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Predicting relationship satisfaction in distressed and non-distressed couples based on a stratified sample: a matter of conflict, positivity, or support?

Peter Hilpert^{a*}, Guy Bodenmann^a, Fridtjof W. Nussbeck^b and Thomas N. Bradbury^c

^aDepartment of Psychology, University of Zurich, Zurich, Switzerland; ^bDepartment of Psychology, University of Bielefeld, Bielefeld, Germany; ^cDepartment of Psychology, University of California, Los Angeles, CA, USA

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Spousal interactions are key predictors of relationship satisfaction in couples, but it is not yet sufficiently clear as to which aspect of spousal interactions matters most. In this study, three forms of interactions are examined to disentangle their unique associations with relationship satisfaction. Altogether, 1944 married individuals completed questionnaires in a cross-sectional study. Self-report measures of relationship external stress, negative interactions (NIs), positive interactions (PIs), dyadic coping (DC), and relationship satisfaction were assessed. A multigroup path analytical mediation model was used to test whether couple interactions mediate the association between stress and relationship satisfaction. Stress stemming from outside the relationship is highly associated with an increase in NIs and a decrease in DC. Although all interactions covaried significantly with relationship satisfaction, DC outperformed PI and NI. Being supported by the partner in times of need (i.e. after experiencing relationship external stress) seems to be particularly relevant for marital quality.

Keywords: couples; conflict; interactions; dyadic coping

To date, it is well known that marital quality and stability covary with different forms of spousal interactions for distressed and non-distressed couples. More specifically, there is evidence that marital quality is associated with negative interactions (NIs) (e.g. Bradbury, Fincham, & Beach, 2000; Karney & Bradbury, 1995), positive interactions (PIs) (e.g. Heyman, 2004; Weiss & Heyman, 1997), and dyadic coping (DC) (Bodenmann & Cina, 2006; Bodenmann, Meuwly, & Kayser, 2011). In addition, relationship external stress (e.g. financial problems, job stress) can spillover into relationships and is negatively associated with marital quality (i.e. spillover effect; Bodenmann, Ledermann, & Bradbury, 2007; Repetti, 1989). Furthermore, relationship external stress increases the likelihood for relationship internal stress (i.e. conflict, argument; Ledermann, Bodenmann, Rudaz, & Bradbury, 2010) and is associated with less PIs and with less DC (Bodenmann, Meuwly, Bradbury, Gmelch, & Ledermann, 2010; Ledermann et al., 2010).

Since the 1970s, most studies focused on marital distress and the role that poor interaction plays in predicting relationship dissatisfaction or an increased likelihood for divorce. Marital distress includes generalized criticism (attacking and blaming the partner as a person), defensiveness (rejecting responsibility for negative outcomes, protecting oneself and refusing guilt), belligerence (asking provocative nonanswerable questions), contempt (putting down the partner, mocking, sarcasm, devaluation of the

partner), domineering (insisting on one's opinion and fighting for one's position), withdrawal (refusing communication and stonewalling; Gottman, 1994). NIs are a major predictor of poor relationship functioning and a detrimental developmental course of close relationships over time (e.g. Karney & Bradbury, 1995). For example, contempt, belligerence, defensiveness, generalized criticism, and withdrawal are particularly deleterious forms of NIs, predicting low relationship quality and a higher risk for divorce (Gottman, Coan, Carrere, & Swanson, 1998). Although some studies suggest that NIs may also have positive effects on relationship quality and stability in the longer run (e.g. Karney & Bradbury, 1997), especially when couples are facing severe problems (McNulty & Russell, 2010), there is broad empirical evidence for a generally negative association between dysfunctional interactions and poor marital outcome (Karney & Bradbury, 1995).

Recently, researchers have suggested that marital quality is not only based on marital distress but also on PIs: skilled interactions (Coyne & DeLongis, 1986; Reis & Shaver, 1988). According to this view, non-distressed or satisfied couples should be characterized primarily by PIs (high exchange of positive reinforcements such as caring, appreciation, respect, tenderness) while distressed or dissatisfied couples should score higher in NIs (e.g. criticism, defensiveness). As Gottman (1994) suggests in his balance theory, not the absence of positivity or the presence of negativity are characteristic for most distressed

*Corresponding author. Email: peter.hilpert@uzh.ch

couples, but an unbalanced ratio between positivity and negativity. Thus, NIs may be buffered in their harmful impact on close relationships by positivity.

This reasoning is noteworthy, because it opens a new perspective on the role of PI in couples that was neglected for a long time in marital research. The fact that most individuals search for affection, security, and love in intimate relationships and do not primarily focus on the avoidance of negativity (Bachand & Caron, 2001; Levinger & Huston, 1990), reflects the needs and goals of partners on PIs in a more appropriate way (Antonucci, Langfahl, & Akiyama, 2004). According to the broaden-and-build theory (Fredrickson, 2001), positive experiences and positive emotions are consequential because they allow people to build up lasting social and intellectual resources (e.g. developing problem-solving skills, solidify bonds), which lead to more positive emotions. It may be assumed that relationship satisfaction depends largely on how positively spouses interact with each other, as PIs might induce a positive mood in spouses, shape affirmative attitudes and expectancies toward the relationship, increase mutual positive reciprocity, and foster satisfying sexuality (e.g. Noller & Feeney, 1998).

PI can be differentiated according to the *context* it occurs and, therefore, it seems consistent that PIs can be viewed as a heterogeneous category. One major distinction appears to involve PIs as compared with socially supportive or DC. The first form, *PI*, is defined as reinforcing interactions such as showing respect, interest, attention, and openness toward the partner, participating in the partner's life, caring about the partner's needs, spending time with the partner, offering him or her gifts, telling the partner that one loves him or her, and emotional self-disclosure. Often active listening, acceptance of partners' ideas and opinions, and interest are also included in PIs (Gottman, 1994; Weiss & Heyman, 1997). On the nonverbal level, PIs are shown by warm gaze, affection, and tenderness as well as humor and positive feedback channeling, in general (Heyman, 2004). PIs occur in unspecific everyday life context, which are unrelated to relationship internal or external stressors.

The second form of PI goes beyond the exchange of reinforcing interactions and refers to support and caregiving in the context of relationship external stress experience. Relationship external stress often leads to worries and negative emotions (nervousness, sadness, fear, etc.) within the person who experiences the stress and may cross over to his/her partner. Support provision and DC conceptually go beyond mutual reinforcement because adequate support provision or DC imply being ready to empathize with the partner's worries, problems, and pain in times when the partner is especially vulnerable and to react in an understanding, helpful and caring way, in an attempt to alleviate the partner's stress and to restore both

partners' homeostasis to some degree (Badr & Acitelli, 2005; Revenson, Kayser, & Bodenmann, 2005). Support provision and DC not only contribute to stress reduction but also increase mutual trust, intimacy, the feeling of wellness, and attachment (Cutrona & Gardner, 2006; Pasch & Bradbury, 1998). This aspect of positivity focuses on spousal support provision or DC, a form of interaction that has been shown to be a strong and significant predictor of relationship quality and stability (e.g. Bodenmann & Cina, 2006; Bodenmann, Pihet, & Kayser, 2006; Bodenmann et al., 2011; Sullivan, Pasch, Johnson, & Bradbury, 2010).

However, support provision and DC are not the same. Even though social support provision and DC reflect the way how partners help each other in times of an external stress experience, only *DC* includes additionally the aspect how couples deal together with stressful events that concern both of them (e.g. child education, financial problems, household chores; Bodenmann, 1997). Thus, couples, facing a common stressor, can cope dyadically by understanding, supporting, and caring for each other in times when both need it. There is evidence that DC is a good predictor for relationship satisfaction (Bodenmann, 2000).

The three interaction forms (NI, PI, and DC) overlap conceptually to some degree. All these interactions are based on verbal (content), paraverbal (e.g. tone), and physical/nonverbal interactions (e.g. mimic, gestures). But the interaction forms can be distinguished. Conflict interactions (e.g. pushing, shoving, contempt, criticism, rolling eyes, harsh tone) are clearly distinct from PIs (e.g. listening to or supporting the partner) – but there seems to be a high conceptual overlap between PI and DC. Both of them can be based on positive physical interactions (e.g. touching, holding hand), positive verbal content (e.g. *I understand you*), positive nonverbal interactions (e.g. turning oneself openly to the partner), or positive paraverbal interactions (e.g. warm tone). But the interaction forms can be best disentangled by the circumstances they occur. *NIs*, for example, describe the interactions that occur in arguments or conflicts (i.e. relationship internal stress situations). PIs, as defined in this study, occur in non-stressful situations. In contrast, DC occurs when one member of the couple or both of them experience relationship external stress (e.g. problem with family of heritage, financial problems). Even though PIs and DC seem to be similar, they occur in different situations and one can, therefore, expect different associations with relationship satisfaction. Thus, stress seems to be a crucial component to disentangle couple interactions.

In the last two decades, stress research contributed significantly to a better understanding of interaction processes. The stress–divorce model (Bodenmann, 2000) predicts that couples' ability to interact adequately deteriorate when they are under stress (Bodenmann, 2005; Ledermann et al., 2010). Thus, the quality of interaction covaries

importantly with personal resources of both partners – resources that are reduced under stress. Several studies documented the negative spillover of extra-dyadic stress on intimate relationships (e.g. Bodenmann et al., 2010; Ledermann et al., 2010; Neff & Karney, 2004, 2007) and that relationship external stress increases the likelihood for arguments and conflicts (Bodenmann, Ledermann, & Bradbury, 2007). These findings indicate that the negative association between relationship external stress and relationship satisfaction can be explained by couple interactions. In other words, the mechanism by which stress affects the way a person finally evaluates the relationship depends largely on how couples interact with each other, indicating a mediation model. Because relationship external stress seems to erode interaction skills, it is particularly interesting to understand how stress spills over into relationships, how stress affects a couple's interaction styles, and to compare, which of the couple interactions is most strongly associated with relationship satisfaction.

The associations among stress, interactions, and relationship satisfaction might be different for genders. Based on previous findings on gender differences (e.g. Baucom, McFarland, & Christensen, 2010; Bodenmann, 2000), one can assume that PIs (PI and DC) are higher associated for women than for men – and NIs are more aversive for men than for women.

The current study

In this study, we focus on three different aspects of self-perceived interactions in order to disentangle mechanisms on relationship functioning and to study the mediating effects of interactions on the association between stress and relationship satisfaction: (i) self-perceived NIs during arguments; (ii) self-perceived PIs and exchange of reinforcing interactions in everyday life situations, and (iii) self-perceived DC, supporting each other in times of individual or common relationship external stress. All three interactions have been found to be significantly correlated with marital quality. However, no study thus far has examined which interaction is of most relative importance in statistically predicting relationship satisfaction, i.e., which interaction shows the strongest association with relationship satisfaction. Because the relative importance of couple interactions (NI, PI, and DC) has not been tested yet, the hypotheses are tested based on a sample, which was stratified to match the population of married individuals in Switzerland. A questionnaire survey is used because we are interested in a wide range of naturally occurring couple interactions which would hardly occur in laboratory sessions: pushing or punching (NI), bringing spontaneously gifts or saying loving things to the partner (PI), or helping each other in times of individual or common stress such as job stress, burden with educating children, or having problems with the family of origin (DC).

Hypotheses

Comparing the associations of NI, PI, and DC with relationship satisfaction assume that these interactions are empirically distinct. We hypothesize that PI and DC are distinct from NI in the sense that they are not just the inverse of it and that furthermore, PI and DC can also be empirically separated from each other (Hypothesis 1; H1).

Second, we hypothesize that NI, PI, and DC have different effects as mediators in the stress–relationship satisfaction path (H2) testing a complex multigroup mediation model as depicted in Figure 1. More specifically, we hypothesize that stress reduces PI and DC but increases NI (H2a). PI, DC, and NI significantly predict relationship satisfaction (H2b). Because DC and NI are, in general, stronger predictors regarding relationship satisfaction than PI, we assume that DC and NI explain incremental variance in relationship satisfaction above and beyond PI (H2c). Based on previous findings (Baucom et al., 2010), we also test for gender differences in the mediation model: relationship satisfaction is expected to covary with PI and DC to a greater extent for wives than for husbands (H3a); for husbands, however, NI is higher associated with relationship satisfaction than for wives (H3b).

Methods

Participants and procedure

A Swiss survey firm used data of the Swiss Federal Administration to select potential participants with respect to socioeconomic status, age, marriage duration, gender, and language in order to match the population of married individuals in the Swiss population. The survey research firm invited 10,000 married individuals in Switzerland to participate in this study by sending a paper pencil questionnaire randomly either to the husband or to the wife. Twenty-seven percent of the invited individuals participated in this study, yielding a comparable participation rate to other

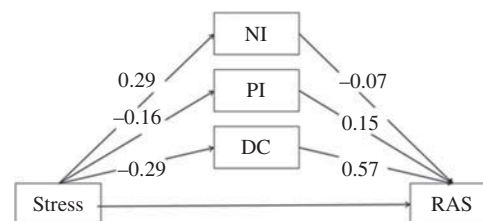


Figure 1. In the path analytical multigroup mediation model, one model is computed for each group (husbands and wives) at the same time. Because final results reveal no gender differences, standardized regression weights are identical for husbands and wives and are charted only one time. Covariances between the mediation variables were calculated but are uncharted. NI = conflict interaction; PI = positive interaction; DC = dyadic coping; RAS = relationship satisfaction scale (relationship adjustment scale).

studies using this recruitment strategy (e.g. Larson & Poist, 2004). For the purpose of the current study, we selected individuals from the total sample according to their age (maximum age of 59 years; $M_{\text{age}} = 44.7$, $SD_{\text{age}} = 8.4$) in order to examine individuals who were not yet retired or are in the transition to retirement, yielding a final sample of $N = 1944$ individuals. About 37.5% of the participants were husbands ($M_{\text{age}} = 47.7$; $SD_{\text{age}} = 7.9$; Range: 23–59 years) and 62.5% were wives ($M_{\text{age}} = 42.9$ years; $SD_{\text{age}} = 8.2$; Range: 25–59 years). Participants had a mean relationship duration of 22.6 years ($SD = 8.9$; Range: 2–45) for husbands and 19.7 years ($SD = 8.7$; Range: 1–43) for wives, respectively. On average, husbands were married for 19.5 years ($SD = 9.2$; Range: 1–38) and wives for 16.1 years ($SD = 9.1$; Range: 1–39). No individual participating in this study was married to another individual participating. Sixty-one percent of the husbands and 45% of the wives completed high school or had a university degree. Altogether, 92.3% of the participants had at least one child ($M_{\text{children}} = 2.1$; $SD_{\text{children}} = 1.0$; Range: 1–9) and the mean age of children was 14.5 years ($SD_{\text{age}} = 8.7$; Range: 0–38).

Measures

Demographics

Participants completed a comprehensive demographic questionnaire (including questions about their age, gender, ethnicity, education level, income, weekly working hours, number of children, and relationship duration).

General stress level (GSL; German version; Bodenmann, 2000)

The 7-item brief version of the 17-item GSL was used to measure the current level of relationship external stress across 7 life domains, namely work/education, family of origin, financial situation, leisure, social contacts, and daily hassles (*How much stress do you currently feel in the following areas: e.g. Job/Education [expenditure of time, demands, rush, performance requirements]; Financial Situation [debt, lack of money, not enough money for a comfortable apartment or activities, etc.]*). Each item was rated on a 5-point scale, ranging from *not at all* to *very severe*, with higher scores indicating higher levels of stress. The internal consistency (Cronbach's alpha) of the GSL was $\alpha = 0.68$ in this study, showing a general stress level across the seven different domains.

Negative interaction (NI)

To assess NI, items of two different scales were used. The first set of four items assessed one's own conflict communication, reflecting NIs such as criticism, contempt,

belligerence, domineering of the *specific affect coding system* (SPAFF; Gottman, 1994; *Negative behavior against my partner: e.g. I provoke my partner when we have an argument; I criticize my partner and blame him/her in an argument*). The second scale assessed, with five items, aggression (pushing, threaten to leave the relationship, insulting, sexual refusal, and sharing spouse's humiliating detail to others) referring to the conflict tactic scale (CTS; Straus, 1979; *Negative behavior against my partner: e.g. I shook, push, shove my partner in an argument; I slap, kick, punch my partner in an argument*). The total of nine items was rated on a 5-point scale, ranging from *never* to *very often*, with higher scores indicating more conflict interactions (NI). In a confirmatory factor analysis (CFA), all items proved to load on a single factor ($\chi^2 = 78.3$; $df = 12$; $p = 0.001$; CFI = 0.98; TLI = 0.97; RMSEA = 0.05), representing maladaptive conflict interaction. The internal consistency of the NI for the present sample was $\alpha = 0.80$.

Positive interaction (PI)

The 3-item brief version of the communication questionnaire (Bodenmann, 2000) assesses one's own PI (caring for the partner, showing interest in partner, reinforcing behaviors such as giving gifts) based on social learning theory and by referring to the SPAFF-communication categories of Gottman (1994; *Positive behavior against my partner: e.g. I show my partner that I love him/her and I am affectionate with him/her; I show interest in my partner*). Each item was rated on a 5-point scale, ranging from *never* to *very often*, with higher scores indicating more general PI. The internal consistency of the scale was $\alpha = 0.75$.

Dyadic coping (DC)

The 3-item subscale from the Dyadic Coping Inventory (DCI; Bodenmann, 2008) assesses the subscale DC (supporting the partner, when he/she needs help; common dealing with stressful encounters; taking over tasks for the partner in order to reduce his/her stress) and is based on the stress-divorce model of Bodenmann (2000; *Dealing with stress as a couple: e.g. I support my partner, when he/she is stressed; We cope dyadically with stress that affects both of us*). Each item was rated on a 5-point scale, ranging from *never* to *very often*, with higher scores indicating more DC. The internal consistency of the DC for the present sample was $\alpha = 0.84$.

Relationship satisfaction

The 7-item German version (Sander & Böcker, 1993) of the Relationships Adjustment Scale (RAS; Hendrick, 1988) was used to assess relationship satisfaction (*Relationship,*

quality, satisfaction: e.g. *In general, how satisfied are you with your relationship?*). Each item was rated on a 5-point scale, ranging from *not at all* to *very much*, with higher scores indicating higher level of relationship satisfaction. The internal consistency of the RAS was $\alpha = 0.92$.

Statistical analyses

As a prerequisite for further analyses, we first tested hypothesis H1. Partial correlations (i.e. partial regression coefficients) regarding the three interactions and relationship satisfaction as well as the CFA served to determine whether the three interactions could be separated empirically from each other. The CFA yields information about the discriminant validity of the three variables. Partial correlations point out that the different mediators explain different variance components of the dependent variable (relationship satisfaction). Because partial correlations and the CFA supported the notion of different interactions, we proceeded to analyze H2 and H3.

Hypotheses H2 and H3 were tested by a multigroup path analytical mediation model as depicted in Figure 1. In the first step, we tested for gender differences in the path models using multiple group analysis. In this approach, path analytic models can simultaneously estimate and test for different predefined (measured) groups like husbands and wives. This approach allows for testing differences with respect to all model parameters between groups (e.g. mean values, regression parameters, and variances). To test the above-mentioned hypotheses, the following models were estimated: (i) a saturated model allowing all model parameters to vary freely between the male and female participants, (ii) a model with identical (unstandardized) regression coefficients, (iii) a model with identical regression weights as well as identical variances and residual variances across gender, and (iv) a model with all model parameters set equal across gender. We relied on the following criteria to identify the best fitting model: absolute model fit as indicated by the χ^2 -value, relative model fit as indicated by the CFI and TLI, RMSEA indicating closeness of fit, as well as AIC and BIC for model comparisons (see Schermelleh-Engel, Moosbrugger, & Mueller, 2003).

Having determined the best fitting model, we proceeded to investigate the incremental impacts of the three mediating interaction variables (NI, PI, and DC; Hypotheses 2 and 3). This was accomplished by removing one of the mediation variables from the model while the other variables were still considered. Differences in the determination coefficient indicated the incremental impact of the removed variable. We considered differences in determination coefficients of 0.05 as practically meaningful. In order to test whether DC and NI contributed significantly more to relationship satisfaction, we examined the chi-square difference for nested models with paths

constrained to be equal between DC and PI as well as for DC and NI.

All analyses were conducted using SPSS 21 (H1) and Mplus 7 (Muthén & Muthén, 1998–2012) for the path analytical model (H2 and H3). The full information maximum likelihood estimator (FIML) with bootstrap option implemented in Mplus was used to estimate model parameters and their standard errors.

Results

Descriptives

The percentage of missing values was very low in this study (maximally 0.7% of the scores of one variable were missing). Furthermore, results were identical whether FIML was used or not. Means, standard deviations, bivariate correlations, and partial correlations for husbands and wives among all study variables are shown in Table 1. Consistent with most studies, our participants reported relatively low levels of stress and NI, but relatively high levels of PI and DC, as well as relationship satisfaction. Gender differences were found in mean level of perceived stress, NI, PI, and relationship satisfaction, but not in DC. However, group differences in mean levels were quite small (e.g. $\text{stress}_{\text{Husbands}} M = 1.86$; $\text{stress}_{\text{Wives}} M = 1.80$). Skewness and kurtosis are far below critical levels for all study variables ($0.32 < | \text{skew} | < 1.32$; $0.45 < | \text{kurt} | < 2.83$). Stress is correlated with all other variables ($0.15 < | r | < 0.35$ for both sexes). All variables correlate with relationship satisfaction ($0.23 < | r | < 0.72$ for both sexes), indicating that relationship satisfaction has bivariate associations with all variables. Although mean differences are statistically significant, they are all smaller than 0.20 scale-points and show small effect sizes ($d_{\text{Stress}} = 0.12$; $d_{\text{NI}} = 0.26$; $d_{\text{PI}} = 0.28$; $d_{\text{DC}} = 0.02$; $d_{\text{RAS}} = 0.12$).

Hypothesis 1

The partial correlations show that each of the mediating variables is distinctly associated with relationship satisfaction (absolute values of all partial correlations > 0.10). The highest partial correlations can be found between DC and relationship satisfaction. Furthermore, NI, PI, and DC differ in explaining incremental variance of the dependent variable ($\Delta R_{\text{DC}}^2 = 0.194$; $\Delta R_{\text{PI}}^2 = 0.016$; $\Delta R_{\text{NI}}^2 = 0.030$; see Table 3). Finally, the CFA indicates that the three mediators are statistically distinguishable ($\chi^2 = 330.3$; $\text{df} = 59$; $p = 0.001$; $\text{CFI} = 0.97$; $\text{TLI} = 0.96$; $\text{RMSEA} = 0.05$; model). These findings show that PI and DC are related constructs ($r_{\text{Husbands}} = 0.58$; $r_{\text{Wives}} = 0.57$), but both constructs differ clearly in the association with relationship satisfaction according to the partial correlation and are statistically distinct based on the finding of the CFA.

Table 2. Goodness of fit coefficients for different restricted models.

Models	χ^2	df	<i>p</i>	CFI/TLI	AIC/BIC	RMSEA	SRMR
1. Saturated model	0	0	0.000	1/1	15,380/15,579	0.000	0.000
2. Regression weights restricted	914.5	13	0.000	0.668/0.448	16,268/16,396	0.207	0.189
3. Regression weights and variances restricted	40.3	15	0.000	0.991/0.988	15,398/15,537	0.042	0.102
4. Totally restricted	185.2	20	0.000	0.939/0.939	15,533/15,644	0.093	0.116

Notes: Goodness of fit coefficients for different restricted models; Model 1: no restrictions on model parameters; Model 2: regression weights restricted to be equal across genders; Model 3: regression weights and residual variances restricted to be equal across genders; Model 4: no group differences. No additional models were calculated, because Model 3 is the most parsimonious fitting model.

Hypotheses 2 and 3

Table 2 provides an overview of the four different multigroup models that have been tested to investigate gender differences (models 1 through 4). As can be seen with respect to AIC = 15,398 and BIC = 15,537, the model with identical regression weights and (residual) variances for husbands and wives but differing intercepts offers the best fit ($\chi^2 = 40.3$; $df = 15$; $p = 0.00$; $\chi^2/df = 2.7$; CFI = 0.99; TLI = 0.99; RMSEA = 0.04, C.I. [90] = 0.03, .06; SRMR = 0.10). Therefore, gender differences exist only with respect to the mean values but not with respect to associations and interindividual differences between the variables. In other words, this means that identical differences between two husbands and two wives on a particular interaction variable (e.g. stress) lead to the identical difference in relationship satisfaction – even though husbands and wives might differ in the level. Thus, there is no support for Hypothesis 3: No differences in the associations among NI, PI, and DC on relationship satisfaction with respect to gender can be found.

Table 3 provides the path coefficients of the mediation model. As can be seen, stress statistically predicts all

three mediating variables. Standardized regression weights fall in the range of -0.16 to 0.29 , indicating moderate associations of perceived stress with the mediating interaction variables. The direct effect of stress on relationship satisfaction (-0.10) is also significant, indicating incomplete mediation. The regression weights reflect the statistical impact of the mediators on the dependent variable controlling for the statistical impact of the other mediators. In terms of standardized regression weights, DC outperforms NI and PI (regression weight of 0.57 against -0.07 and 0.15 for NI and PI, respectively). Inspecting the model fit for models with identical paths for DC and PI ($\chi^2 = 136.5$; $df = 16$; $p = 0.00$; CFI = 0.96; TLI = 0.94; RMSEA = 0.09; SRMR = 0.10) or DC and NI ($\chi^2 = 432.5$; $df = 16$; $p = 0.00$; CFI = 0.85; TLI = 0.81; RMSEA = 0.17; SRMR = 0.12) on relationship satisfaction shows that differences in regression coefficients are statistically significant. Thus, based on a statistical prediction model, which is based on theoretical assumptions, DC outperforms NI and PI in terms of predicting relationship satisfaction. But because the data are based on cross-sectional data, the statistical paths cannot be interpreted

Table 3. Direct effects, total direct effect, indirect effects, and total indirect effect of the path analytical multigroup mediation model.

Direct effects	Standardized results			Non-standardized results		
	Lower 2.5%	Estimate	Upper 2.5%	Estimate	<i>s.e.</i>	<i>p</i>
Stress → NI	0.238	0.287	0.335	0.249	0.02	0.000
Stress → PI	-0.202	-0.157	-0.111	-0.201	0.03	0.000
Stress → DC	-0.339	-0.293	-0.247	-0.460	0.04	0.000
Stress → RAS	-0.138	-0.099	-0.060	-0.139	0.03	0.000
NI → RAS	-0.110	-0.072	-0.033	-0.116	0.03	0.000
PI → RAS	0.109	0.154	0.199	0.168	0.03	0.000
DC → RAS	0.521	0.565	0.610	0.505	0.02	0.000
Total direct effect	-0.356	-0.309	-0.262			
Standardized results						
Indirect effects	Lower 2.5%	Estimate	Upper 2.5%	<i>s.e.</i>	<i>p</i>	$\Delta R^2(a)$
NI	-0.032	-0.021	-0.009	0.01	0.000	0.030
PI	-0.034	-0.024	-0.014	0.01	0.000	0.016
DC	-0.195	-0.166	-0.136	0.02	0.000	0.194
Total indirect effect	-0.243	-0.210	-0.177	0.02	0.000	

Notes: NI = conflict interaction behavior; PI = positive interaction behavior; DC = dyadic coping; RAS = relationship satisfaction; lower and upper 2.5% indicate the boundaries of the 95% confidence interval, *s.e.* = standard error; *p* = significant level. ^(a) ΔR^2 depicts the change in ΔR , if the mediator is not included in the model.

as causal paths. However, the differences between the associations can be interpreted. The associations between DC and relationship satisfaction are significantly stronger than the associations between NI or PI with relationship satisfaction.

The significant indirect paths (see Table 3) indicate that the impact of stress is mediated by each of the three mediators. However, the indirect path of stress via DC on relationship satisfaction is strongest in comparison with the other indirect paths. Stress exerts its main influence on relationship satisfaction by first decreasing DC and in turn decreasing relationship satisfaction. This finding is supported by the inspection of ΔR^2 for the three mediators. In the incomplete model without NI, R^2 decreases by 3%, without PI by 1.6%, and without DC by 19.4%, respectively. The unique contribution to relationship satisfaction is thus largest for DC.

Discussion

Interactions play a major role in understanding the functioning of intimate relationships. Many studies revealed that NIs predict poor relationship satisfaction and a higher risk for divorce (e.g. Gottman, 1994; Karney & Bradbury, 1995; Weiss & Heyman, 1997). Additionally, more recent studies show that stress triggers poor dyadic interactions and stress is further associated with a decrease in relationship satisfaction and an increased likelihood for divorce (Bodenmann et al., 2010; Ledermann et al., 2010). While the link between stress experience and more NIs (higher rates of criticism and angry interaction or withdrawal) has been demonstrated in several studies (e.g. Crouter, Perry-Jerkins, Huston, & Crawford, 1989; Repetti, 1989) and the deleterious impact of stress on relationship quality has been consistently reported (Bodenmann, 2005; Neff & Karney, 2007; Story & Bradbury, 2004), only few studies addressed the link between stress and subsequent lower positivity (Bodenmann, 2000). To date, no study investigated NIs, PIs (reinforcing), and DC interactions simultaneously, thus this study is among the first to address this issue.

A multitude of findings suggest that interaction affects relationship satisfaction and our model is based on this assumption. However, Zuo (1992) argues that the causal effect can be the other way round and relationship satisfaction might affect interactions. But thus far, only longitudinal studies claim to test the 'causal direction' between interactions and satisfaction (Zuo, 1992). Using a cross-sectional study does not allow to interpret the causality of the causal paths based on the statistical model.

Although previous studies have shown the importance of NIs, PIs, and DC for intimate relationships in different studies and in a theoretical framework (see for example Fincham & Beach, 1999; Karney & Bradbury, 1995), this study differs from other works in two ways: (i) by testing the role of all three interactions in one study and thus

being able to examine what kind of interactions has the most important relative statistical impact (i.e. the highest association) and (ii) by testing the assumption that conflict interaction is not just the opposite of positive or coping interactions but a different form of interaction, and that positivity (e.g. showing respect, interest, attention, telling the partner that one loves him or her) is different from DC (support and caregiving). Thus, three distinct interactions were tested with regard to their association with relationship satisfaction.

Results reveal that indeed self-perceived NIs are not the inverse of self-perceived PIs and self-perceived DC and, furthermore, that DC is a unique factor that can be differentiated from PI as shown by the factor analysis and partial correlations. Interesting findings also emerged regarding the association between stress and relationship satisfaction, as mediated by interactions between wives and husbands. Contrary to our assumption, hypotheses about gender differences were not supported. Gender differences were found only with respect to the mean values, but not with respect to regression weights in the path analytical model. In other words, husbands and wives did not differ with respect to the associations of stress, NIs, PIs, DC, or relationship satisfaction in our sample; the two genders only differed with respect to the level of stress, NI, PI, and relationship satisfaction they perceived. These results suggest that the psychological mechanisms between the associations of stress, NIs, PIs, and DC with relationship satisfaction are similar for males and females.

Several studies report that external stress is negatively associated with relationship satisfaction, and our results support these findings. The associations of stress with DC and with NI were similar in magnitude, and both associations were larger than the association of stress with PI. Individuals scoring one standard deviation unit higher in stress score 0.29 standard deviation units lower on DC, and 0.29 standard deviation units higher on NI. Thus, increased levels of relationship external stress seem to covary with less support provision and more NIs.

This study sought to examine what kind of interaction (negative, reinforcing or DC) would be more strongly associated with relationship satisfaction. Results show that all three variables were significantly associated. However, PIs outperformed NIs, and within the domain of PI, positive reinforcing interaction (such as showing respect, interest, caring about partner's needs, spending time with the partner, telling the partner that one loves him or her) was less strongly associated with relationship satisfaction than was DC. Although most couples appreciate expressions of love (positive, reinforcing interactions; Bachand & Caron, 2001), our findings suggest that feeling supported (common efforts to deal with stress and burdens) may matter more for relationship satisfaction. Thus, the statement of Baumeister and colleagues that 'Bad is stronger than good' (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001,

p. 323) was not supported; relationship satisfaction seems to be more highly associated with DC.

There are two possible explanations for this finding. First, as is known from learning theories, reinforcement loses its effectiveness over time (habituation) and one becomes accustomed to nice interactions. However, support is always needed and is less prone to erode over time. Second, DC is a stronger proof of commitment toward the partner than simple PI. Conveying the experience that the partner is available and supportive when one needs him/her and cares about one's worries and problems fosters mutual intimacy and attachment beyond simple positivity (Cutrona, 1996).

This possible major effect of DC is even more evident in view of the indirect effects (stress → mediators → relationship satisfaction). These suggest that DC is a key variable in understanding relationship functioning, which goes beyond NI or reinforcing PI. Finally, these findings support the assumption of Antonucci and colleagues (Antonucci et al., 2004) that receiving support is a major motive for people to engage in an intimate relationship. According to Fredrickson (2001), positive supportive experiences build up to become long-lasting resources and stable relationships. This finding is compatible with previous studies showing that DC not only reduces stress but also increases the feeling of we-ness, mutual understanding, trust, intimacy, and attachment (Bodenmann, 2005; Cutrona, 1996), which may explain the importance of DC for relationship satisfaction.

The findings presented here may be relevant to interventions designed to treat and prevent relationship distress. Although most evidence-based couple approaches aim to enhance positivity and skills in couples (Hahlweg, Grawe-Gerber, & Baucom, 2010), the focus on stress and DC is far from being integrated in those approaches as a standard component. Thus far CARE (Halford, Lizzio, Wilson, & Occhipinti, 2007) and the coping-oriented couple therapy (Bodenmann et al., 2010) or Couples Coping Enhancement Training (CCET; Bodenmann & Shantinath, 2004) are among those approaches explicitly addressing methods to improve DC interactions (see 3-phase method, Bodenmann, 2007). As a previous study has shown, relationship satisfaction increased to a higher extent when partners made greater positive changes in DC compared to just PIs (Bodenmann, Bradbury, & Pihet, 2009).

Limitations and future research directions

Interpretation of the present findings is limited by several factors. First, all data were based on self-report and self-perceived data that may inflict personal biases. Second, results originate from a cross-sectional study and thus do not permit any causal inferences. Whenever results are presented in terms of statistical impact or statistical effect, readers should be aware that we do not claim a causal

relation to be proved by statistical prediction but only explanation in variance. Third, although a stratified sample was recruited, participants with very low and very high income were under-sampled. Therefore, the findings cannot be generalized to other groups than the middle class. Fourth, as in many other studies, participation was voluntary, further limiting generalizability of the findings. Fifth, PI was measured with a three-item scale describing rather concrete interaction, but there are more than three PIs (e.g. showing respect, interest, attention, emotional self-disclosure). Thus, the effect of PI on relationship satisfaction might be underestimated. Finally, we only accepted individuals of 59 years or younger for the study. Thus, the findings cannot be generalized for older couples.

As mentioned above, the *question of causation* (e.g. do couple interactions predict relationship satisfaction or is the causal path reversed or even bidirectional) between stress, interactions, and marital quality cannot be adequately tested based on a cross-sectional data set. Therefore, future research should examine such mechanisms assessing dyadic data in longitudinal studies or even daily diary studies. Especially daily diary studies would allow to test, how stress experiences during, for example working days, spill over into relationships, affecting couple interactions, and how stress and interactions influence the level of relationship satisfaction on that particular day. Moreover, the use of daily diary data would allow to compare (i) whether the associations of stress, couple interactions, and relationship satisfaction differ in satisfied and distressed couples, or (ii) whether stress during everyday life influences the frequency of positive or negative couple interactions. Thus, using a statistical approach like latent change score modeling for two factors (Bodenmann, Hilpert, Nussbeck, & Bradbury, revised and resubmit; McArdle, 2009) or multivariate multilevel modeling (Baldwin, Imel, Braithwaite, & Atkins, submitted) would allow to disentangle the mechanisms of real dynamic interaction processes among couples.

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