Article

Daily Support Equity in Romantic Couples: Response Surface Analyses of Monadic and Dyadic Data

Eran Bar-Kalifa[1], Rony Pshedetzky-Shochat[2], Eshkol Rafaeli[2,3],
and Marci E. J. Gleason[4]

Abstract

Receiving support may yield negative outcomes, although these can be offset by reciprocating support. Here, we argue that support receipt and reciprocation should be considered with reference to two separate needs, for relatedness/communion and competence/agency, which underlie differential effects of equity on affective versus relational outcomes. To test these, we go beyond earlier studies by (a) examining equity along a (daily) continuum, (b) using the novel analytic approach of polynomial regression with response surface analyses, and (c) indexing equity from both monadic and dyadic perspectives. Using dyadic daily diaries ($N_{Days} = 35$, $N_{Couples} = 80$), we found personal outcomes (positive affect [PA] and negative affect [NA]) to be worst on inequitable days, particularly overbenefit ones. In contrast, equity did not play the same role with regard to relational outcomes (closeness/satisfaction), for which overbenefit proved more positive. Interestingly, the monadic and dyadic perspectives converged more with personal than with relational outcomes.

Keywords

There is an established paradox in the social support literature: Although the perceived availability of social support and a general feeling of being supported are strongly associated with positive outcomes (e.g., better health, lower mood disorder risk; Uchino, 2009; Uchino, Bowen, Carlisle, & Birmingham, 2012), particular instances of enacted support receipt are at times associated with negative individual outcomes including emotional distress, poorer physical health, and increased mortality (Bolger, Zuckerman, & Kessler, 2000; Krause, 1997; Uchino, 2009).

Unlike support receipt, support *provision* is often associated with positive outcomes, ranging from improvement in mood (Inagaki & Eisenberger, 2012) and increased partner responsiveness (Lemay & Muir, 2016) to reduced mortality (Brown, Nesse, Vinokur, & Smith, 2003). Furthermore, days in which individuals report both receiving and providing support from their significant other are marked by lower negative mood (Gleason, Iida, Bolger, & Shrout, 2003; Gleason, Iida, Shrout, & Bolger, 2008; McClure et al., 2013) compared to receipt-only days (on which negative moods are highest) as well as to days on which support was only provided or on which no support was exchanged.

These findings can be interpreted from the perspective of equity theory (Hatfield, Rapson, & Aumer-Ryan, 2008; Walster, Walster, & Berscheid, 1978), which predicts that whenever the balance in a relationship is inequitable (i.e., whenever one person benefits more or less than the other), negative emotions ensue. Yet equity theory also posits that one form of inequity (underbenefit) exacts greater costs than the other form (overbenefit). Interestingly, this position is at odds with the results in Gleason et al. (2003, 2008) involving affective outcomes. In particular, when negative or positive moods were used as outcomes, overbenefit (receipt of support without provision) was tied to more adverse changes in mood than underbenefit.

An alternative perspective, which could account for these findings, is offered by reciprocity theory (Uehara, 1995). Like equity theory, reciprocity theory argues that exchanges in relationships are best when they are even, but it further predicts that overbenefit would be associated with worse outcomes than underbenefit. According to this theory, the social norm of reciprocation serves as a moral causal force within interpersonal relationships. This norm—to avoid being

[1] Ben-Gurion University of the Negev, Beer-Sheva, Israel
[2] Bar-Ilan University, Ramat Gan, Israel
[3] Barnard College, Columbia University, New York, NY, USA
[4] The University of Texas at Austin, Austin, TX, USA

Corresponding Author:
Eran Bar-Kalifa, Department of Psychology, Ben-Gurion University of the Negev, P.O.B. 653, Beer-Sheva 84105, Israel.
Email: eran.barkalifa@gmail.com

overbenefited—governs our behavior toward reciprocation when we *receive* support. Unlike the fairness norm that is seen as central in equity theory, the reciprocity norm remains silent when we do not receive support—that is, when we are not at risk of being overbenefited.

Importantly, reciprocity theory also comes short in accounting for some of Gleason et al.'s (2008) results. In particular, when closeness, a relational construct, was used as the outcome, these authors found no evidence for either the fairness or the reciprocity norms. Contrary to what equity theory would predict, days marked by a lack of any support exchange (i.e., ostensibly "fair" days) were associated with the lowest levels of relational closeness. Additionally, contrary to what reciprocity theory would predict, overbenefit was not better (or worse) than underbenefit.

These divergent findings vis-à-vis affective versus relational outcomes highlight the need for a theoretical account of support reciprocation and equity that simultaneously considers more than one norm or need. In our view, several models offer such accounts and lead to similar predictions. These models (e.g., Deci & Ryan, 2012; Fisher, Nadler, & Whitcher-Alagna, 1982; O'Brien & Delongis, 1996, 1997) speak to the orthogonal motivations for relatedness (communion) and competence (agency). The former involves the desire to belong and to maintain strong and stable ties with others. The latter involves the desire to feel challenge and mastery in one's activity.

Significantly, both motivations come into play in support transactions. For example, the threat-to-self-esteem model (Fisher et al., 1982) argued that support provides a sense of being cared for and is likely to lead to relational closeness (thus satisfying the relatedness motivation). In contrast, its role vis-à-vis competence motivation is more complex. Specifically, some support may provide comfort and relief from the stressors at hand; yet quite often, support actually poses a threat to recipients, undermining their self-efficacy, competence, and perceived coping abilities, and possibly leads to increased distress.

The threat-to-self-esteem model highlights two aspects of support transactions—as relational acts (which tend to convey partner responsiveness) and as coping aids (which may alleviate or exacerbate distress). Importantly, the act of reciprocation (i.e., when recipients provide support back) is likely to have different effects on the relational versus the coping aid aspects. Relationally, reciprocation simply adds to the virtuous cycle of responsiveness. As such, reciprocation should have an additive effect on relational outcomes such as closeness or satisfaction. When it comes to coping aid, though, support reciprocation may help offset or even reverse the affective costs of support receipt (costs which are not present for relational outcomes). Specifically, the opportunity to provide (i.e., reciprocate) support tends to reinstate a sense of competence and self-esteem and makes us feel needed and valued (for review, see Rafaeli & Gleason, 2009). As such, reciprocation should have an interactive effect on affective outcomes such as positive and negative moods.

To our knowledge, Gleason et al. (2008) is the only study to date that has examined both affective and relational outcomes, thus permitting a test of the theoretical stance presented here. A major strength of that study (and of others examining the role of support equity or reciprocation in the daily-life context of romantic relationships; e.g., Gleason et al., 2003; Iida, Seidman, Shrout, Fujita, & Bolger, 2008) is their use of daily diaries to obtain reports of actual supportive acts. Diary methods help assess support in an ecologically valid manner, reducing retrospective biases with experience-near reports (for review, see Bolger, Davis, & Rafaeli, 2003). However, a limitation of the extant studies is their use of dichotomous items to tap support receipt and provision. Although this use allowed a neat classification of days into ones marked by support equity, overbenefit, or underbenefit, it overlooked the fact that support often comes in many forms (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Cutrona & Russell, 1990; Weiss, 1974; Xu & Burleson, 2001). As such, the present work is premised on the idea that it may be more accurate to consider support receipt and provision as lying on continua. This consideration allows us to examine whether equity can be a matter of degree. It also allows us to test the possibility that supportive equity, like other support phenomena (e.g., Bar-Kalifa & Rafaeli, 2015), exerts effects that may not be linear. For example, it may be that equity matters only above a certain level of support receipt/provision. Similarly, it allows us to compare levels of inequity (namely, under- or overprovision) as continua.

A second limitation of previous support equity studies has been their reliance on one partner's reports of both support receipt and provision. On one hand, this choice seems intuitive, given that equity is usually defined as each partner's subjective perception of the balance between their contribution and their benefit. On the other hand, partners do not always agree about these contributions or benefits or even about the sheer occurrence of any support transaction (Bolger et al., 2000; Gable, Reis, & Downey, 2003). Thus, it is imperative to also examine equity as the dyadic phenomenon it really is—and thus, use the conjunction between both partners' reports. Such examination may help us determine whether the effects of support equity are tied more to the subjective (monadic) perception of equity/inequity or also to the objective situation of equity/inequity (or at least to the conjunction of the two independent perspectives about it).

The Current Study

To summarize thus far, the states of equity or inequity created by the conjunction of support receipt and provision have been shown to have differential affective and relational effects (Gleason et al., 2008), in ways that challenge existing theories of equity or reciprocity. The current study tests whether an approach that recognizes the orthogonal motivations for relatedness (communion) and competence (agency) may offer a better theoretical fit. It does so with several methodological innovations.
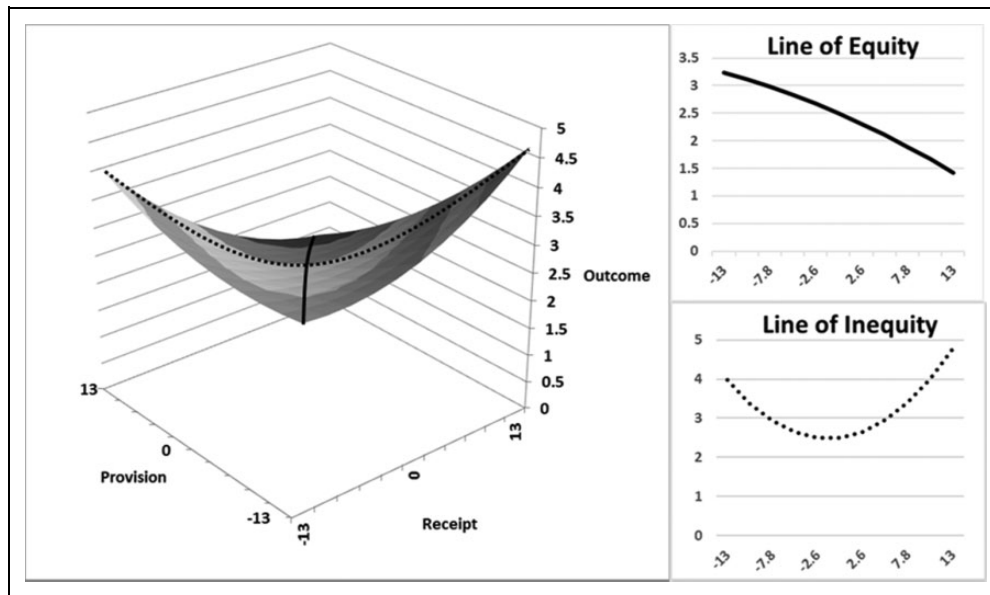
Figure 1. Hypothetical response surface plots illustrating representation of support (in)equity in polynomial regression with response surface analysis.

First, the study utilizes the dyadic nature of the data to examine the effects of equity in two ways; Like earlier studies, it considers *subjective* equity by using each individual's reports of support provision and receipt; in addition, it considers *objective* equity by taking into account both parties' reports of provision on a given day.

Second, this study utilizes a support measure that allows partners to report daily receipt or provision of various supportive behaviors each day. Although previous work on the topic (Gleason et al., 2003, 2008) explored a set of discrete states (namely, equity, overbenefit, or underbenefit), equity can also be examined as a matter of degree, ranging from extreme imbalance on either end to total equity in the middle. Moreover, continuum indices of receipt and provision allow exploring the state of equity itself as varying between equity based on low contributions and benefits or on high contributions and benefits.

Third, the treatment of supportive equity as lying on a continuum lends itself to a novel analytic approach—polynomial regression with response surface analysis (PRRSA; Edwards & Parry, 1993; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010)—which has yet to be utilized extensively in the close relationship literature in general and in the study of supportive equity in particular. PRRSA allows plotting, in three-dimensional space, the contour of two *continual* predictors (in the case of equity, the dimensions of support receipt and provision; see Figure 1). Importantly, it allows the simultaneous examination of the effect of inequity (ranging along the line of inequity from underbenefit to overbenefit) and the effect of varying degrees of equity (ranging along the line of equity from low to high levels of dyadic support). The polynomial regression version of PRRSA allows testing both the linear and quadratic patterns along these two lines.

Figure 1 illustrates the way in which support (in)equity can be represented using PRRSA. In the left (three-dimensional) plot, the vertical axis represents the outcome (e.g., daily negative mood), the right horizontal axis represents the level of support receipt, and the left horizontal axis represents the level of support provision. The solid line (extending from the closest corner to the farthest) represents the line of equity; along it, increases in support receipt are accompanied by equal increases in support provision. The top right plot provides a two-dimensional representation of this line. In this hypothetical case, an increase along the line of equity (i.e., an increase in levels of support receipt and provision) is associated with a linear decrease in the outcome.

The dotted line in the three-dimensional plot (extending from right to left) represents the line of inequity; along it, increases in support receipt are accompanied by equal decreases in support provision. The bottom right plot provides a two-dimensional representation of this line. In this hypothetical case, both linear and quadratic patterns exist: Moving from the midpoint of the line of inequity (the point where the inequity line intersects with the equity line) in either direction (to the left toward underbenefit or the right toward overbenefit) is associated with an increase in the outcome. Additionally, the curve is tilted, such that movement to the right (toward overbenefit) is tied to a greater increase in the outcome than the movement to the left (toward underbenefit) in this hypothetical case.

Table 1 notes our study hypotheses, linking them to the PRRSA model parameters. Notably, we used both monadic (i.e., one person's reports of provision/receipt) and dyadic (i.e., both partners' reports of provision) data to test our equity predictions. These parallel models allow us to explore the differential effects of support (in)equity based on subjective versus conjoint perspectives. For consistency with previous

Table 1. Hypotheses and PRRSA Parameters.

Study Hypothesis	PRRSA Parameter, Equation, and Definition	PRRSA Specification
Hypothesis 1: Equity resulting from high amount of support receipt and provision will be tied to improved personal outcomes (lower negative affect [NA]; greater positive affect [PA]) as well as relational outcomes (higher relationship satisfaction [RS] and closeness) than will equity resulting from low-support receipt and provision.	a_1 = Receipt + provision Estimates the linear effect along the line of equity.	For NA as an outcome, we expect to find a significant negative a_1, indicating that support equity resulting from high amount of support (e.g., receiving and providing 10 supportive behaviors) is associated with lower NA then support equity resulting from low amount of support (e.g., two supportive behaviors). Conversely, for PA, RS, and closeness as outcomes, we expect to find a significant positive a_1, indicating that support equity resulting from high amount of support is associated with higher levels of the outcome.
Hypothesis 2: Inequity (including both over- and underbenefit) will be tied to poorer personal outcomes (NA, PA) than equity. No such pattern is predicted for relational outcomes (RS, closeness), as previous studies showed support receipt and provision to have independent main effects on relational outcomes, with no interaction.	$a_4 = \text{Receipt}^2 - \text{receipt} \times \text{provision} + \text{Provision}^2$ Estimates the curvature (quadratic) effect along the line of inequity.	For NA as an outcome, we expect to find a significant positive a_4, indicating an increase in NA when moving from the center of the line of inequity (where it intersects with the line of equity) to both directions of inequity (support underbenefit to the left and overbenefit to the right). Conversely, for PA as an outcome, we expect to find a significant negative a_4.
Hypothesis 3: Support overbenefit will be associated with poorer personal outcomes (NA, PA) than support underbenefit. Again, no such pattern is predicted regarding relational outcomes.	a_3 = receipt − provision Estimates the linear effect along the line of inequity.	For NA as an outcome, we expect to find a significant positive a_3, indicating an increase in NA when moving along the line of inequity from support underbenefit (where provision > receipt) to support overbenefit (where provision < receipt). Conversely, for PA as an outcome, we expect to find a significant positive a_3.
No directional hypothesis is tied to this parameter	$a_2 = \text{Receipt}^2 + \text{receipt} \times \text{provision} + \text{Provision}^2$ Estimates the curvature (quadratic) effect along the line of equity.	We had no a priori expectation about whether the linear a_1 effect will be qualified by a positive or negative quadratic effect for any of the outcomes.

Note. PRRSA = polynomial regression with response surface analyses.

studies (Gleason et al., 2003, 2008), the effects of support (in)equity were tested on positive and negative moods (two personal outcomes) and on closeness (a relational outcome). Relationship satisfaction (RS), another central relational construct, served as an additional outcome.

Method

This study is a part of a broader project investigating dyadic processes (see online supplemental [OSM]: osf.io/karzf). Within it, dyads took part in three data collection components: (a) a preliminary background questionnaire, (b) 5 weeks (35 days) of daily diaries at home, and (c) a lab visit involving a videotaped dyadic support interaction. Here, we focus on the diary component.

Participants

Participants were recruited to a couples' study in exchange for US$100 per couple and inclusion in a raffle for a gift worth US$200. Participants were 86 Israeli adult couples who have been cohabiting for a minimum of 6 months. Six couples (7%) dropped out during the study period. Among those remaining, the mean age was 26.7 ($SD = 3.9$) for women and 29.3 ($SD = 4.4$) for men. All had completed high school, with an average of 2.5 years ($SD = 2.3$) of postsecondary education; most (61.6%) had also completed a bachelor's degree. The average relationship duration was 4.6 years ($SD = 2.9$, range = 1–17 years). The average length of cohabitation was 3.0 years ($SD = 2.5$, range = 6 months to 15 years). Fifty-six couples (70.0%) were married and 21 (26.3%) were parents.

The sample size of the broader project was determined in advance using power analyses for multilevel modeling (MLM), taking into account expected attrition rates given the demanding study design; see OSM (osf.io/karzf) for further explanation.

Procedure

Each evening, for 35 days, participants were e-mailed a link to a secure online data collection site and were asked to complete a diary questionnaire 1 hr before going to sleep. Participants were asked not to discuss their responses with their partner. Participants completed an average of 34.8 ($SD = 0.6$, range = 32–35) diary entries.

Measures

Daily stress, support receipt, and support provision. Each evening, participants were asked to indicate the extent to which they

experienced stressful events outside their relationships in the last 24 hr using a 5-item measure of stressors. They then completed a daily support inventory (Bar-Kalifa & Rafaeli, 2013), adapted from Barrera, Sandler, and Ramsay's Scale of Social Support (1981). As a count of support behaviors, they used dichotomous items to report whether they received any of 15 forms of support from their partners. A similar list of dichotomous items was used to determine whether they provided each of these to their partner.[1]

Daily personal outcomes (moods). Participants' daily moods were assessed using a shortened daily diary version (Cranford et al., 2006) of Lorr and McNair's Profile of Mood States (1971), which included 18 items rated on 5-point scales. Items were aggregated to create indices of daily NA (e.g., angry, calm [reversed]) and PA (e.g., vigorous, sad [reversed]).

Daily relational outcomes. Daily RS was assessed using Rafaeli, Cranford, Green, Shrout, and Bolger's (2008) brief daily measure. Each day, participants were asked to rate the extent to which they were experiencing (a) *contentment* and (b) *satisfaction* within their relationship with their partner at the moment, on a scale ranging from 0 (*not at all*) to 5 (*extremely*). These items were averaged each day to create a daily RS score. Daily *closeness* was assessed using Gleason et al.'s (2008) 2-item daily measure tapping emotional and physical closeness rated on a scale ranging from 0 to 4.[2]

Data Analysis

To examine support (in)equity effects using PRRSA, we followed the procedure outlined by Shanock et al. (2010; see also Edwards, 2001; Edward & Parry, 1993). Specifically, we ran a MLM analyses (days nested within individuals, individuals nested within couples) in which the outcome is predicted by the following five predictors: (a) daily support receipt, (b) daily support provision, (c) a first quadratic term formed by squaring daily support receipt, (d) a cross-product term formed by multiplying daily support receipt and provision, and (e) a second quadratic term formed by squaring daily support provision. Before constructing the quadratic and cross-product terms, the daily support receipt and provision variables were person mean centered (see OSM [osf.io/karzf] for more information about this decision).

The generic mixed-level equation, with all effects considered to be random, was:

$$\begin{aligned}
\text{Outcome}_{ij} = {} & (\gamma_{00} + u_{0j}) + (\gamma_{10} + u_{1j}) \times \text{Receipt}_{ij} \\
& + (\gamma_{20} + u_{2j}) \times \text{Provision}_{ij} + (\gamma_{30} + u_{3j}) \\
& \times \text{Receipt}_{ij}^2 + (\gamma_{40} + u_{4j}) \times \text{Receipt}_{ij} \\
& \times \text{Provision}_{ij} + (\gamma_{50} + u_{5j}) \times \text{Provision}_{ij}^2 + e_{ij},
\end{aligned}$$

where the outcome for day-i for participant-j is predicted by the sample's intercept (γ_{00}) and by the average (i.e., fixed) effects ($\gamma_{10}, \gamma_{20}, \gamma_{30}, \gamma_{40}, \gamma_{50}$) of the five predictors, alongside this

participant's deviation from the intercept (i.e., the random effect; u_{0j}) and the predictors ($u_{1j}, u_{2j}, u_{3j}, u_{4j}, u_{5j}$). In addition, residuals within couples (e_{ij}) were allowed to correlate. Our analyses adjusted for the effect of daily stress, allowing us to test the *relational* effects of support (in)equity (i.e., above and beyond the actual stressful situation which may have prompted support in the first place). Finally, they adjusted for the previous day's outcome level, allowing us to allay some of the concern regarding reverse causation (i.e., that changes in daily relationship satisfaction and/or NA precede changes in perceived equity or inequity).

We used the fixed coefficients from the MLM analyses to calculate test values for the four PRRSA parameters (Edwards & Parry, 1993; Shanock et al., 2010; see Table 1 as well as Barranti, Carlson, & Cote [in press] for details; also see OSM [osf.io/karzf] for further explanation). Finally, as we found only minimal evidence for gender differences in our results, we report the results pooled across gender.

Results

Personal Outcomes

The results of the PRRSA with personal moods (NA and PA) as outcomes are presented in Tables 2 and 3 and in Figure 2. Using the dyadic approach (with both partners' provision reports; Panels A and C), the a_1 parameter was negative and significant for NA and positive and significant for PA. This indicates that when equity resulted from high amounts of support receipt and provision, participants reported less NA and more PA, as expected by Hypothesis 1. The a_2 parameter (regarding which we had no prediction) was positive and significant for NA, indicating that the effect of greater amount of support on NA gradually decreased.

The a_4 was positive and significant for NA and negative and significant for PA. This indicates that inequity was associated with more NA and less PA, as expected by Hypothesis 2. Finally, the a_3 parameter was positive and significant for NA and negative and significant for PA. This indicates that support underbenefit was tied to less NA and more PA in comparison to support overbenefit, as expected by Hypothesis 3.

Using the monadic approach (with only one partner's receipt/provision reports; Panels B and D), the pattern of hypothesized results (i.e., significant a_1, a_3, and a_4) remained the same for both NA and PA. One minor difference was found with the a_2 parameter, regarding which no predictions were made: With monadic data, it was not significant for NA. These almost identical patterns of results suggest that with personal outcomes, the effects of (in)equity do not differ whether one uses dyadic or monadic data.

Relational Outcomes

The results of the PRRSA with relational constructs (RS and closeness) as outcomes are presented in Tables 4 and 5 and in Figure 3. Using the dyadic approach (Panels A and C), the a_1 parameter was positive and significant for both outcomes.

Table 2. The Results of Response Surface Analyses With Daily Negative Affect as an Outcome.

	Dyadic				Monadic			
Effect	b (SE)	95% CI	p	Effect Size r	b (SE)	95% CI	p	Effect Size r
Predictors								
Intercept (γ_{00})	.861 (.037)	[.788, .934]	<.001		.860 (.037)	[.787, .933]	<.001	
Receipt (γ_{10})	−.004 (.003)	−[.010, .002]	.149	.172	−.007 (.003)	[−.013, −.001]	.017	.273
Provision (γ_{20})	−.021 (.004)	[−.029, −.014]	<.001	.567	−.019 (.004)	[−.026, −.012]	<.001	.535
Receipt^2 (γ_{30})	.002 (.001)	[.001, .003]	.001	.121	.002 (.000)	[.001, .003]	<.001	.138
Receipt × Provision (γ_{30})	−.002 (.001)	[−.004, .000]	.043	.043	−.002 (.001)	[−.004, .000]	.078	.232
Provision^2 (γ_{40})	.003 (.001)	[.001, .004]	.002	.395	.002 (.001)	[.001, .004]	.008	.334
Response surface parameters								
a_1	−.025 (.005)	[−.035, −.016]	<.001	.419	−.026 (.004)	[−.034, −.017]	<.001	.495
a_2	.003 (.001)	[.000, .005]	.027	.139	.002 (.001)	[.000, .005]	.064	.223
a_3	.017 (.005)	[.007, .026]	.001	.302	.012 (.005)	[.002, .021]	.020	.173
a_4	.007 (.002)	[.003, .010]	<.001	.148	.006 (.002)	[.003, .010]	<.001	.298

Note. p Values were based on two-tailed t tests with the Satterthwaite approximation method for computing degrees of freedoms. Approximate effect sizes were calculated using the formula $r = \sqrt{(t^2/(t^2 + df))}$ (see Muise, Stanton, Kim, & Impett, 2016). CI = confidence interval.

Table 3. The Results of Response Surface Analyses With Daily Positive Affect as an Outcome.

	Dyadic				Monadic			
Effect	b (SE)	95% CI	p	Effect Size r	b (SE)	95% CI	p	Effect Size r
Predictors								
Intercept (γ_{00})	2.623 (0.04)	[2.543, 2.702]	<.001		2.624 (0.040)	[2.544, 2.703]	<.001	
Receipt (γ_{10})	0.002 (0.003)	[−0.005, 0.008]	.568	.062	0.007 (0.003)	[0.001, 0.013]	.028	.217
Provision (γ_{20})	0.022 (0.004)	[0.014, 0.029]	<.001	.551	0.020 (0.004)	[0.012, 0.027]	<.001	.511
Receipt^2 (γ_{30})	−0.001 (0.001)	[−0.003, 0.000]	.101	.312	−0.001 (0.001)	[−0.003, 0.000]	.048	.255
Receipt × Provision (γ_{30})	0.002 (0.001)	[0.000, 0.004]	.089	.340	0.002 (0.001)	[0.001, 0.004]	.005	.058
Provision^2 (γ_{40})	−0.003 (0.001)	[−0.004, −0.001]	<.001	.453	−0.003 (0.001)	[−0.005, −0.002]	<.001	.438
Response surface parameters								
a_1	0.024 (0.005)	[0.014, 0.033]	<.001	.369	0.027 (0.004)	[0.018, 0.035]	<.001	.460
a_2	−0.002 (0.001)	[−0.005, 0.000]	.093	.257	−0.002 (0.001)	[−0.004, 0.000]	.064	.157
a_3	−0.020 (0.005)	[−0.030, −0.010]	<.001	.291	−0.013 (0.005)	[−0.023, −0.003]	.015	.161
a_4	−0.006 (0.002)	[−0.010, −0.003]	.001	.355	−0.007 (0.002)	[−0.010, −0.004]	<.001	.208

Note. CI = confidence interval.

This indicates that when equity resulted from high amount of support receipt and provision, participants reported greater RS and closeness, as expected by Hypothesis 1. The a_2 parameter was not significant for either RS or closeness, indicating that the linear association was not qualified by a quadratic pattern. Finally, as expected by Hypotheses 2 and 3, neither the a_3 nor the a_4 parameters were significant for either outcome. This indicates that when it comes to relational outcomes, the *relative* balance between support receipt and provision did not matter (when dyadic data are used).

Using the monadic approach (Panels B and D), most of the results remained unchanged, including a significant positive a_1 parameter and nonsignificant a_2 and a_4 parameters for both outcomes. However, one difference emerged for both relational outcomes: The a_3 parameter was now positive and significant,

contrary to our Hypothesis 3. This indicates that support over-benefit (i.e., receipt > provision) was associated with greater RS and closeness than support underbenefit (when monadic data are used).

The divergent results indicate that with relational outcomes, the effect of inequity differs to some extent when one uses dyadic versus monadic data. Specifically, with the dyadic approach, the relative contributions of support receipt and provision to RS were independent; in contrast, with the monadic approach, these contributions interacted.[3]

Discussion

The current study set out to examine supportive equity as a dyadic phenomenon. It demonstrated how existing models of
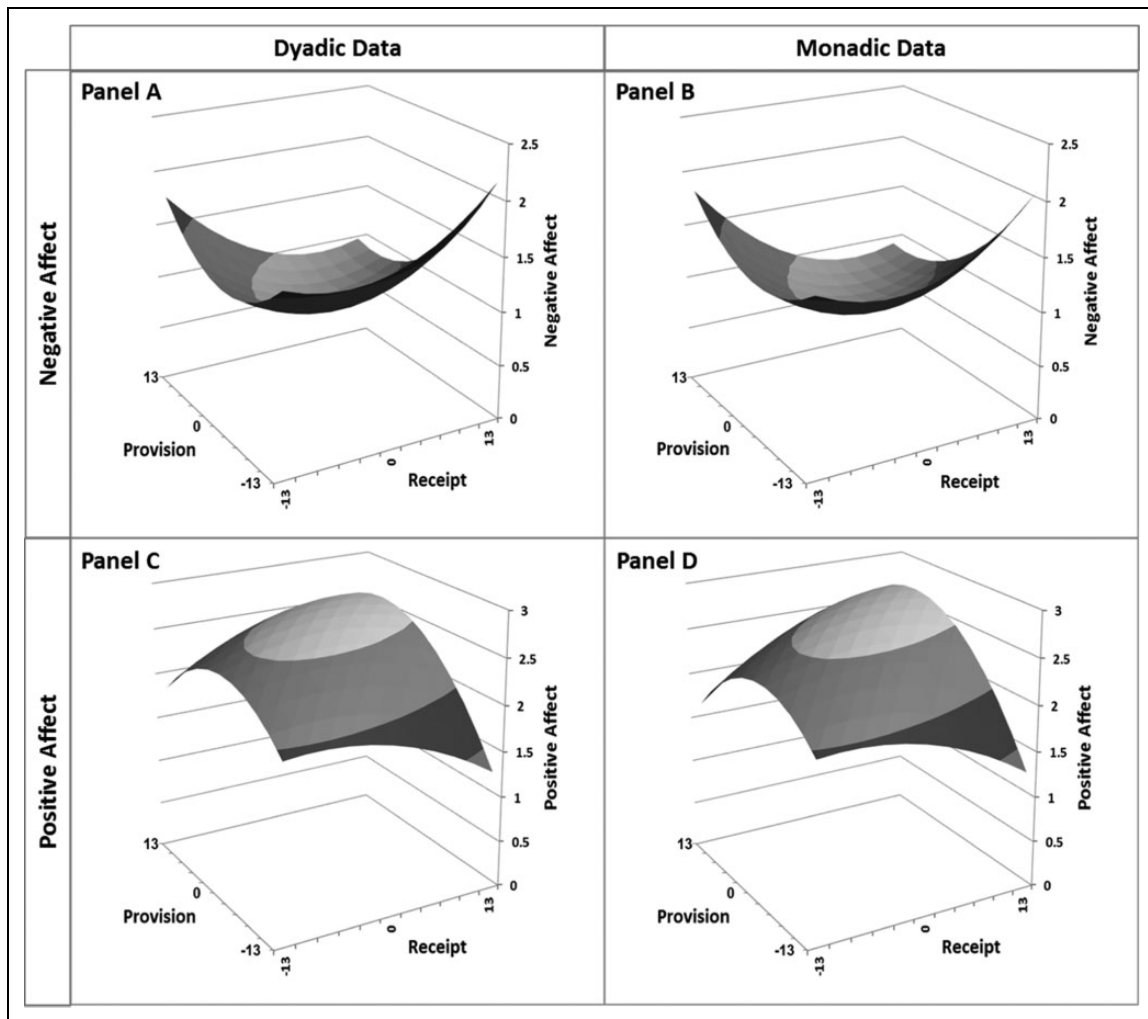
Figure 2. Response surface plots for the effects of support (in)equity on daily negative affect (top panels) and daily positive affect (bottom panels), using dyadic data (left panels) and monadic data (right panels).

Table 4. The Results of Response Surface Analyses With Daily Relationship Satisfaction as an Outcome.

Effect	Dyadic				Monadic			
	b (SE)	95% CI	*p*	Effect Size *r*	*b* (SE)	95% CI	*p*	Effect Size *r*
Predictors								
Intercept (γ_{00})	3.064 (0.057)	[2.95, 3.177]	<.001		3.061 (0.058)	[2.947, 3.176]	<.001	
Receipt (γ_{10})	0.020 (0.005)	[0.010, 0.030]	<.001	.428	0.038 (0.004)	[0.029, 0.046]	<.001	.682
Provision (γ_{20})	0.032 (0.005)	[0.022, 0.042]	<.001	.585	0.020 (0.005)	[0.011, 0.029]	<.001	.465
Receipt^2 (γ_{30})	−0.001 (0.001)	[−0.003, 0.001]	.343	.144	−0.002 (0.001)	[−0.003, 0.000]	.034	.334
Receipt × Provision (γ_{30})	0.000 (0.001)	[−0.003, 0.002]	.775	.007	0.002 (0.001)	[−0.001, 0.004]	.252	.181
Provision^2 (γ_{40})	−0.001 (0.001)	[−0.003, 0.001]	.351	.176	0.000 (0.001)	[−0.002, 0.001]	.706	.074
Response surface parameters								
a_1	0.052 (0.007)	[0.038, 0.066]	<.001	.490	0.058 (0.006)	[0.046, 0.069]	<.001	.629
a_2	−0.002 (0.002)	[−0.006, 0.001]	.184	.115	0.000 (0.001)	[−0.003, 0.003]	.782	.040
a_3	−0.011 (0.007)	[−0.025, 0.002]	.108	.138	0.018 (0.007)	[0.004, 0.031]	.009	.178
a_4	−0.002 (0.002)	[−0.006, 0.003]	.515	.035	−0.004 (0.002)	[−0.008, 0.000]	.084	.149

Note. CI = confidence interval.

Table 5. The Results of Response Surface Analyses With Closeness as an Outcome.

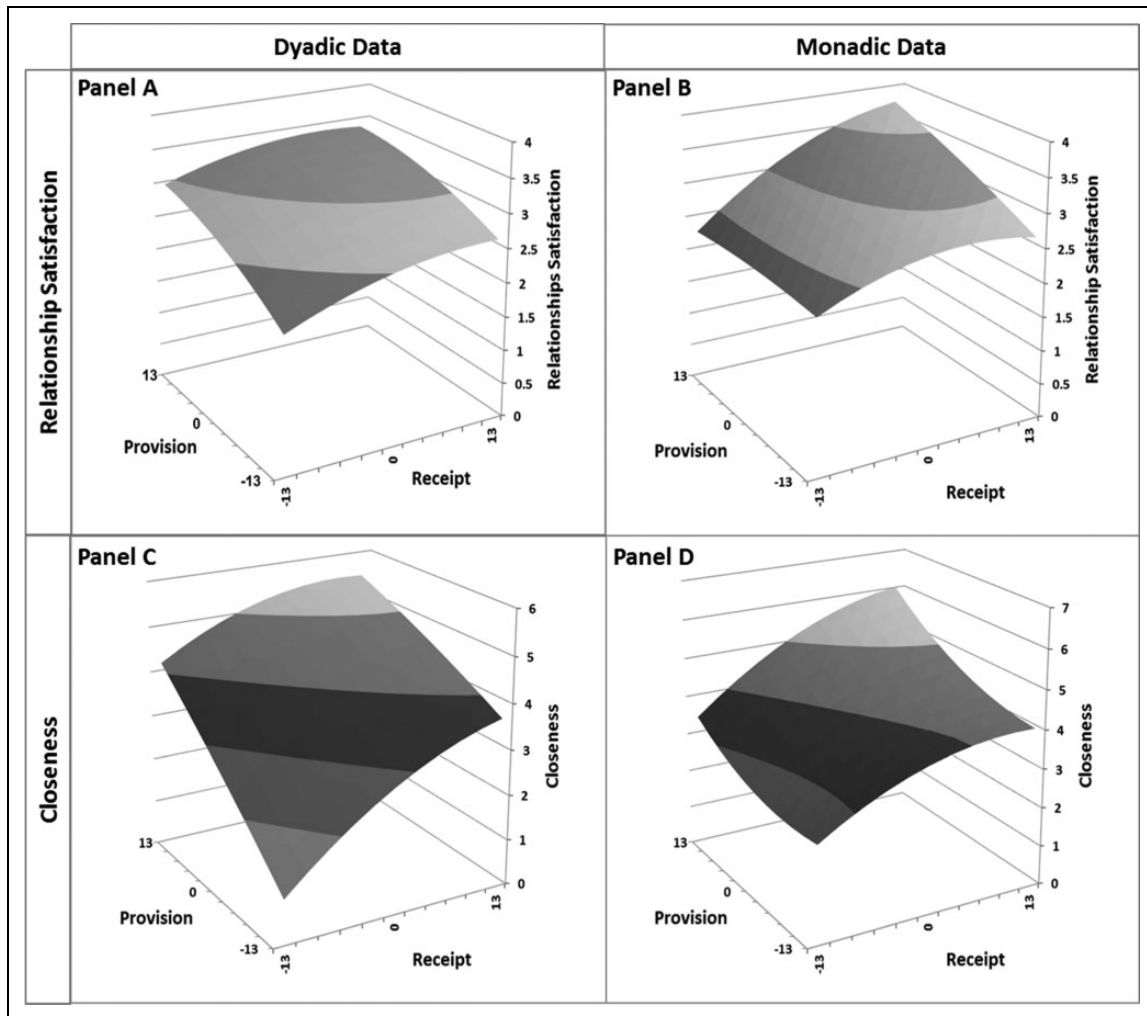| Effect	Dyadic				Monadic			
	b (SE)	95% CI	*p*	*Effect Size r*	*b* (SE)	95% CI	*p*	*Effect Size r*
Predictors								
Intercept (γ_{00})	4.074 (0.102)	[3.870, 4.278]	<.001		4.057 (0.103)	[3.852, 4.262]	<.001	
Receipt (γ_{10})	0.078 (0.007)	[0.063, 0.092]	<.001	.767	0.081 (0.008)	[0.066, 0.097]	<.001	.785
Provision (γ_{20})	0.094 (0.007)	[0.079, 0.109]	<.001	.832	0.055 (0.007)	[0.041, 0.068]	<.001	.716
Receipt^2 (γ_{30})	−0.002 (0.002)	[−0.006, 0.001]	.135	.200	−0.003 (0.001)	[−0.005, 0.000]	.023	.280
Receipt × Provision (γ_{30})	−0.002 (0.002)	[−0.007, 0.003]	.383	.021	0.001 (0.002)	[−0.002, 0.005]	.411	.124
Provision^2 (γ_{40})	0.000 (0.002)	[−0.004, 0.003]	.768	.039	0.002 (0.001)	[0.000, 0.005]	.076	.296
Response surface parameters								
a_1	0.172 (0.012)	[0.149, 0.195]	<.001	.731	0.136 (0.01)	[0.117, 0.156]	<.001	.777
a_2	−0.005 (0.003)	[−0.011, 0.001]	.092	.117	0.001 (0.002)	[−0.003, 0.005]	.585	.072
a_3	−0.016 (0.009)	[−0.034, 0.001]	.068	.208	0.027 (0.011)	[0.006, 0.048]	.013	.198
a_4	−0.001 (0.004)	[−0.009, 0.008]	.857	.007	−0.002 (0.003)	[−0.008, 0.004]	.533	.048

Note. CI = confidence interval.

Figure 3. Response surface plots for the effects of support (in)equity on daily relationship satisfaction (top panels) and daily closeness (bottom panels), using dyadic data (left panels) and monadic data (right panels).

equity (e.g., Hatfield et al., 2008) and reciprocity (Uehara, 1995) need to be augmented by taking into account the (at times competing) motives for relatedness and competence. In doing so, the study built on earlier work (Gleason et al., 2008) but went beyond it in several ways.

First, Gleason et al. (2008), like most daily studies on this topic, used dichotomous measures of support, whereas the current study asked respondents about various supportive behaviors each day. This allowed us to address variations in amount of support of various kinds rather than support's simple omnibus presence/absence. After all, one hallmark of committed relationships is that they permit partners to reciprocate flexibly. Such flexibility can be seen over *time* (for review, see Clark & Aragon, 2013). Alternatively, it could also be seen at any one point (or day), over different *kinds* of support (as pointed out by reciprocity theory; Gouldner, 1960; Uehara, 1995). Our continua (count) measures, indexing the variety of supportive behaviors transacted, helped reveal this pattern.

A second innovation, which became possible with our use of continua support measures, was the adoption of PRRSA. To our knowledge, ours is the first study to explore dyadic support using this method which is particularly suited for examining the effect of discrepancies. PRRSA provides formal tests for the questions central to our examination, and for which traditional moderated regression (or difference score) methods provide only approximate answers (Barranti et al., in press). In particular, it allows us to examine (using a_1) whether equity based on high receipt and provision differed from one based on low receipt and provision (in our case: yes for all outcomes). It also allows us to compare (using a_3) overbenefit with underbenefit (in our case: overbenefit was worse for personal outcomes, but better for relational ones, at least with monadic data [see our next point]). Finally, it allows us to determine (using a_4) whether equity was better than inequity (in our case: yes for personal outcomes, no for relational outcomes).

A third innovation of our study was its use of both monadic and dyadic perspectives. The former takes into account only actor effects, whereas the latter turns PRRSA into an actor–partner–interdependence model (Kenny, Kashy, & Cook, 2005). Moreover, the former addresses only visible support, whereas the latter allows for support which may be either visible or invisible (see Bolger et al., 2000). As disagreement between partners' perceptions of daily supportive behaviors is pervasive (e.g., Bar-Kalifa, Rafaeli, & Sened, 2016; Bolger et al., 2000; Gable et al., 2003), we reasoned that comparing these perspectives will provide us with a fuller understanding of the effects of equity than was possible with previous studies of support equity, which relied solely on one partner's monadic (subjective) reports.

Finding that the two perspectives converge with regard to personal outcomes helps bolster our confidence that the obtained results are not a simple product of the partners' subjective perceptions of balance/imbalance, as suggested by some (e.g., Sechrist, Suitor, Howard, & Pillemer, 2014). Instead, they seem to reflect the objective daily balance of receiving and providing support or at least the conjunction of the two

independent perspectives about these. Similarly, the lack of evidence for adverse consequences for inequity with relational outcomes (i.e., nonsignificant a_4 and nonnegative a_3) using either perspective bolsters our argument that these outcomes (unlike personal affect) respond unconditionally well to subjective or objective receipt of support.

The one point of divergence between the monadic and the dyadic perspectives (namely, the difference in a_3, with overbenefit being superior for relational outcomes only with monadic data) is also informative. In stark contrast to reciprocity theory, it suggests that it is precisely the subjective (not the objective) feeling of overbenefit that is associated with more closeness and satisfaction; in our mind, this is probably due to the greater fulfillment of relatedness, even at the expense of competence (for review, Knee, Hadden, Porter, & Rodriguez, 2013).

Limitations and Future Directions

Our use of both monadic and dyadic perspectives for indexing equity was motivated by substantial documented disagreements within couples regarding support transactions (see Bar-Kalifa et al., 2016, using the same data set). We argued that the dyadic perspective provides a better index of the actual (objective) balance of support within couples. Still, this index cannot simply be considered an objective measure of support equity. Unfortunately, lab studies are not likely to be of much help either: Observing support reciprocation in circumscribed situations may not be feasible, as reciprocation, even on a daily basis, requires variable lengths of time. However, future studies could harness methods allowing objective assessment of real-time dyadic support transactions (see Mehl, Vazire, Holleran, & Clark, 2010).

Moreover, future studies could go beyond the transient affective/relational outcomes assessed here and include more long-term functional/behavioral outcomes (e.g., Väänänen, Buunk, Kivimäki, Pentti, & Vahtera, 2005) as well. These longer term patterns may be most informative with regard to the obtained results with our relational outcomes (namely, the null finding regarding inequity [a_4] with monadic or dyadic data, and the null finding regarding over- vs. underbenefit [a_3] with dyadic data). For example, it may be that the provision/receipt balance does matter for relational outcomes but only in the aggregate, long-term sense. Specific days of inequity can go by without much effect, but a more chronic sense of imbalance may start taking a toll (for review, see Hatfield et al., 2008).

It is interesting to consider our findings through the lens of Clark & Aragon's (2013) prominent model of communal relationships. In contrast to that model's prediction, we observe that the typical partner in a close committed relationship actually does seem to respond to the balance of inputs and outputs exchanged on a daily basis. However, it may be that communal orientation plays a role as an individual difference, leading some to pay lesser attention to this balance. Future research should explore communal orientation (as well as other relevant constructs) as possible moderators. (Relatedly, future work may need to test whether these results generalize to other

cultures, as support processes operate differently in Western and non-Western cultures; see Burleson & Hanasono, 2010; Wang, Shih, Hu, Louie, & Lau, 2010.)

Finally, our analyses controlled for stress as a covariate. Support is recruited at times of stress and is therefore collinear with it. Not adjusting for stress levels would have run the risk of mistakenly assigning to support some of the variability in the outcomes that should be attributed to stress. Still, it may be worthwhile to examine stress as a moderator rather than a covariate. Specifically, it may be that equity has different associations with both affective and relational outcomes depending on the level of contextual stress.

To summarize, our results indicate that equity obtained through acts of support reciprocation is tied to different relational versus affective/coping outcomes. Relationally, reciprocation behaviors simply added to a virtuous cycle of responsiveness. When it came to coping, though, support reciprocation seems to offset or even reverse the affective costs of support receipt. These results are consistent with the idea that fuller understanding of support transactions must consider both relatedness and competence needs. Future studies should measure these needs explicitly to formally test the mechanisms suggested to explain the differential effects of supportive equity on relational versus affective outcomes.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

Supplemental Material

The supplemental material is available in the online version of the article.

Notes

1. We also partitioned the support items into 8 emotional-focused (i.e., emotional support) and 6 problem-focused (i.e., practical support) items (1 item was dropped as it assessed "other support"). The results section describes analyses run with the overall measure; separate analyses with the emotional and practical support scales are available in the OSM (osf.io/karzf).
2. An expended description of the study's measures can be found in the online supplemental material (OSM; osf.io/karzf).
3. A comparison of the results reported in the article (using all 15 support items) and those that are available in the OSM ([osf.io/karzf], using emotional and practical support indices separately), indicate that the former are mostly driven by the emotional support items.

References

Bar-Kalifa, E., & Rafaeli, E. (2013). Disappointment's sting is greater than help's balm: Quasi-signal detection of daily support matching. *Journal of Family Psychology*, 27, 956–967. doi:10.1037/a0034905

Bar-Kalifa, E., & Rafaeli, E. (2015). Above and below baselines: The nonmonotonic effects of dyadic emotional support in daily life. *Journal of Social and Personal Relationships*, 32, 161–179. doi:10.1177/0265407514525888

Bar-Kalifa, E., Rafaeli, E., & Sened, H. (2016). Truth and bias in daily judgments of support receipt between romantic partners. *Personal Relationship*, 23, 42–61. doi:10.1111/pere.12110

Barranti, M., Carlson, E. N., & Cote, S. (in press). How to test questions about similarity in personality and social psychology research: Description and empirical demonstration of response surface analysis. *Social Psychological and Personality Science*.

Barrera, M., Sandler, I. N., & Ramsay, T. B. (1981). Preliminary development of a scale of social support: Studies on college students. *American Journal of Community Psychology*, 9, 435–447. doi:10.1007/BF00918174

Barry, R. A., Bunde, M., Brock, R. L., & Lawrence, E. (2009). Validity and utility of multidimensional model of received support in intimate relationships. *Journal of Family Psychology*, 23, 48–57. doi:10.1037/a0014174

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579–616. doi:10.1146/annurev.psych.54.101601.145030

Bolger, N., Zuckerman, A., & Kessler, R. C. (2000). Invisible support and adjustment to stress. *Journal of Personality and Social Psychology*, 79, 953–961. doi:10.1037/0022-3514.79.6.953

Brown, S. L., Nesse, R. M., Vinokur, A. D., & Smith, D. M. (2003). Providing social support may be more beneficial than receiving it: Results from a prospective study of mortality. *Psychological Science*, 14, 320–327. doi:10.1111/1467-9280.14461

Burleson, B. R., & Hanasono, L. K. (2010). Explaining cultural and sex differences in responses to supportive communication: A dual-process approach. In K. T. Sullivan & J. Davila (Eds.), *Support processes in intimate relationships* (pp. 291–317). New York, NY: Oxford University Press.

Clark, M. S., & Aragon, O. R. (2013). Communal (and other) relationships: History, theory development, recent findings, and future directions. In J. A. Simpson & L. Campbell (Eds.), *The Oxford handbook of close relationships* (pp. 255–280). New York, NY: Oxford University Press.

Cranford, J. A., Shrout, P. E., Iida, M., Rafaeli, E., Yip, T., & Bolger, N. (2006). A procedure for evaluating sensitivity to within-person change: Can mood measures in diary studies detect change reliably? *Personality and Social Psychology Bulletin*, 32, 917–929. doi:10.1177/0146167206287721

Cutrona, C. E., & Russell, D. W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 319–366). New York, NY: Wiley.

Deci, E. L., & Ryan, R. M. (2012). Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In R. M. Ryan (Ed.), *Oxford handbook of human motivation* (pp. 85–107). Oxford, England: Oxford University Press.

Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods*, 4, 265–287. doi:10.1177/109442810143005

Edwards, J. R., & Parry, M. E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal*, *36*, 1577–1613. doi:10.2307/256822.

Fisher, J. D., Nadler, A., & Whitcher-Alagna, S. (1982). Recipient reactions to aid. *Psychological Bulletin*, *91*, 27–54. doi:10.1037/0033-2909.91.1.27

Gable, S. L., Reis, H. T., & Downey, G. (2003). He said, she said a quasi-signal detection analysis of daily interactions between close relationship partners. *Psychological Science*, *14*, 100–105. doi:10.1111/1467-9280.t01-1-01426

Gleason, M. E., Iida, M., Bolger, N., & Shrout, P. E. (2003). Daily supportive equity in close relationships. *Personality and Social Psychology Bulletin*, *29*, 1036–1045. doi:10.1177/0146167203253473

Gleason, M. E. J., Iida, M., Shrout, P. E., & Bolger, N. (2008). Receiving support as a mixed blessing: Evidence for dual effects of support on psychological outcomes. *Journal of Personality and Social Psychology*, *94*, 824–838. doi:10.1037/0022-3514.94.5.824

Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, *25*, 161–178. doi:www.jstor.org/stable/2092623

Hatfield, E., Rapson, R. L., & Aumer-Ryan, K. (2008). Social justice in love relationships: Recent developments. *Social Justice Research*, *21*, 413–431. doi:10.1007/s11211-008-0080 -1

Iida, M., Seidman, G., Shrout, P. E., Fujita, K., & Bolger, N. (2008). Modeling support provision in intimate relationships. *Journal of Personality and Social Psychology*, *94*, 460–478. doi:10.1037/0022-3514.94.3.460

Inagaki, T. K., & Eisenberger, N. I. (2012). Neural correlates of giving support to a loved one. *Psychosomatic Medicine*, *74*, 3–7. doi:10.1097/PSY.0b013e3182359335

Kenny, D. A., Kashy, D. A., & Cook, W. (2005). *The analysis of dyadic data*. New York, NY: Guilford Press

Knee, C. R., Hadden, B. W., Porter, B., & Rodriguez, L. M. (2013). Self-determination theory and romantic relationship processes. *Personality and Social Psychology Review*, *17*, 307–324. doi:10.1177/1088868313498000

Krause, N. (1997). Received support, anticipated support, social class, and mortality. *Research on Aging*, *19*, 387–422. doi:10.1177/0164027597194001

Lemay, E. P., & Muir, H. J. (2016). The action model of relationship security: How one's own behavior shapes confidence in partners' care, regard, and commitment. *Personal Relationships*, *23*, 339–363. doi:10.1111/pere.12129

Lorr, M., & McNair, D. M. (1971). *The profile of mood states manual*. San Diego, CA: Educational and Industrial Testing Service.

McClure, M. J., Xu, J. H., Craw, J. P., Lane, S. P., Bolger, N., & Shrout, P. E. (2013). Understanding the costs of support transactions in daily life. *Journal of Personality*, *82*, 563–574. doi:10.1111/jopy.12061

Mehl, M. R., Vazire, S., Holleran, S. E., & Clark, C. S. (2010). Eavesdropping on happiness well-being is related to having less small talk and more substantive conversations. *Psychological Science*, *21*, 539–541. doi:10.1177/0956797610362675

Muise, A., Stanton, S. C., Kim, J. J., & Impett, E. A. (2016). Not in the mood? Men under- (not over-) perceive their partner's sexual desire in established intimate relationships. *Journal of Personality and Social Psychology*, *110*, 725–742. doi:10.1037/pspi0000046

O'Brien, T. B., & DeLongis, A. (1996). The interactional context of problem-, emotion-, and relationship-focused coping: The role of the big five personality factors. *Journal of Personality*, *64*, 775–813. doi:10.1111/j.1467-6494.1996.tb00944.x

O'Brien, T. B., & DeLongis, A. (1997). Coping with chronic stress: An interpersonal perspective. In B. H. Gottlieb (Ed.), *Coping with chronic stress* (pp. 161–190). New York, NY: Plenum.

Rafaeli, E., Cranford, J. A., Green, A. S., Shrout, P. E., & Bolger, N. (2008). The good and bad of relationships: How social hindrance and social support affect relationship moods in daily life. *Personality and Social Psychology Bulletin*, *34*, 1703–1718. doi:10.1177/0146167208323742

Rafaeli, E., & Gleason, M. E. J. (2009). Skilled support within intimate relationships. *Journal of Family Theory and Review*, *1*, 20–37. doi:10.1111/j.1756-2589.2009.00003.x

Sechrist, J., Jill Suitor, J., Howard, A. R., & Pillemer, K. (2014). Perceptions of equity, balance of support exchange, and mother–adult child relations. *Journal of Marriage and Family*, *76*, 285–299. doi:10.1111/jomf.12102

Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggestad, E. D. (2010). Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology*, *25*, 543–554. doi:10.1007/s10869-010-9183-4

Uchino, B. N. (2009). Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. *Perspectives on Psychological Science*, *4*, 236–255. doi:10.1111/j.1745-6924.2009.01122.x

Uchino, B. N., Bowen, K., Carlisle, M., & Birmingham, W. (2012). Psychological pathways linking social support to health outcomes: A visit with the "ghosts" of research past, present, and future. *Social Science & Medicine*, *74*, 949–957. doi:10.1016/j.socscimed.2011.11.023

Uehara, E. S. (1995). Reciprocity reconsidered: Gouldner's moral norm of reciprocity' and social support. *Journal of Social and Personal Relationships*, *12*, 483–502. doi:10.1177/0265407595124001

Väänänen, A., Buunk, B. P., Kivimäki, M., Pentti, J., & Vahtera, J. (2005). When it is better to give than to receive: Long-term health effects of perceived reciprocity in support exchange. *Journal of Personality and Social Psychology*, *89*, 176–193. doi:10.1037/0022-3514.89.2.176

Walster, E., Walster, G. W., & Berscheid, E. (1978). *Equity: Theory and research*. Boston, MA: Allyn and Bacon.

Wang, S. W., Shih, J. H., Hu, A. W., Louie, J. Y., & Lau, A. S. (2010). Cultural differences in daily support experiences. *Cultural Diversity and Ethnic Minority Psychology*, *16*, 413–420. doi:10.1037/a0019885

Weiss, E. R. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others* (pp. 17–26). Englewood Cliffs, NJ: Prentice Hall.

Xu, Y., & Burleson, B. R. (2001). Effects of sex, culture, and support type on perceptions of spousal social support: An assessment of the "support gap" hypothesis in early marriage. *Human Communication Research*, 27, 535–566. doi:10.1111/j.1468-2958.2001.tb00792.x

Author Biographies

Eran Bar-Kalifa is a senior lecturer at Ben-Gurion University of the Negev, Israel. His research interests focus on dyadic processes in the context of romantic relationships including support, empathy and conflict. He also focuses on dyadic processes in the context of psychotherapeutic relationships, including therapeutic alliance, interpersonal co-regulation, and empathy.

Rony Pshedetzky-Shochat is a PhD student at Bar-Ilan University in Israel. Her research interests are skillfull support processes among couples in the transition to parenthood, using multi-method techniques such as daily diaries, lab observations, physiological measures, self-report, and partner-report questionnaires, and longitudinal follow-ups.

Eshkol Rafaeli is a professor at Bar-Ilan University in Israel, and a research scientist at Barnard College, Columbia University, in New York. He is interested in the interplay between two key components of daily life – our affect (that is, our moods and emotions) and our relationships (and particularly the intimate bonds connecting committed couples).

Marci E. J. Gleason is an associate professor of Human Development and Family Sciences at the University of Texas at Austin. Her research focuses on how dyadic processes–particularly social support exchanges, personality processes, and daily life events interact to influence relational and personal well-being.

Handling Editor: Nickola Overall