03	1.32	1.43	1.57	34.33

PCR stands for parental conditional regard; CR stands for conditional regard

$^{+}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

Table 6 Unconditional indirect effect of parental conditional regard to dependent variables (satisfaction with the interaction, vitality, emotional reliance, and intention for further interaction) through perceived accomplice conditional regard (Study 4)

Number of bootstrap resamples = 5000

	Direct and total effects				Bootstrap results for indirect effect	
DV(s)	*b* (YX) = the total effect of the independent variable (PCR) on the DV (*SE*)	*b* (MX) = the effect of the IV on the mediator (perceived accomplice CR) (*SE*)	*b* (YM.X) = the effect of the mediator on the DV, controlling for the IV (*SE*)	*b* (YX.M) = the effect of the IV on the DV, controlling mediator (*SE*)	Mean Indirect Effect (*SE*)	95% BCa CI
Satisfaction with interaction (n = 71)	−.1046 (.0898)	.4446*** (.0770)	−.5971*** (.1215)	.1609^{+} (.0946)	−.2647 (.0751)	{−0.4685, −0.1522}
Vitality (n = 72)	−.1022 (.0944)	.4325*** (.0765)	−.5617*** (.1322)	.1408 (.1022)	−.2467 (.0823)	{−0.3999, −0.0817}
Emotional reliance (n = 72)	−.1693 (.1049)	.4304*** (.0775)	−.3215* (.1595)	−.0309 (.1235)	−.1347 (.0743)	{−0.3236, −0.0167}
Intention for further interaction (n = 72)	−1.1945 (2.3517)	.4325*** (.0765)	−7.2345* (3.5970)	1.9345 (2.7786)	−3.0878 (1.2043)	{−5.7742, −0.9520}

The model predicting emotional reliance also controlled for the covariate gender ($b = .7010^{+}$, $SE = .4191$)

$^{+}p < .10$, $*p < .05$, $**p < .01$, $***p < .001$

effect: M (SE) = −0.13 (0.07); 95% BCa *CI* −0.32, -0.02], and (iv) intentions to have future interaction with the accomplice [indirect effect: M (SE) = −3.09 (1.20); 95% BCa *CI* −5.77, −0.95]. Results summarized in Table 6.

We used the same analytic methods (Preacher and Hayes 2008) to examine the unconditional indirect effects of perceived accomplice CR on the outcome measures through the participants' basic psychological need satisfaction during the interactions. Again, the unconditional indirect effect was significant for each of the four outcome measures of participant experience of relationship quality vis-à-vis the accomplice during the mutual self-disclosure task: (i) satisfaction with the interaction [indirect effect: M (SE) = −0.31 (0.10); 95% BCa *CI* −0.57, −0.17], (ii) vitality experienced during the interaction [indirect effect: M (SE) = −0.40 (0.10); 95% BCa *CI* −0.63, −0.24], (iii) willingness to turn to the accomplice in the future [emotional reliance; indirect effect: M (SE) = −0.32 (0.12); 95% BCa *CI* −0.63, −0.12], and (iv) intentions to have future interaction with the accomplice [indirect effect: M (SE) = −4.82 (2.61); 95% BCa *CI* −10.84, −0.44]. Results summarized in Table 7.

In summary, Study 4 revealed a strong relation between participants' perceptions of PCR and perceptions of the confederates' providing CR. This is a very interesting finding because the accomplices did not know what the study was about and had been trained to treat all participants in the same way. Thus, the findings are consistent with the projection hypothesis. Further, the results showed that if the participants perceived the confederates as high in CR, the participants experienced less need satisfaction and less

Table 7 Unconditional indirect effect of parental conditional regard to dependent variables (satisfaction with the interaction, vitality, emotional reliance, and intention for further interaction) through the participants' basic psychological need satisfaction (Study 4)

Number of bootstrap resamples = 5000						
	Direct and total effects				Bootstrap results for indirect effect	
DV(s)	*b* (YX) = the total effect of the independent variable (PCR) on the DV (*SE*)	*b* (MX) = the effect of the IV on the mediator (need satisfaction) (*SE*)	*b* (YM.X) = the effect of the mediator on the DV, controlling for the IV (*SE*)	*b* (YX.M) = the effect of the IV on the DV, controlling mediator (*SE*)	Mean Indirect Effect (*SE*)	95% BCa CI
Satisfaction with interaction (n = 72)	−.4887*** (.0988)	−.4495*** (.0722)	.6909*** (.1421)	−.1781 (.1070)	−.3124 (.0960)	{−0.5665, −0.1690}
Vitality (n = 73)	−.4936*** (.1096)	−.4509*** (.0718)	.9000*** (.1473)	−.0878 (.1112)	−.4039 (.0987)	{−0.6299, −0.2359}
Emotional reliance (n = 73)	−.3431** (.1286)	−.4696*** (.0688)	.6798** (.2096)	−.0238 (.1557)	−.3165 (.1236)	{−0.6250, −0.1179}
Intention for further interaction (n = 73)	−5.1695^{+} (2.9257)	−.4509*** (.0718)	10.4807* (4.7046)	−.4441 (3.5506)	−4.8232 (2.6147)	{−10.8438, −0.4407}

The model predicting emotional reliance also controlled for the covariate gender ($b = 1.1350$**, $SE = .4081$)

$^{+}p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

relationship-specific personal and relational well-being, findings that parallel those for CR in Studies 1–3.

General discussion

Past research had already shown that receiving CR from parents predicted a number of negative outcomes including more rigid and lower quality performance in domains on which parents' regard was contingent (Assor and Roth 2007), diminished emotional regulation and well-being, and poorer relationships between parents and children (Assor et al. 2004; Roth and Assor 2010; Roth et al. 2009). The present investigation extended this literature by testing the hypothesis that PCR might also interfere with finding and developing high quality relationships with close peers as a young adult. We further hypothesized that the predicted relations between PCR and their adult children's relationship quality with close peers might be mediated by relative satisfaction of psychological needs and also by CR experienced within those close relationships. Across four studies, leveraging mixed methods and different samples, we found support for each of these two overarching mediation hypotheses. In Study 3, we used dyadic data collected from both members of a young–adult romantic couple, and found that the relation between PCR of a target and romantic attachment was mediated by target participants' receiving CR from their romantic partners. Finally, in Study 4, we employed an experimental accomplice to interact with participants in a scripted manner. In this lab context, we found that participants who experienced PCR perceived more CR from that peer, thereby supporting our hypothesis that the relations from PCR to perceived CR of peers would result at least in part from projecting CR learned from parents onto future relationship partners.

Aside from Roth and Assor (2012), which relied on self-report from one source concerning intimacy capacity, the present findings are the first, to our knowledge, to link PCR to long-term harm reflected in the quality of young adults relationships with peers. Further, the current findings document for the first time multiple pathways through which this harmful association comes to be.

The present studies demonstrate that PCR impairs the close relationships of parents and their children when they have become young adults by fostering the transmission of CR relationship dynamics. The potential for intergenerational transmission of PCR has been previously documented by Assor et al. (2004) in a study of academic achievement. The present studies demonstrate correlational evidence for this intergenerational passage of CR to intimate peer relationships for both men and women, and from both parents. These findings are especially striking in so far as individuals continued to pass along CR to others despite having suffered personally when they experienced receiving CR themselves.

Limitations

One limitation of this package of studies concerns the lack of data collected from parents. Logistically, collecting data from both adult targets and their parents is challenging. Nevertheless, in the future, collecting data directly from parents would help rule out the possibility that the young

adult participants were projecting CR not only onto peers but also onto their parents. A second limitation concerns the possible fallibility of adult participants' retrospective memories of experienced CR while growing up; as such, observing or getting reports of PCR during childhood would be preferred. Collecting trained observer ratings of parents, targets, and partners' giving CR would also help to address concerns about social desirability. Another potential issue related to the measurement of PCR concerns whether participants can differentiate via self-reports between PCR and related constructs, such as overall parental coldness or warmth, in general; however, past research has consistently demonstrated that participants can and do differentiate between these constructs (e.g., Roth 2008). Another limitation concerns the length of the adult peer relationships investigated. Future research might explore whether these patterns generalize to marriages and friendships that have endured for longer periods of time. A fourth limitation, associated with all cross sectional designs, concerns the issue of directionality. For example, an alternative interpretation of data presented is that having poorer relationships with peers may cause people to have biased memories of whether their parents were conditionally regarding. In Study 3, we found that the romantic partners of participants who reported receiving PCR acknowledged being more conditionally regard and interpreted this as evidence of maladaptive partner selection. An alternative hypothesis is that participants who reported receiving PCR may have acted in ways that shaped their romantic partners behavior, encouraging their romantic partners to become more conditionally regarding over time (shaping vs. selection). As mentioned above, this alternative interpretation could be ruled out with follow up studies that collect data directly from parents, and/or follow a cohort longitudinally over many years.

Future directions

One direction for follow-up research will involve collecting longer-term outcome variables associated with relationship quality, including objective indicators of dysfunction or dissolution. Past research has robustly demonstrated general wide ranging mental and physical health benefits associated with marital status and peer social support (Brockmann and Klein 2004). However, numerous studies have also shown that the health benefits associated with being married or having friendships are often moderated by relationship quality (Antonucci et al. 2001). Insights from the present research could inform future research that relates antecedents of adult relationship quality to long-term health and investigate whether greater insight into these dynamics might inform interventions designed to improve adult relationships.

Another important and related direction for future research might investigate the extent to which PCR predicts the formation and durability of peer relationships in the first place. In the present investigations, eligibility criteria dictated that participants be in a romantic relationship for at least 3 months. This restriction prohibited analysis of whether PCR is related to odds of being single, or of having fewer close friendships. Further, those who experience PCR may also engender CR from their partners. Future studies could be designed to directly test this third, potential mediator of the relation between PCR and peer relationship quality.

Future research may also test the effectiveness of parenting strategies that do and do not involve PCR, such as was done by Roth et al. (2009). Ultimately, it would be important to conduct a longitudinal randomized controlled trial of parenting interventions that make parents aware of and decrease their use of CR, especially if it followed children into adulthood and assessed their relationships with adult peers. Such a study would help to rule out the possibility of influence by unidentified confounding variables, and address the degree to which CR can be deliberately controlled.

The focus of the present research has been on understanding the long-term consequences of using PCR, and ultimately warning readers about its potential harm. As such, some readers may wonder what parenting strategies are recommended in place of PCR. Although a thorough review of these issues is beyond the scope of this paper, we want to be clear that permissive parenting and/or physical punishment are not recommended alternatives. Rather, researchers working within the SDT tradition have shown that autonomy-supportive parenting was associated with far more positive academic and emotion-regulation outcomes (Roth et al. 2009). For a review of this literature, see: Brenning et al. 2015.

Conclusion

Broadly speaking, decades of research in the social sciences have documented the importance of forming strong peer relationships for emotional well-being, health, and longevity. Far fewer studies have laid out models for understanding the social factors that contribute to determining the quality of our peer relationships. The present investigation is part of a growing literature critically analyzing a particular socialization strategy employed and even endorsed by many parents (i.e., PCR), a strategy which appears to do significant, long-lasting, and far-reaching harm to the adult relationships of children subjected to it. We hope that this work can be leveraged toward improving the quality of future relationships between individuals and their parents, romantic partners, close friends, and beyond.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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