



Accuracy and Bias in Vulnerability Perceptions of Partners Undergoing Emotion-Focused Therapy for Couples

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The primary mechanism of change in emotion-focused couples therapy (EFT-C) is described as one partner accessing and expressing vulnerability, with the other partner responding affiliatively, with compassion, acceptance, validation, and support. These interactions are assumed to restructure the negative, rigid interactional cycle that usually brings couples to therapy and helps build a positive emotional bond. The primary aim of this study was to test whether for this process to occur, partners need to accurately perceive their spouse's experiences of vulnerability during therapy. Specifically, it examined the factors (i.e., tracking accuracy, assumed-similarity bias, and directional bias) shaping partners' perceptions of their spouse's vulnerability and whether accurate perceptions predict positive session outcomes during EFT-C. Data from 36 couples who took part in the York Emotional Injury Project were analyzed. Following each session, clients reported their own experience of vulnerability as well as their perceptions of their partners' vulnerability. Session outcome was defined as the extent to which clients reported resolution. Using a multi-level Truth and Bias model, the results indicated that partners accurately perceived changes in their spouses' expressions of vulnerability (i.e., significant tracking accuracy). Interestingly, partners' perceptions were also tied to their own expressions of vulnerability (i.e., significant assumed-similarity bias) and tended to underestimate the level of their partners' vulnerability expressions (i.e., significant negative mean-level bias). Using a multilevel Response Surface Analysis, we found that accuracy regarding partners' vulnerability was associated with higher levels of resolution.

Keywords: Emotion-Focused Therapy for Couples; Accuracy and Bias; Vulnerability; Emotional Injury; Resolution

Fam Proc x:1–16, 2020

An emotional injury is a significant relational event (e.g., an affair, financial cover-up, abandonment) that leaves one partner (the injured party) feeling betrayed and generates a great deal of distrust and unresolved hurt and anger (Greenberg, Warwar, & Malcolm, 2010). The injury becomes a pivotal element in the relationship, leaving both

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partners in distress (Greenberg & Goldman, 2008; Greenberg et al., 2010; Johnson, Maki-
nen, & Millikin, 2001).

An emotional injury typically occurs as a result of a severe violation of core aspects and needs in the relationship (Johnson et al., 2001; McKinnon & Greenberg, 2017). Usually, the injury is not an isolated event, but rather a reaction to the continuous deterioration in the bond between the partners. Nevertheless, it is often possible to isolate a salient, relationally toxic incident caused by one of the partners (e.g., having an affair). Such events, if left unresolved, are not forgotten but rather result in lingering painful feelings and mistrust, which can have long-term deleterious effects on the relationship (Greenberg et al., 2010; Halchuk, Makinen & Johnson, 2010; Johnson et al., 2001; Makinen & Johnson, 2006; Woldarsky Meneses & Greenberg, 2011; Woldarsky Meneses & Greenberg, 2014).

One therapeutic approach with substantial empirical support for its effectiveness in reducing marital distress in general (Rathgeber, Bürkner, Schiller, & Holling, 2018) and in dealing with emotional injuries in particular (Greenberg et al., 2010; McKinnon & Greenberg, 2013) is Emotion-Focused Couples Therapy (EFT-C; Greenberg & Goldman, 2008; Greenberg & Johnson, 1986, 1988). According to this approach, affect regulation is a core motive in romantic partners' interactions (Greenberg & Goldman, 2008). It posits that close relationships are to a large extent sought out because they provide means to regulate emotions,—that is, they help individuals to feel more secure and proud and avoid feelings of fear, loneliness and shame. In that sense, the theory suggests that emotion regulation and motivation are intrinsically intertwined; the need to sooth anxiety/fear and restore calmness is at the heart of the attachment motivation system, whereas the need to regulate shame and establish self-esteem/pride is at the heart of the identity motivation system.

For example, in well-functioning relationships, people feel safe enough to turn to their partners when they feel self-doubt or scared, and their partners' response helps them to restore a sense of self-esteem and security. Conversely, relational distress occurs when there is a breakdown in the process of dyadic affect regulation; for example, when partners do not feel safe to share their distress, or when they do not help each other regulate their distress, or even when one partner is the very source that elicits fear or shame in the other partner (Greenberg, 2002; Greenberg & Goldman, 2008; McKinnon & Greenberg, 2017).

Thus, the path to resolving relational conflicts and emotional injuries involves improving couples' dyadic affect regulation processes. This process is fostered in therapy when one partner is gradually able to access, experience, and express his or her vulnerable primary emotions and related needs, and the other partner is able to respond to these courageous disclosures with empathy, compassion, and support. Over time, this process contributes to the recovery of couples' capacity for adaptive affect regulation (Greenberg & Goldman, 2008; McKinnon & Greenberg, 2017).

Being *vulnerable*, the first key element in the process of change and in recovery from emotional injuries in EFT-C, means experiencing past and current sensitivities or emotional pain and allowing oneself to be attentive to primary emotions while reducing protective behaviors and guards. In the context of couples therapy, being vulnerable means not only experiencing these emotions but also opening up and expressing them to the very partner who caused (or at least is believed to have caused) the hurt and acknowledging the emotional pain (McKinnon & Greenberg, 2013, 2017; Woldarsky Meneses & Greenberg, 2011; Scheinkman & Fishbane, 2004; Woldarsky Meneses & Greenberg, 2014).

Vulnerability in therapy means a shift from focusing on secondary reactive or protective emotions, such as destructive blaming anger, to focusing on primary ones. Specifically, primary emotions are people's immediate reactions to a current event such as sadness when experiencing a loss, shame in response to a failure, fear in response to abandonment, or anger when experiencing boundary violation. For distressed partners, who are typically

characterized by a certain degree of limited emotional regulation capacity, primary emotions can be painful and overwhelming; therefore, such primary painful emotions are often masked by secondary emotions. For example, distressed partners often express blame and resentment (secondary emotions), which cover their primary emotions of hurt and shame. Primary emotions can be hidden even from oneself (i.e., outside of awareness) by secondary emotions.

A great deal of research in EFT-C has focused on facilitating resolution when working with couples confronting an emotional injury (e.g., Greenberg et al., 2010; Halchuk et al., 2010; Makinen & Johnson, 2006; McKinnon & Greenberg, 2013, 2017). In recent studies that have tested the key transformative elements in the resolution process, McKinnon and Greenberg (2013, 2017) indicated that expression of vulnerability by the injured partner predicted the other partner's responsiveness, as well as greater injury resolution and trust. However, for these salubrious effects to occur, the partners need to accurately perceive each other's vulnerability. In other words, awareness is assumed to be a key element in this process.

One of the main principles guiding therapeutic work in EFT, for individuals and couples, is the enhancement of clients' awareness of emotions. Emotional awareness involves the capacity to access, acknowledge, and label emotions (Greenberg, 2002). In the context of couple therapy, however, this process is twofold: Partners are assisted in symbolizing their own emotions, as well as accurately recognizing their partner's expression of emotions. The theory suggests that gaining awareness of one's own emotions allows for clearer, more differentiated, and less aggressive communication, whereas expanding awareness of one's partner's emotional experiences and expressions facilitates more empathic and compassionate responses to his or her needs (Greenberg & Goldman, 2008). The empirical literature on EFT-C has mainly focused on the role of the expression and experience of emotions during therapy. However, there is much less empirical work testing the role of partners' accuracy (or lack thereof) in perceiving each other's emotion expression. Therefore, the primary goal of this study is to test the extent to which partners are accurate (or biased) in perceiving vulnerability as well as the role of such accuracy in the therapeutic process.

Accuracy and Bias in Partners' Perception

There is ample evidence that romantic partners' perception of each other is driven by both reality and bias (e.g., Fletcher & Kerr, 2010; Lemay & Clark, 2015). For example, in a meta-analysis, Fletcher and Kerr (2010) found that when people judge their partner's behaviors (e.g., expressions of affection), their assessments are positively correlated with an external benchmark; however, they also tend to demonstrate a significant underestimation in their judgment.

Accuracy in perceptions of partners' behaviors and experiences is associated with a myriad of relational outcomes. In the meta-analysis mentioned above (Fletcher & Kerr, 2010), higher levels of inaccuracy were associated with lower relationship quality (see also Fincham & Bradbury, 1989 and Gagné & Lydon, 2004). Furthermore, daily compassionate behaviors (e.g., acceptance, understanding) were found to be more beneficial when receivers accurately perceive their occurrences (Reis, Maniaci, & Rogge, 2014, 2017). Similarly, the effect of support on recipients' well-being was also found to be dependent on recipients' recognition of supportive acts (Gable, Reis, & Downey, 2003; Lemay & Neal, 2014; though see Bolger, Zuckerman, & Kessler, 2000).

These findings suggest that individuals' ability to recognize their partner's behaviors, emotions, and intentions accurately is important to relationship functioning (Ickes & Hodges, 2013; Sened, Levidor, Lazarus, Bar-Kalifa, Rafaeli & Ickes, 2017). However, to

the best of our knowledge, no research has yet examined the effect of partners' perceptions of *vulnerability* in the context of *couple therapy*, which is the central focus of the present study.

The literature on interpersonal perception suggests that when examining perception accuracy, at least three components should be taken into account (Fletcher, 2002, 2015; Fletcher & Kerr, 2010): (a) mean-level bias (aka directional bias), (b) tracking accuracy, and (c) assumed-similarity bias. These biases can be illustrated by a fictitious (though common) example. Assume that Dan's assessment of his wife Sarah's experience of vulnerability is examined repeatedly throughout their couple therapy. The *mean-level bias* would be the average level difference between Dan's perception of Sarah's vulnerability experience, and Sarah's actual vulnerability experience (e.g., Dan's perception reports minus Sarah's experience reports). *Tracking accuracy* would be the association between Dan's perception and Sarah's experience of vulnerability across all assessment points (e.g., the correlation, over time, between Dan's perception reports and Sarah's experience reports). Finally, *assumed-similarity* bias would be the association between Dan's perception and his own experience of vulnerability across all assessment points (e.g., the correlation, over time, between Dan's perception reports and Dan's experience reports).

These three elements are conceptually orthogonal to each other. In other words, having a strong mean-level bias does not necessarily entail having a weak tracking accuracy. In fact, at times, these elements work in tandem in shaping partners' perceptions. For example, in one observational study of romantic couples' conflict discussions, relationally insecure women simultaneously demonstrated greater levels of negative mean-level bias (i.e., underestimation) and greater levels of tracking accuracy of their partners' regard (Overall, Fletcher, & Kenny, 2012). It is thus imperative to examine all of these components simultaneously to permit a comprehensive grasp of dyads' perceptions of each other.

The Present Study

The present study focuses on the role of partners' perceptions of each other's vulnerability in the context of EFT-C for couples struggling with unresolved emotional injury. Several studies have already documented the curative effects of vulnerability expression (Mckinnon & Greenberg, 2013, 2017). However, there is a dearth of studies examining the interplay between partners' expressions of vulnerability and accurate perception (i.e., awareness) of their partner's vulnerability in the process of change. In EFT-C, accurately perceiving one's partner's vulnerability is theorized to be a crucial clinical process because it helps reshape the way partners view each other and may promote more responsive communication. The overarching goal of the current paper is to provide the first empirical examination for this theoretical assumption.

To examine this research question, we utilized session-by-session reports of couples' vulnerability and injury resolution. Following other studies in the field, self-reports of vulnerability expression were used as the criterion to estimate the perceivers' accuracy or bias (Fletcher & Kerr, 2010). With these data, the following four hypotheses were tested:

Hypothesis 1: We predicted that partners are attuned to and capable of recognizing changes in expressions of vulnerability from their partners. Therefore, we expected that over the course of treatment, perceivers would demonstrate *tracking accuracy* in assessing their partners' vulnerability. In other words, on a session-by-session basis, their perceptions would be positively associated with their partners' reports of vulnerability expression.

Hypothesis 2: Based on previous research showing that perceivers tend to assume similarities between their own experience and their partner's experience (Lemay et al., 2007), we also expected that perceivers would manifest *assumed-similarity bias* when assessing their partners'

vulnerability. In other words, on a session-by-session basis, their perceptions should partly correspond with their own reports of vulnerability expression.

Hypothesis 3: In distressed couples, vulnerability is often masked by more reactive secondary emotions (e.g., blaming, anger). Such chronic expression of secondary emotions may obscure the emergence of more vulnerable primary emotions. Therefore, we expected that at the same time that perceivers would accurately track the *pattern* of their partners' vulnerability fluctuations from session to session (related to Hypothesis 1), they would also exhibit a *negative mean-level bias* in assessing their partners' vulnerability. In other words, they would tend to underestimate the *degree* of their partners' reports of vulnerability expression.

Hypothesis 4: EFT-C assumes that failing to recognize expressions of vulnerability hinders perceivers' potential to benefit from these expressions. Therefore, we expected that perceivers' underestimation (i.e., *negative mean-level bias*) in of their partners' vulnerability expression would be associated with lower levels of injury resolution.

METHOD

Clients and Therapists

The current study utilized data from 36 couples who participated in the York Emotional Injury research project (Greenberg et al., 2010). In this project, couples struggling with an emotional injury received 10–12 sessions of Emotion-Focused Couples Therapy (EFT-C). At least one partner needed to report an unresolved emotional injury that had lasted at least 2 years. Examples included adultery, alienation from extended family, and hiding financial difficulties.

In order to participate in the project, both partners had to be over 18, have cohabitated for at least 2 years, and expressed a desire to stay in the relationship. Participants were recruited through newspaper advertisements, flyers, and posters. Couples were excluded from the study if they were already in another form of couple therapy, and if there was any indication of violence or abuse, suicidal ideation, substance abuse, severe psychological disturbances (e.g., dissociation, psychosis), or severe personality disorder (i.e., borderline or narcissistic personality disorder). These inclusion criteria were assessed in an initial phone screening session followed by an in-person clinical interview.

Demographic data

All 36 couples who participated in the study were heterosexual. 73% of the women and 59.5% of the men were of European descent. Other ethnicities were Asian, Mediterranean, Caribbean, Arab, and First Nations. For women, age ranged from 27 to 68 ($M = 43.9$, $SD = 9.42$), and 70.3% earned at least a Bachelor's degree. For men, age ranged from 26 to 73 ($M = 45.5$, $SD = 9.89$), and 62.3% earned at least a Bachelor's degree. All couples were married or in a common-law marriage. Couples had an average of about two children ($M = 1.82$, $SD = 0.94$, range: 0–4).

Therapists

Eighteen therapists participated in the study. Each therapist treated one to six couples. Therapists were registered psychologists, Marriage and Family therapists, or advanced doctoral students in clinical psychology. Fifteen therapists were women. The therapists received 30 hours of specialized training in EFT-C related to resolving emotional injuries. To ensure adherence to EFT-C, weekly supervision with video reviews was conducted by Leslie Greenberg, one of the two developers of the treatment model.

Measures and Procedure

Vulnerability experience and perception

At the end of each session, both partners completed a 20-item self-report questionnaire designed to identify and rate the intensity of different emotion-related states they experienced during the session. Each emotional state was rated on a 5-point Likert scale ranging from 1 (“not at all”) to 5 (“very much”). An exploratory factor analysis found three items that loaded highly ($>.40$) on the expression of vulnerability factor: (a) “I expressed my fear of my partner’s disapproval or anger,” (b) “I expressed a need for my partner’s caring/comfort,” and (c) “I expressed my fear of my partner’s distance.” We used the “multilevel reliability” function from the *psych* R package (Revelle, 2018) to compute reliabilities with nested data as outlined in Cranford et al. (2006). The between-person (R_{KF}) and within-person reliabilities (R_C) were .97 and .61, respectively.

In addition, at the end of each session, husbands and wives were asked to complete a questionnaire that assessed their perceptions of their partners’ emotional states during the session. The questionnaire was similar to the one described above; however, the items’ stem now focused on their perceptions of their partners’ emotional experiences (i.e., “My partner. . .”). We again focused on the three items that captured perceptions of partner’s vulnerability: (a) “My partner expressed fear of my disapproval or anger,” (b) “My partner expressed a need for my caring/comfort,” and (c) “My partner expressed his/her fear of my distance.” The between-person (R_{KF}) and within-person reliabilities (R_C) were .97 and .68, respectively.

Injury resolution

At the end of each session, the couples completed an adapted version of the *Unfinished Business Resolution Scale* (UFB-RS; Singh, 1994). The UFB was developed to assess the resolution of unfinished business in relation to the significant other. In the current study, a short, 4-item version was used, comprising four items (e.g., “I feel unable to let go of my unresolved feelings in relation to my partner,” “I feel compassionately understanding of my partner”). Scores of two items were reversed such that higher scores represented greater resolution of the injury. The between-person (R_{KF}) and within-person reliabilities (R_C) were .97 and .70, respectively.

Data Analytic Strategy

The truth and bias model

One particularly appropriate model for simultaneously exploring tracking accuracy (Hypothesis 1), assumed-similarity bias projection bias (Hypothesis 2), and mean-level bias (Hypothesis 3) is the Truth and Bias Model (West & Kenny, 2011). In this model, perceivers’ assessment (termed the *judgment variable*) is regressed onto two variables: (a) the target’s reports (termed the *truth variable*) and (b) the perceiver’s reports (termed the *bias variable*). Specifically, the first parameter estimating the association between the truth variable and the judgment (termed the *truth force*) represents perceivers’ tracking accuracy (related to Hypothesis 1) and the second parameter estimating the association between the bias variable and the judgment (termed the *bias force*) represents perceivers’ assumed-similarity bias (Hypothesis 2). Finally, by centering the judgment, the truth, and the bias variables on the mean of the truth variable, the Truth and Bias Model enables the intercept estimate to represent the *mean-level bias*; that is, the degree to which perceivers overestimate (in cases of positive intercepts) or underestimate (in cases of negative ones) their partners’ reports of vulnerability expression (Hypothesis 3; see West & Kenny, 2011).

The York dataset had a hierarchical structure in which session ratings were nested within couples. Therefore, a 2-level multilevel Truth and Bias Model in which all parameters were treated as random at level 2 was applied.¹ Level-1 residuals within couples were allowed to correlate, and a first-order autoregressive structure was imposed on the within-person residual covariance matrix.

The mixed equation for the Truth and Bias Model was as follows:

$$\begin{aligned} \text{Perceiver's Assessment}_{ijk} = & (\gamma_{00} + u_{0ij}) + (\gamma_{10} + u_{1ij}) + *Targets's Vulnerability_{ijk} \\ & + (\gamma_{20} + u_{2ij}) * Perceiver's Vulnerability_{ijk} + e_{ijk} \end{aligned}$$

where the assessment of perceiver i in couple j on session k was predicted by the average (i.e., fixed effect γ_{00}) directional-bias intercept (representing *mean-level bias*) plus this perceiver's variation from the averaged intercept (i.e., random effect u_{0ij}); the average (γ_{10}) truth-force slope (representing *tracking accuracy*) plus this perceiver's variation from this average (u_{1ij}) multiplied by the target's vulnerability (truth variable) on the k th session; the average (γ_{20}) bias-force slope (representing *assumed-similarity bias*) plus this perceiver's variation from this average (u_{2ij}) multiplied by this perceiver's vulnerability (bias variable) on the k th session; and finally, this perceiver's error term on this particular k th session (e_{ijk}). Note that in this dyadic model, partners served as both perceivers and as targets, so that the analyses were conducted under the framework of the Actor Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006). Using two dummy codes, we estimated separate parameters for the male and female partners (i.e., using the two-intercept model; see Bolger & Laurenceau, 2013).

Response surface analysis

To test Hypothesis 4, concerning the association between partners' (in)accuracy in perceiving their partners' vulnerability and change in resolution, we utilized the Polynomial Regression with Response Surface Analysis (*PRRSA*; Edwards & Parry, 1993). In this method, ratings from both partners serve as separate predictors, thus overcoming several limitations of traditional methods when using indices of accuracy (e.g., difference scores) as predictors (for a review, see Edwards & Parry, 1993). In the current study, perceivers' levels of resolution reported at the end of each session served as the outcome which was regressed on (a) the target's vulnerability, (b) the perceiver's assessment, (c) a first quadratic term constructed by squaring the target's vulnerability, (d) an interaction term constructed by multiplying the target's vulnerability by the perceiver's assessment, and (e) a second quadratic term constructed by squaring the perceiver's assessment. Prior to constructing these terms, the targets' vulnerability and perceivers' assessment variables were person-mean centered (Atzil-Slonim et al., 2018; Shanock, Baran, Gentry, Pattison, & Heggstad, 2010). Specifically, we controlled for resolution levels reported in the previous session, which allowed us to interpret the outcome as a change score.

The mixed equation for the *PRRSA* model, in which the intercept, the main effects of perceivers' and targets' reports, and the lagged outcome were treated as random at level 2,² was as follows:

¹Running a model in which variables were treated as random at level 3 (i.e., the level of the therapists) yielded estimation problems; i.e., the variability of five out of six variables at level-3 was estimated as zero, which was probably due to the small number of nested level-2 units (i.e., couples) within each level-3 unit (therapist): an average of 2.05 couples per therapist).

²Estimating the cross-product and quadratic terms as random at Level 2 did not improve the model fit $\chi^2(6) = 3.8, p = .704$.

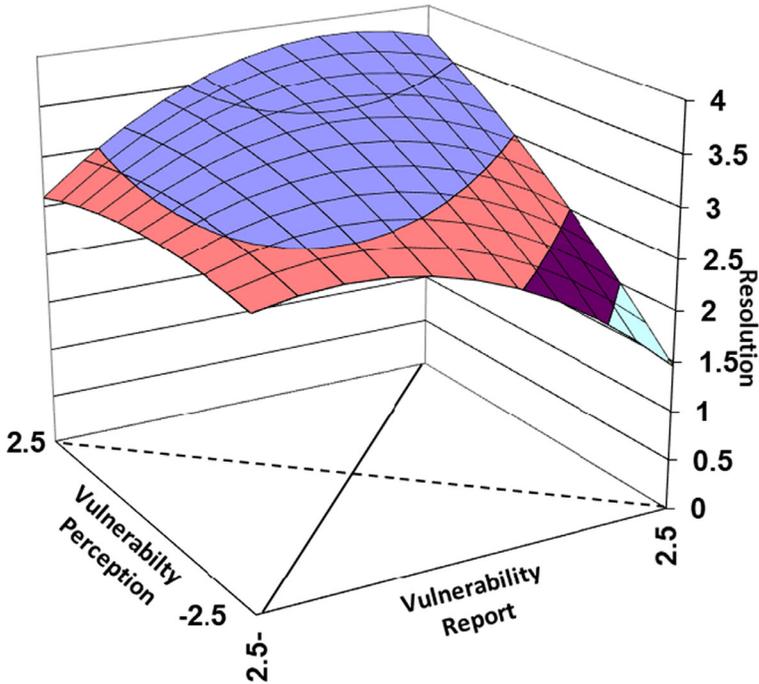


FIGURE 1. Response Surface Plot for the Effects of Accuracy in Vulnerability Perception on Partners' Levels of Resolution.

$$\begin{aligned}
 \text{Perceiver's Resolution}_{ijk} = & (\gamma_{00} + u_{0ij}) \\
 & + (\gamma_{10} + u_{1ij}) * \text{Target's Vulnerability}_{ijk} \\
 & + (\gamma_{20} + u_{2ij}) * \text{Perceiver's Assessment}_{ijk} \\
 & + (\gamma_{30}) * \text{Target's Vulnerability}_{ijk}^2 \\
 & + (\gamma_{40}) * \text{Target's Vulnerability}_{ijk} * \text{Perceiver's Assessment}_{ijk} \\
 & + (\gamma_{50}) * \text{Perceiver's Assessment}_{ijk}^2 \\
 & + (\gamma_{60}) * \text{Perceiver's Resolution}_{ijk-1} + e_{ijk}.
 \end{aligned}$$

In PRRSA, testing the association between (in)accuracy and outcome involves a second step in which the fixed coefficients from the above model are used to calculate four parameters for the response surface (Edwards & Parry, 1993; See Figure 1): (a) the linear slope of the accuracy line (when perceiver's assessments = target's reports; termed the a_1 parameter), (b) the curvature along the line of accuracy (a_2), (c) the linear slope of the inaccuracy line (when perceivers' assessments = -1 *target's reports; a_3), and (d) the curvature along the inaccuracy line (a_4).

In our application of this model, the a_1 parameter indicates whether levels of *accurately* perceived vulnerability were associated with levels of resolution, whereas the a_2 indicates whether this association shows a pattern of nonlinearity (e.g., the association levels off at certain point). The a_3 indicates whether underestimation (vs. overestimation) is associated with lower levels of resolution, whereas the a_4 indicates whether a deviation of any sort (points farther away from the line of accuracy) is associated with lower levels of resolution.

RESULTS

Table 1 reports the means, standard deviation, and the correlation matrix for the variables.

Truth and Bias Model

In the first stage, we ran the model with separate estimates for women and men. However, since none of the gender differences was significant (see Appendix A), we opted to run a model with data pooled across genders. The results of this model are presented in Table 2. As shown, consistent with Hypothesis 1, partners showed significant tracking accuracy; that is, they accurately perceived changes in their partners' vulnerability expression. In addition, in line with Hypothesis 2, couples demonstrated significant assumed-similarity bias; that is, they presumed similarity between their own vulnerability expression and their partners' vulnerability expression. Finally, consistent with Hypothesis 3, couples showed significant negative mean-level bias; that is, they underestimated their partners' vulnerability expression.³

Response Surface Analysis

We initially ran a model with separate estimates for women and men. However, we again found no significant gender difference in any of the RSA parameters (see Appendix B). Thus, we opted to run a model with data pooled across genders. Table 3 presents the results of the PRSA model, which was used to test Hypothesis 4 (concerning the association between accuracy and resolution). Figure 1 provides a graphical representation of the response surface. The solid line represents the line of accuracy (when perceivers' assessment = targets' reports), denoting the levels of resolution when perceivers were accurate in their assessments along a continuum ranging from low levels of vulnerability (the closest corner) to high levels of vulnerability (the farthest corner). As Table 3 shows, the a_1 parameter (estimating the linear association along this line) was significant, indicating that perceivers reported higher levels of resolution when they accurately assessed their partners' vulnerability expression *as high* than when they accurately assessed their partners' vulnerability expression *as low*. The a_2 parameter (estimating the quadratic association along this line) was not significant.

The dashed line in Figure 1 represents the line of inaccuracy (when perceivers' assessment \neq targets' reports), denoting the levels of resolution when perceivers were

TABLE 1
Summary of Means, SDs, and Correlations

Measure	Vulnerability Self	Vulnerability Perception	Resolution	<i>M</i>	<i>SD</i>
Vulnerability Self	—	.29*	.15*	2.93	1.15
Vulnerability Perception	.29*	—	.28*	2.71	1.22
Resolution	.15*	.28*	—	3.24	.97
<i>M</i>	2.93	2.71	3.24		
<i>SD</i>	1.15	1.22	.97		

* $p < .01$.

³When testing the Truth and Bias Model for each gender separately, women did not have a significant negative mean-level bias. However, when testing the data pooled across gender, the results were significant.

TABLE 2
Results of the Truth and Bias Model

	Est. (SE)	Stad. Est	p
Mean-level bias	-0.21 (0.08)	-0.15 (0.05)	.01
Tracking accuracy	0.19 (0.04)	0.10 (0.02)	<.001
Projection bias	0.21 (0.05)	0.22 (0.05)	<.001

Note. The standardized effect sizes for the mean-level bias were calculated by dividing the unstandardized estimate by the *SD* of perceivers' assessment (see Nezelek, 2012); they thus should be regarded as an approximation of Cohen's *d* effect size. For the *tracking-accuracy* and *projection-bias* parameters, standardized effect sizes were calculated by standardizing the raw variables and rerunning the models; they thus should be regarded as an approximation of standardized betas (see Baldwin, Imel, Braithwaite, & Atkins, 2014).

TABLE 3
Results of the Response Surface Analyses

Effect	Est. (SE)	p
Intercept	3.36 (0.08)	<.0001
Target's Vul.	-0.02 (0.03)	.469
Perceiver's Ass.	0.20 (0.04)	<.0001
Target's Vul. ²	-0.09 (0.02)	.001
Interaction	0.09 (0.03)	.006
Perceiver's Ass. ²	-0.02 (0.02)	.260
Response surface parameters		
a ₁	0.18 (0.04)	.000
a ₂	-0.02 (0.04)	.603
a ₃	-0.22 (0.05)	<.0001
a ₄	-0.21 (0.06)	.000

Note. a₁ = the linear slope of the line of congruence; a₂ = the curvature along the line of congruence; a₃ = the linear slope of the line of incongruence; a₄ = the curvature along the line of incongruence; Ass = Assessment; Vul = Vulnerability.

inaccurate in their assessments along a continuum ranging *underestimation* (the right corner) to *overestimation* (the left corner). As Table 3 shows, both the a₃ parameter (estimating the linear association along this line) and the a₄ parameter (estimating the quadratic association along this line) were significant. Together, these parameters indicate that consistent with Hypothesis 4, inaccuracy regarding the targets' vulnerability (significant a₄) was associated with lower levels of resolution, though underestimation was more detrimental than overestimation (significant a₃).

DISCUSSION

Partners' ability to access and express their own vulnerability is the cornerstone of EFT-C (Greenberg & Goldman, 2008; Greenberg & Johnson, 1986, 1988). Vulnerability is indeed related to salubrious therapeutic outcomes, including greater levels of conflict resolution, more responsiveness, and a higher degree of relational trust (e.g., McKinnon & Greenberg, 2017, 2013; Woldarsky Meneses & Greenberg, 2011; Woldarsky Meneses & Greenberg, 2014). In theory, a central path to promoting vulnerability involves the facilitation of partners' emotional awareness; that is, helping partners to understand their own as well as their partners' internal (often hidden) emotional processes (Greenberg &

Goldman, 2008). The main aim of the current study was to test this theoretical postulation. Specifically, the extant literature has mainly focused on the therapeutic role of vulnerability *expression*. By utilizing session-by-session data, the current study sought to go one step further in clarifying the dyadic interplay between one partner's expression of vulnerability and the other partner's *perception* of vulnerability.

Consistent with models of interpersonal perception in romantic relationships (Fletcher & Kerr, 2010; Lemay & Clark, 2015), the results suggested that partners' perceptions in therapy were driven by both accuracy and bias. In line with Hypothesis 1, partners displayed significant tracking accuracy, that is, the perceptions of their partners' vulnerability positively covaried with their partner's vulnerability expressions over the course of treatment. This finding illustrates that individuals are indeed able to recognize when their partners allow themselves to exhibit more primary, vulnerable emotions such as loneliness, anxiety, and shame. Notably, this process is at the core of restructuring how partners perceive and experience one another.

At the same time, consistent with Hypothesis 2, partners also demonstrated significant assumed-similarity bias; that is, their perceptions of their partner's vulnerability expression were also tied to their own experience of vulnerability. These biased perceptions can function as a double-edged sword; individuals who find it hard to open up and reveal their own vulnerability may find it hard to recognize their partner as being vulnerable, but rather be biased to assume that their partner struggles with similar difficulties. Therefore, they might miss opportunities to perceive new expressions of vulnerability by their partner. This process can result in a closed dyadic system that prevents beneficial changes from evolving. However, assumed-similarity bias can also result in a positive illusion, namely, perceiving the partner as reciprocating one's own vulnerability expression. Indeed, motivations such as the desire to bond can positively bias and shape one's perception of the partner (Lemay & Clark, 2015). Thus, someone with a strong desire to stay in a relationship could perceive their partner as more vulnerable than their partner currently is. It would be fruitful in future studies to attempt to identify when assumed-similarity bias functions to inhibit vs. facilitate therapeutic change. It may be the case, for example, that when couples begin to restore relational trust, they become biased to perceive their partners as mutually vulnerable, thus setting in motion a positive dyadic cycle.

Whereas the first two hypotheses were concerned with the two factors responsible for *fluctuations* in partners' perceptions from session to session, the third hypothesis focused on the average *level* of difference in partners' reports. Consistent with our prediction, partners demonstrated negative mean-level bias; that is, they tended to underestimate the *level* of their partner's vulnerability. One possible explanation for this finding may be that among couples with a relational history of emotional injury, it is hard to fully trust even authentic expressions of partner's vulnerability. Such mistrust tends to dictate partners' maladaptive relational positions and perceptions (e.g., one partner cast as the pursuer and the other as the withdrawer). In other words, recognizing vulnerability entails moving from a familiar, though maladaptive relational position, and thus involves a great deal of emotional risk. The results of the current study suggest that while partners perceive session-to-session *fluctuations* in their partners' vulnerability, they tend to underestimate the *level* of change. This may reflect an attempt on their part to regulate the tension between the hope for connection and the risk of being exposed/rejected (for similar ideas see Overall, Fletcher, & Kenny, 2012).

The results for the first three hypotheses provide a rich picture of how partners' vulnerability perceptions are forged in therapeutic sessions. The fourth and final hypothesis was concerned with clarifying the role of accuracy and bias in the process of injury resolution. Consistent with the prediction, when partners were accurate in perceiving their partners as vulnerable, they reported greater levels of resolution. In contrast, and again in line

with our prediction, when partners misperceived their partners' vulnerability, they experienced lower levels of resolution. Importantly, consistent with our hypothesis, underestimation of partners' vulnerability was more strongly associated with lower levels of resolution than overestimation.

These findings appear to highlight the paramount role of accurately recognizing expressions of vulnerability. As noted above, allowing oneself to express vulnerability in the presence of a yet to be trusted partner often takes a great deal of courage. Thus, failing to identify such expressions can be detrimental both for the partner who risked expressing vulnerability which then went unrecognized, as well as for the partner who missed the opportunity to meet the other on a deeper, more authentic and vulnerable level. Furthermore, a failure to accurately perceive the partner's vulnerability may make it less likely that one will provide a compassionate response. Indeed, seeing another in pain elicits compassion, an affective state which propels prosocial and caring behaviors (Goetz, Keltner, & Simon-Thomas, 2010). In fact, there is some strong evidence to suggest that several physiological processes have evolved to support the motivation to ameliorate the suffering of another individual (see Goetz et al., 2010; Stellar, Cohen, Oveis, & Keltner, 2015). Therefore, in the context of couple therapy, accurately recognizing the partner's vulnerability and pain seems to play a key role in the change process, because it catalyzes responsive reactions in the partner witnessing the emotional pain (Mikulincer, Shaver, Gillath, & Nitzberg, 2005).

Limitations and Future Directions

The current study focused on the interplay between vulnerability expressions and perceptions. As noted above, however, the EFT-C theory posits that the process of resolution and relational transformation comprises two sequential building blocks: vulnerability, followed by responsiveness (Greenberg & Goldman, 2008). It is thus essential to examine whether the link identified in the current study between accurate vulnerability perceptions and greater resolution is mediated through higher levels of responsiveness. Interestingly, the perceptions of partners as responsive, that is, conveying understanding, validation, and care, are also shaped and exert their effects through accuracy and bias (Lemay & Clark, 2015). For example, in a series of studies, Lemay Clark and Feeney (2007) found that people manifested both accuracy and assumed-similarity bias in perceiving their partners' responsiveness, though the bias effect was about three times stronger than the accuracy effect. Furthermore, the assumed-similarity bias functioned to promote perceivers' satisfaction in their relationships. Thus, to better grasp how vulnerability and responsiveness work in tandem to alter the relational system, future studies could consider the interplay between accuracy and bias in both of these processes.

Most of the couples who participated in the study were comprised of a male-offender partner and a female-injured partner. This precluded the possibility of distinguishing between gender and role differences. To overcome this limitation, future studies could expand and diversify the samples. It is interesting, however, that in practice, we found negligible gender differences in the study's results. These findings are in line with the results of a meta-analysis documenting very minimal gender differences in the accuracy and bias of couples' judgment in romantic relationships (Fletcher & Kerr, 2010). They are also consistent with other studies that have revealed limited gender/role differences in the context of EFT-C (e.g., Johnson & Talitman, 1997; McKinnon & Greenberg, 2017). One possible interpretation for these findings may be that although partners often enter therapy with identified opposing positions (e.g., one is the offender the other is the injured), during the process of therapy, this firm distinction dissolves to some extent. This process allows couples to reconstruct and broaden their relational narrative, making room for both partners to access and express

their vulnerability. The current results may further suggest that in order for the resolution process to take place, both partners' vulnerability needs to be accurately recognized, regardless of the initial position they held at the onset of therapy.

Another related limitation of the current study is that the sample was neither very culturally diverse nor sufficiently powered to test whether cultural background moderates the obtained results. Importantly, cultural differences are associated with how partners communicate with each other (e.g., Hiew, Halford, van de Vijver, & Liu, 2015), as well as alter the impact of emotional experience on partners' well-being (e.g., Schoebi, Wang, Ababkov, & Perrez, 2010). It is thus possible that couples from various cultural backgrounds also communicate and react to vulnerability differently. Therefore, if therapists should help partners recognize each other's expressions of vulnerability, it is important for future studies to test the potential ways in which cultural background shapes partners' vulnerability communication—for example, which verbal and nonverbal cues they use to recognize their partners' vulnerability. Such data may help therapists to expand their multicultural competence – the capacity to work effectively with culturally diverse groups (Sue, Arredondo, & McDavis, 1992; Tao, Owen, Pace & Imel, 2015).

Finally, in line with most studies in the field, we used targets' reports of their vulnerability as the benchmark for evaluating perceivers' accuracy or bias (Fletcher & Kerr, 2010). While these reports could reflect partners' actual experience, they are prone to multiple self-serving biases, such as self-enhancement bias (e.g., Dufner, Gebauer, Sedikides, & Denissen, 2019). To address this limitation, future studies should use external raters to provide assessments of partners' vulnerability expressions during sessions. Such ratings would serve as a more objective benchmark to gauge targets' and perceivers' ratings. Relatedly, future studies could incorporate therapists' assessments and compare them to partners' assessments. In theory, therapists' accurate perceptions of partners' vulnerability, or any other emotional state, are crucial for selecting the appropriate interventions and navigating the therapeutic process constructively (for similar ideas, see Atzil-Slonim et al., 2019; Bar-Kalifa et al., 2016).

Summary and Possible Clinical implications

These limitations notwithstanding the results of the current study contribute to a better understanding of emotional processes in EFT-C in several important ways. By recognizing the central role of vulnerability in couple therapy, the current study is the first, to our knowledge, to begin elucidating the factors (i.e., partner's actual experience, the perceiver's experience) driving partners' perceptions of each other's vulnerability in therapy. Furthermore, premised on the idea that partners' perceptions of each other shape their experience, we sought to understand the role of accuracy in the process of emotional injury resolution. As expected, there was a positive association between partners' accurate perceptions of vulnerability and higher levels of resolution. In a broader sense, this study aligns with the growing body of research utilizing session-by-session reports which shows that more accurate understanding leads to better treatment outcome (Atzil-Slonim et al., 2019; Atzil-Slonim et al., 2018; Bar-Kalifa et al., 2016). However, whereas this literature has mainly focused on accuracy in therapist–client dyads (e.g., the extent to which therapists perceive their clients' emotions accurately), the current findings illustrated the critical role of such accuracy in dyads of romantic partners in the context of couple therapy.

From a clinical point of view, we interpret the findings as suggesting that when working with partners, therapists should attend to how partners perceive each other's expressions of vulnerability. Especially during the early stages of therapy, partners deal with a whole host of unresolved hurts, which often prevent them from perceiving their partners' vulnerability expressions. By paying attention to how partners perceive each other,

therapists will be able to help clients identify misunderstandings and start to explore the emotional processes that limit partners' ability to see each other's more vulnerable side. It is often frightening for partners to give up their old relational positions and start viewing their partners' experience from a new angle. By helping partners to process their emotional reactions to each other and how these shape their perceptions, therapists may provide couples with scaffolding for restructuring their emotional reactions and perceptions of each other.

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APPENDIX A

TABLE A1

Results of the Truth and Bias Model With Gender Differences

	Men			Women			Gender Differences	
	Est. (SE)	Std. Est	p	Est. (SE)	Std. Est	p	Est. (SE)	p
Mean-level bias	-0.38 (0.15)	-0.269	.017	-0.10 (0.16)	-0.069	.555	-0.25 (0.20)	.22
Tracking accuracy	0.17 (0.06)	0.096	.008	0.19 (0.06)	0.105	.004	-0.01 (0.08)	.89
Projection bias	0.20 (0.06)	0.211	.002	0.28 (0.07)	0.300	<.001	-0.08 (0.08)	.34

APPENDIX B

TABLE B1

Results of the Response Surface Analyses With Gender Differences

	Men		Women		Gender Differences	
	Est. (SE)	p	Est. (SE)	p	Est. (SE)	p
a ₁	0.12 (0.07)	.093	0.26 (0.06)	<.001	-0.13 (0.09)	.135
a ₂	-0.04 (0.06)	.518	0.04 (0.06)	.511	0.01 (0.08)	.854
a ₃	-0.18 (0.08)	.025	-0.33 (0.07)	<.001	0.08 (0.09)	.406
a ₄	-0.20 (0.09)	.025	-0.17 (0.09)	.060	0.03 (0.12)	.777

Note. a₁ = the linear slope of the line of congruence; a₂ = the curvature along the line of congruence; a₃ = the linear slope of the line of incongruence; a₄ = the curvature along the line of incongruence; Ass = assessment; Vul = vulnerability.