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Mental Contrasting and Problem-Solving in Romantic Relationships

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Table of Contents

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All study data, analysis scripts, material, and preregistrations are available at https://osf.io/y84un/?view_only=119bd44344cf4a298a3c2d1cef49ecc0. Portions of this dissertation are based on two previously published studies. Studies 1 and 2 were published by Sage in the Journal of Social and Personal Relationships (Jöhnk et al., 2025) under a Creative Commons license (CC BY). As the main author and copyright holder of that publication, I have the right to reuse and adapt the respective content.

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Abstract

Mental contrasting, a self-regulation strategy, promotes behavior change. We hypothesized that mental contrasting enhances problem-solving in romantic couples, and we explored whether this effect depends on the perceived importance and solvability of the problem. In Experiment 1 (N = 274), among individuals in predominantly satisfied relationships, mental contrasting (vs. indulging) improved the perceived resolution of solvable problems—except for problems of highest importance, which we found to be more severe. In Experiment 2 (N = 270), among individuals in less satisfied relationships, mental contrasting (vs. indulging and a concentration task) increased mental engagement with more severe problems. In Experiment 3 (N = 105 couples), when both partners in predominantly satisfied relationships participated, mental contrasting (vs. indulging) improved the perceived problem resolution for problems of highest importance. Additionally, mental contrasting increased men's self-disclosure, promoted acceptance in response to self-disclosure, and made women more selective in suggesting solutions. Overall, when used individually, mental contrasting fosters resolution of relatively solvable, less severe problems within 2 weeks. For the most important, often more severe problems, mental contrasting elicits mental engagement, indicating a commitment to resolve the problem. When used by both partners, mental contrasting fosters resolution of even the most important problems and facilitates openness between partners. Mental contrasting could be a valuable tool in relationship interventions and prevention programs for individuals and couples.

Keywords: romantic relationships, mental contrasting, problem-solving, conflict resolution, digital intervention

Mental Contrasting and Problem-Solving in Romantic Relationships

Most romantic couples face problems. These problems can range from disagreements about the chores, to dysfunctional communication, or sex-related issues (Meyer & Sledge, 2022). The way couples handle such problems plays a crucial role in determining both the quality and longevity of their relationship. Successfully managing problems fosters greater satisfaction, happiness, and intimacy (Gesell et al., 2020; Overall & McNulty, 2017). Ineffectively managing problems results in distress, frustration, and an increased risk of relationship dissolution (Baker et al., 2013; Fincham, 2003; Robles et al., 2014).

It is well-established that better self-regulation generally helps people recognize and resolve relationship problems (e.g., DeWall et al., 2008; Fitzsimons & Finkel, 2011; Luchies et al., 2011). However, research on how specific self-regulation strategies contribute to relationship problem-solving remains limited. Developing brief, self-guided interventions based on self-regulation strategies could offer cost- and time-efficient additions to traditional couple counseling or therapy programs (review by Bradbury & Bodenmann, 2020). Such interventions would be particularly beneficial for romantic couples who hesitate to seek counseling or therapy due to financial or time constraints (Schofield et al., 2015; Trillingsgaard et al., 2019). One promising self-regulation strategy is mental contrasting, which is both brief and self-guided while allowing full adaptability to individuals' unique desired futures and obstacles (Oettingen, 2012; Oettingen & Sevincer, 2018).

Mental contrasting involves identifying and vividly imagining a desired future (e.g., having a tidy home, communicating constructively) followed by the main inner obstacle that prevents reaching the desired future (e.g., laziness, anger). Rather than prescribing specific actions, mental contrasting enables individuals to discover realistic approaches uniquely suited to their obstacles. Mental contrasting has demonstrated particular effectiveness for highly important wishes, enabling individuals to actively overcome surmountable obstacles

while disengaging from insurmountable obstacles (Oettingen, 2012; Oettingen & Sevincer, 2018). However, no research to date has directly investigated mental contrasting's effect on resolving ongoing relationship problems in romantic couples.

In this research, we investigated whether mental contrasting could support romantic partners in resolving ongoing relationship problems. Specifically, we examined whether mental contrasting improves problem-solving outcomes (e.g., perceived problem resolution, problem-solving behavior) and whether these effects depend on two factors: the perceived importance of resolving the problem and the perceived solvability of the problem.

Relationship Problem-Solving

Conflicting needs, goals, opinions, or interests do often cause disagreements, tension, or hostility between romantic partners (Randall & Bodenmann, 2009), which we broadly refer to as *relationship problems*. Common topics of said problems include communication, parenting, finances, household chores, and personal or partner habits (Meyer & Sledge, 2022). Problems can stem from the actions of both partners (e.g., miscommunication), one partner (e.g., neglecting assigned chores), or external factors (e.g., issues with the in-laws; Baker & McNulty, 2020). This research focuses on ongoing relationship problems—those that have caused disagreements between partners but remain unresolved.

Resolving ongoing relationship problems is challenging, and some issues may be entirely unresolvable (Gottman & Gottman, 2008). However, even unresolvable problems, such as a chronic illness of a child, could be better managed to minimize the problem's impact on the relationship. Therefore, we refer to *problem resolution* as both resolving a problem and minimizing its severity. Various theories and empirical studies have addressed the cognitive processes and abilities needed for resolving relationship problems and have disentangled the different phases of resolving relationship problems (e.g., Bransford & Stein, 1993; D'Zurilla & Goldfried, 1971; Epstein & Baucom, 2002; J. R. Hayes, 1989; Jacobson &

Margolin, 1979; Zimmerman & Campillo, 2003). These theories have been integrated into the Relationship Problem Solving Model (Baker & McNulty, 2020), which outlines four stages: (1) recognizing a problem, (2) identifying solutions, (3) implementing a solution, and (4) reappraising the problem.

Relationship Problem-Solving Model

Stage 1 involves identifying the problem and understanding its sources (Baker & McNulty, 2020). For instance, when partners face challenges with time management, they must first recognize that poor time management undermines their ability to enjoy meaningful quality time together. Additionally, they need to identify their lack of planning as a key factor contributing to missed opportunities for shared moments of connection.

Stage 2 focuses on identifying and evaluating solutions (Baker & McNulty, 2020). For instance, a couple frustrated by dirty dishes might wish to maintain a cleaner household. Once they understand that cleaning dishes immediately after use would reduce frustration and improve their shared living environment, they can identify tailored solutions (e.g., dividing responsibilities or setting reminders).

Stage 3 involves implementing these solutions. Generating solutions does not automatically lead to their implementation (i.e., intention-behavior gap; Sheeran & Webb, 2016). Key challenges include anticipating obstacles to implementing solutions and enacting solution strategies (Baker & McNulty, 2020). For example, a couple struggling with communication issues might agree to express their feelings openly to avoid misunderstandings. The challenge lies in anticipating obstacles such as discomfort with vulnerability or fear of conflict and following through with open and honest conversations despite these difficulties. In Stage 4, the couple reassesses the problem and evaluates whether the solution strategies were successfully implemented and whether they resolved or mitigated the problem.

Regardless of the stage, the effectiveness of problem-solving behaviors depends on various contextual factors, such as the problem's severity and solvability (Baker & McNulty, 2020; Overall & McNulty, 2017). Approaches that generally benefit a relationship (e.g., humor, emphasizing positive aspects of the relationship) may help maintain momentary satisfaction but could also hinder tackling pressing yet solvable issues over time (McNulty, 2010; Overall et al., 2010). Conversely, approaches that often harm a relationship (e.g., expressing anger, demanding change) might highlight the issue's severity and stimulate problem-solving, especially for couples with good problem-solving skills (McNulty & Karney, 2004; McNulty & Russell, 2010). Thus, there is no universal approach to resolving relationship problems. Each problem requires a tailored approach. A self-regulation strategy that allows people to identify approaches tailored to their unique challenges is mental contrasting (Oettingen, 2012; Oettingen et al., 2001).

Mental Contrasting

Mental contrasting is a self-regulation technique that facilitates behavior change through cognitive and motivational processes (Oettingen, 2012; Oettingen & Sevincer, 2018). This strategy involves identifying a desirable yet attainable wish, identifying and vividly imagining the most positive outcome of achieving this wish, and then identifying and vividly imagining the main inner obstacle that currently prevents its realization. Activating the expectation of successfully reaching the desired future, mental contrasting helps individuals devise realistic strategies to overcome the main obstacle. If the obstacle is deemed surmountable, mental contrasting fosters strong goal-directed commitment (Oettingen et al., 2009); if the obstacle is insurmountable, it encourages disengagement, thus avoiding continued frustration (Oettingen et al., 2016).

Furthermore, if the obstacle is deemed surmountable, mental contrasting strengthens implicit associations between the desired future and the obstacle, as well as between the

obstacle and the behavior necessary to overcome the obstacle. That is, the mental representation of the desired future nonconsciously activates the representation of the obstacle, and facing the obstacle nonconsciously activates goal-directed behavior (A. Kappes et al., 2012; A. Kappes & Oettingen, 2014). For instance, when people think about the happy ending to an interpersonal problem, they associate this happy ending with current feelings, attitudes, or habits that prevent this happy ending from coming about. Also, when people are confronted with said feelings, attitudes, or habits, they will initiate goal-directed responses in an automatic fashion (e.g., fast and without cognitive effort, A. Kappes et al., 2012).

Mental contrasting is one way of thinking about the future as part of the Fantasy Realization Theory (Oettingen, 1999), which also includes three other modes of future thinking: indulging (imagining solely the desired future), dwelling (imagining solely the current reality), and reverse contrasting (imagining the current reality first, followed by the desired future). In these modes, the present reality is not seen as an obstacle to the desired future. Thus, these modes do not facilitate finding realistic approaches to overcome the obstacle. The effectiveness of mental contrasting compared to these other modes has been demonstrated across various life challenges, such as time management, physical activity, and emotion regulation. This holds true for both measured and experimentally induced mental contrasting, as well as when it is taught as a self-regulatory skill (Oettingen, 2012; Oettingen & Sevincer, 2018).

Mental Contrasting and Problem-Solving

Mental contrasting could be beneficial throughout the first three stages of relationship problem-solving: (1) identifying the problem and its sources, (2) generating and evaluating solutions, and (3) implementing solutions. In Stage 1, by confronting the inner obstacle preventing problem resolution, individuals may better identify and understand the problem's

source. For example, confronting anger as an obstacle may help individuals see how it impedes constructive communication and identify the anger's causes.

In Stage 2, mental contrasting can help identify realistic strategies tailored to individual obstacles (Oettingen et al., 2001). This process involves considering the likelihood that their behavior will lead to the desired outcome. For instance, romantic partners may only attempt reconciliation when the chances of success are high, avoiding futile and potentially damaging efforts when chances of success are low (Schrage et al., 2020).

In Stage 3, mental contrasting aids in implementing solution strategies. When an obstacle is perceived as surmountable, mental contrasting encourages earlier and more persistent goal-directed behavior (Oettingen et al., 2001). Conversely, when an obstacle is insurmountable, mental contrasting helps individuals let go of trying to overcome the obstacle (Oettingen, 1999; Oettingen et al., 2001). We argue that both overcoming surmountable obstacles and accepting insurmountable ones contribute to effective problem resolution. For example, overcoming laziness to wash dishes can bring relief, while accepting the inability to do so after a long day and communicating this to a partner can prevent frustration. In sum, the overarching hypothesis of this research is that mental contrasting improves problem-solving in romantic couples.

Perceptions of Importance and Solvability

The way partners resolve their problems is further influenced by their perceptions of how important it is to resolve a problem and how solvable they think the problem is. Partners invest more effort in resolving problems they consider important rather than unimportant (Bandura, 2001; Overall et al., 2006). Additionally, partners tend to approach problems more constructively (e.g., showing less withdrawal and ruminating less) when they believe the problems are solvable rather than unsolvable (Johnson & Roloff, 1998; Murray et al., 1996; Roese & Sherman, 2007). Similarly, the efficacy of mental contrasting in triggering problem-

solving activities depends on the perceived importance and solvability of the problem (Oettingen, 2000; Schrage et al., 2020). *Perceived importance* relates to the concept of incentive value, while *perceived solvability* relates to the concept of success expectations (see expectancy-value theory; Atkinson, 1957; McClelland, 1985). Deeming a problem's resolution as important is essential for mental contrasting to manifest its expectancy-dependent effects (Oettingen, 2000, 2012; Oettingen & Sevincer, 2018). This means that only for important problems should individuals engage in problem-solving if the problem is perceived as solvable and let go of futile efforts if the problem is perceived as unsolvable. Therefore, we will also explore whether mental contrasting's effects on problem-solving outcomes are further moderated by perceived importance and solvability.

The Present Research

Mental contrasting has shown promising application in interpersonal concerns (e.g., "settle an argument with my sister"; Oettingen et al., 2001). In romantic relationships, mental contrasting has been shown to regulate conciliatory behavior and to foster effective reconciliation (Schrage et al., 2020). Together with implementation intentions, mental contrasting reduced insecurity-driven behavior of romantic partners and increased their relationship commitment (Houssais et al., 2013).

In the present research, we expand on existing studies in various ways. First, instead of focusing on reconciliation attempts and insecurity-driven actions (Houssais et al., 2013; Schrage et al., 2020), this research examines the impact of mental contrasting on the entire process of relationship problem-solving in romantic couples. This includes problem-solving behavior immediately after using mental contrasting, continued engagement with the problem, and perceived problem resolution after partners have had time to resolve the problem. Second, relationship research often neglects less satisfied couples, as more satisfied couples are more likely to participate in studies voluntarily (Starks et al., 2015; Sullivan &

Bradbury, 1997). Thus, we will expand the use of mental contrasting to less satisfied couples as well as satisfied couples. Third, instead of allowing only one partner of a couple to use mental contrasting geared towards an idiosyncratic wish, we will allow both partners of a romantic couple to use mental contrasting geared towards the mutual wish of wanting to resolve a relationship problem. Lastly, while previous mental contrasting studies relied mostly on self-reported relationship behavior (e.g., self-reported reconciliation; Schrage et al., 2020), we will systematically observe romantic partners' problem-solving behavior, illuminating micro-level behavior sequences between partners.

Overview of the Studies

In three pre-registered studies, we investigated the effect of mental contrasting on relationship problem-solving.[1] In Study 1, we investigated whether mental contrasting improves the perceived problem resolution of individuals who were currently in a romantic relationship. We let participants choose an ongoing problem that had been the source of major disagreements in their relationship and had them indicate the perceived importance of resolving the problem and the perceived solvability of the problem. Then, we taught them the mental contrasting strategy (vs. indulging and dwelling) geared towards the resolution of the selected problem. Two weeks later, we assessed the degree to which the problem had been resolved. We predicted that mental contrasting participants would resolve their problems more effectively than those in the indulging and dwelling condition.

In Study 2, we investigated whether mental contrasting increases the mental engagement with relationship problems when a quick resolution is unfeasible, focusing on participants who were less satisfied with their relationship. The participants again selected an ongoing relationship problem, indicated their perceived importance and solvability, and were

[1]Here, we will only report measures relevant to the current research questions. The full study material, data files, analysis scripts, and pre-registrations of all three studies are available at https://osf.io/y84un/?view_only=119bd44344cf4a298a3c2d1cef49ecc0.

then taught mental contrasting (vs. indulging and concentration task) geared towards resolving that problem. We measured both the degree to which the problem had been resolved after 2 weeks, but we also measured the mental engagement with the problem over the 2 weeks. We expected mental contrasting participants to be more mentally engaged with problem-solving than those in the indulging and concentration task condition.

In Study 3, we investigated whether mental contrasting improves the perceived problem resolution and the problem-solving behavior of romantic couples. Thus, we expanded the use of mental contrasting from individuals to couples by recruiting both partners of romantic couples. The couples identified a problem that they both would like to resolve, then they both indicated the perceived importance and perceived solvability of that problem, and they would then individually work through a mental contrasting (vs. indulging) exercise. Right after the exercise, we asked the partners to discuss the problem and try to find a solution. We recorded this discussion and coded the partners' problem-solving behavior. We measured both the rate of displaying speaker skills (i.e., self-disclosure and solution suggestions) as well as the rate of displaying listener skills (i.e., reacting to the partner's self-disclosure with acceptance) relevant to relationship problem-solving (Hahlweg & Kaiser, 2018). Two weeks later, we assessed the degree to which the problem had been resolved. We predicted that mental contrasting (vs. indulging) would increase the rate at which speaker and listener skills are displayed and improve problem resolution after 2 weeks.

Study 1: Mental Contrasting and Problem Resolution in Predominantly Satisfied Relationships

In Study 1, we recruited individuals that are currently in a romantic relationship. The participants selected a problem that they would like to work on for the upcoming 2 weeks. We expected that allowing participants to choose a problem themselves should result in overall high importance and high solvability of the problems. Furthermore, allowing

participants to choose real-life problems ensures high ecological validity of our findings. After selecting the problem, participants indicated the perceived baseline problem resolution, the perceived importance of resolving the problem, and the perceived solvability of the problem. Then, we randomly assigned the participants to one of three experimental conditions: mental contrasting, indulging, or dwelling. After 2 weeks (T2), we reassessed problem resolution.

Mental contrasting should allow participants to find realistic ways of dealing with their selected relationship problem. Thus, we expected mental contrasting (vs. indulging and dwelling) to improve the perceived problem resolution after 2 weeks. Although allowing participants to work on a problem of their choosing should result in an overall high importance and solvability of the problems, there might still be considerable variation in importance and solvability. As mental contrasting leads to different engagement depending on the success expectations (here solvability) and requires a high importance of a wish to be effective, we will explore whether the effect of mental contrasting on the perceived problem resolution depends on the perceived importance and solvability.

Method

Participants

A priori power analyses conducted with G*Power (Faul et al., 2009) indicated that a sample size of 246 participants would be required to achieve 90% power (one-tailed) with an effect size of $d = .46$, based on previous mental contrasting research in romantic relationships (Houssais et al., 2013). To account for an anticipated dropout rate of 20%, we aimed to recruit 310 European participants via the Prolific platform. We advertised the study as an online study on conflict in romantic relationships. Eligibility criteria included being in a heterosexual relationship for at least 1 year, cohabiting with the partner, being at least 21 years old, and being fluent in English. After excluding participants who dropped out between

measurement points (n = 22), ended their relationship during the study (n = 3), failed attention checks (n = 7), or reported unrealistic changes in relationship satisfaction (defined as more than three standard deviations from the mean, suggesting inattentive responding or unusual life events; n = 4), the final sample comprised N = 274 participants. Participants received £2.20 for their participation. For detailed sample demographics, see Appendix A.

Procedure and Measures

T1: Relationship Satisfaction. To determine whether variations in relationship satisfaction might influence the findings, participants completed the 7-item Relationship Assessment Scale (RAS; Hendrick, 1988). An example item is “In general, how satisfied are you with your relationship?” Participants rated each item on a 7-point scale (1 = *not at all*, 7 = *extremely satisfied*), with a high internal consistency (α = .90).

T1: Problem Identification. We asked participants to create a list of three conflict topics that had caused significant disagreements in their relationship. We adapted this task from problem identification methods used in previous research (e.g., Gottman, 1979; Simpson et al., 1996). From the list, participants selected the “most significant unresolved conflict” to tackle for the following 2 weeks.

T1: Perceptions of Importance and Solvability. Participants rated both the importance and solvability of the problem they chose to work on, using single-item measures adapted from mental contrasting studies (Oettingen & Sevincer, 2018). We asked, "How important is it to you that you resolve this conflict?" and "How likely is it that you will resolve this conflict?", using 7-point scales (1 = *not at all*, 7 = *very much*).

T1: Baseline Problem Resolution. Participants initially reported their progress in resolving the selected problem using two items with 5-point scales (“To what degree has the conflict been resolved so far?”, 1 = *completely unresolved*, 5 = *completely resolved*, and “How satisfied are you so far with the resolution of the conflict?”, 1 = *completely dissatisfied,*

5 = *completely satisfied*). Both items converge well (r = .87) and were combined into a single index.

T1: Intervention Procedures. Participants completed the intervention through an online interface where they entered their responses to prompts based on established mental contrasting instructions (Oettingen, 2012; Oettingen & Sevincer, 2018). Participants were randomly assigned to one of three conditions: mental contrasting, indulging, and dwelling. In the mental contrasting condition, Participants first identified the most positive outcome they would experience if the problem was resolved ("Imagine you and your partner would resolve this conflict. What would be the best thing, the most positive aspect if you and your partner had resolved this conflict? How would resolving this conflict make you feel?"). They were then asked to vividly imagine this outcome ("Now imagine this most positive aspect. Imagine it as fully as you can"). To ensure sufficient elaboration on the outcome, participants were required to remain on this page for at least 30 seconds. Next, they identified and elaborated on the main inner obstacle preventing them from resolving the problem ("Now, what is it within you that holds you back from resolving this conflict with your partner? What in you stops you from resolving it? What is your main inner obstacle?"). Again, participants elaborated for at least 30 seconds. Example responses are provided in Appendix B.

In the indulging condition, participants identified and elaborated on two positive outcomes of resolving the problem, instead of one positive outcome and an obstacle. In the dwelling condition, participants identified and elaborated on two obstacles preventing the resolution of the problem, instead of one positive outcome and an obstacle.

T2: Follow-up Measures. Two weeks after the intervention, participants were reminded of the problem they had selected. We then asked them to complete the same measures of relationship satisfaction and problem resolution as at T1 to assess their progress. After finishing the questionnaire, all participants were debriefed. Individuals in the control

conditions were informed that they had participated as part of a control group. Additionally, all participants were provided with a link to the website woopmylife.org, which offers detailed information about mental contrasting research and its practical applications.

Data Analysis

To test the main effect of condition on problem resolution while considering potential interactions between the conditions with importance and solvability, we used hierarchical regression and PROCESS (A. F. Hayes, 2022) in SPSS. We included condition, mean-centered importance and solvability as predictors and added the covariates relationship satisfaction, relationship duration and biological sex (Model 1). We converted condition into two dummy variables (indulging and dwelling), using mental contrasting as the reference category (A. F. Hayes, 2022). Then, we added the two-way interactions: conditions× importance (Model 2), conditions×solvability (Model 3). Lastly, we added the three-way interactions (conditions×importance×solvability; Model 4). As there are two dummy variables for condition, there are also two parameters for each interaction, one for each dummy variable. The dependent variable was the residualized change score in problem resolution, which represents the portion of the T2 score not linearly predicted by the T1 score (Cronbach & Furby, 1970). If the inclusion of an interaction (Model 2, 3, and 4, respectively) improves the models' explanatory power (i.e., a significant increase in R^2), we will interpret the effect of condition on our dependent variable only under consideration of significant moderation.

Results

Descriptive Analyses

Participants reported medium to high levels of relationship satisfaction (M = 5.67, SD = 0.90) and selected problems that were neither completely resolved nor fully unresolved (M

= 2.89, *SD* = 1.06). On average, participants perceived problems as highly important to resolve (*M* = 5.83, *SD* = 1.26) and moderately solvable (*M* = 4.32, *SD* = 1.68).

No differences were observed between conditions across the baseline variables, including relationship satisfaction, problem resolution, importance, solvability, age, relationship duration, biological sex, and parental status (see Appendix C). A summary of descriptive statistics and correlations between variables is presented in Table 1.

Problem Resolution

We expected mental contrasting to improve problem resolution and explored whether this effect was further moderated by importance and solvability. When we added the three-way interactions between conditions, importance, and solvability in Model 4, the model fit increased significantly to $R^2 = .134$ ($\Delta R^2 = .034$, $\Delta F\ (3, 259) = 3.34$, $p = .019$). Further, in our regression analysis (Model 4) the three-way interaction for indulging with importance and solvability was significant ($b = 0.23$, $SE = 0.08$, $p = .003$). Thus, we can interpret the effects of mental contrasting on problem resolution only under consideration of moderation by importance and solvability. For dwelling, the three-way interaction was not quite significant ($b = 0.12$, $SE = 0.07$, $p = .068$). All regression parameters can be found in Table 2.

Using PROCESS Model 3 (A. F. Hayes, 2022), we then tested and probed the observed interaction. That is, we first tested whether the conditions×solvability interaction is significant at varying importance levels (i.e., *medium* = -1 *SD*, *high* = *M*, and *very high* = *max*; we used the *max* because +1 *SD* exceeds the scale maximum). The conditions×solvability interaction was significant when problems had medium importance, $F(2, 259) = 6.93$, $p = .001$, and high importance, $F(2, 259) = 3.76$, $p = .025$. At very high importance, this interaction was not significant, $F(2, 259) = .10$, $p = .909$.

Table 1

Study 1: Means, Standard Deviations, and Correlations of Study Variables (N = 274)

	Variable	*Min*	*Max*	*M*	*SD*	1	2	3	4	5
1.	Importance	1.00	7.00	5.83	1.25	-				
2.	Solvability	1.00	7.00	4.32	1.68	.00	-			
3.	Relationship satisfaction	2.29	7.00	5.67	0.90	-.18**	.31**	-		
4.	Baseline problem resolution	1.00	5.00	2.89	1.06	-.25**	.50**	.36**	-	
5.	Problem resolution Δ	-2.83	2.17	0	0.96	-.01	.13*	.27**	.00	-

Note. Variables 1 to 3 were measured on a 7-point scale, and problem resolution on a 5-point scale. Δ = residualized change score (T1 to T2).

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* $p < .05$, ** $p < .01$ (two-tailed)

Table 2

Study 1: Interactive Effect of Condition, Importance, and Solvability on Problem Resolution

Variable	Model 1		Model 2		Model 3		Model 4	
	b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Constant	-1.87***	0.53	-1.74***	0.42	-1.67***	0.44	-1.58***	0.44
Relationship satisfaction	0.28***	0.07	0.28***	0.07	0.29***	0.07	0.27***	0.07
Indulging (IN)	-0.10	0.14	-0.11	0.14	-0.10	0.14	-0.07	0.14
Dwelling (DW)	0.02	0.14	0.02	0.14	0.20	0.14	-0.01	0.14
Importance (IMP)	0.02	0.05	0.00	0.07	-0.01	0.07	-0.06	0.08
Solvability (SOL)	0.03	0.04	0.03	0.04	0.12^{+}	0.06	0.14*	0.06
IN x IMP			0.08	0.12	0.07	0.12	0.02	0.12
DW x IMP			0.02	0.10	0.03	0.10	0.07	0.11
IN x SOL					-0.18*	0.08	-0.23**	0.09
DW x SOL					-0.08	0.08	-0.10	0.08
IMP x SOL							-0.10^{+}	0.06
IN x IMP x SOL							0.23**	0.08
DW x IMP x SOL							0.12^{+}	0.07
R^2 (ΔR^2)	.083		.085 (.002)		.100 (.016)		.134 (.034*)	
ΔF	3.43**		0.26		2.30		3.34*	

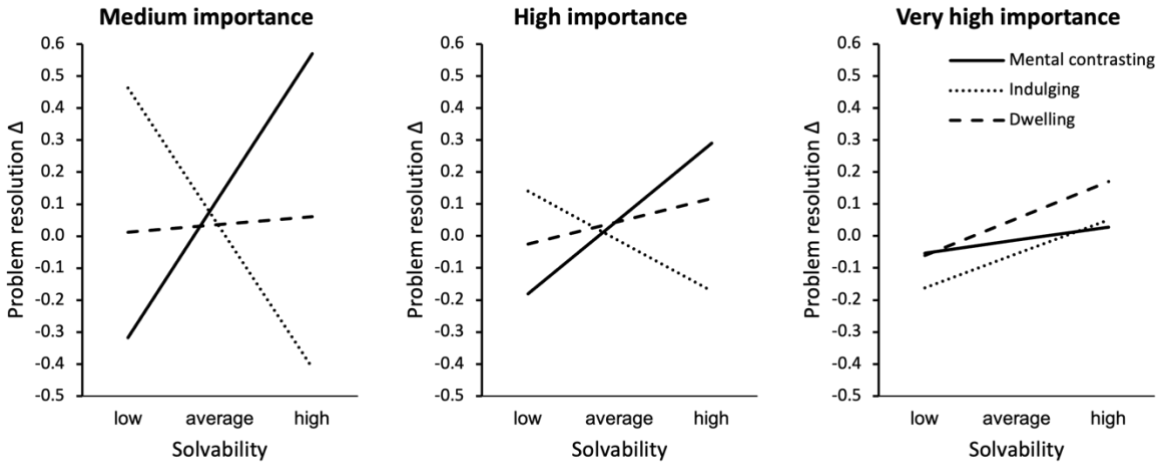
Note. Indulging and dwelling represent their effect when compared with mental contrasting, respectively. We included relationship duration and biological sex as covariates (*p*s ≥ .16). Adapted from "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationships" by H. Jöhnk et al., 2025, *Journal of Social and Personal Relationships*, *42*(2), p. 376. Licensed under CC BY 4.0.

$^{+}$ $p < .10$ * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

As the conditions×solvability interaction was significant at medium and high importance, we then probed this interaction. That is, at medium and high importance, we examined at which solvability levels mental contrasting (vs. indulging and dwelling, respectively) improves problem resolution. Partially supporting our hypothesis, for problems perceived highly solvable, mental contrasting (vs. indulging) led to better problem resolution of problems of medium importance (b = -0.98, SE = 0.32, p = .002; see Figure 1) and high importance (b = -0.46, SE = 0.20, p = .021). However, for highly solvable problems, dwelling fared between mental contrasting and indulging but was not significantly different from mental contrasting, both at medium importance (b = -0.51, SE = 0.30, p = .092) and at high importance (b = -0.17, SE = 0.20, p = .384).

Figure 1

Study 1: Effect of Condition on Problem Resolution at Different Importance and Solvability Levels



Note. Δ = residualized change score. Adapted from "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationships" by H. Jöhnk et al., 2025, *Journal of Social and Personal Relationships*, *42*(2), p. 377. Licensed under CC BY 4.0.

At other combinations of importance and solvability, mental contrasting did not lead to better problem resolution compared to both indulging (ps ≥ .119) and dwelling (ps ≥ .188). Unexpectedly, at low solvability and medium importance, mental contrasting participants reported lower problem resolution than indulging participants (b = 0.78, SE = 0.34, p = .021).

Discussion

We tested whether mental contrasting improves the resolution of ongoing relationship problems while taking both the perceived importance and solvability into account. After 2 weeks, participants in the mental contrasting condition reported better problem resolution than indulging participants for problems they perceived as highly solvable. Dwelling's effect on problem resolution fell between that of mental contrasting and indulging. This pattern of results was observed for problems of medium and high importance but, surprisingly, not for those of the highest importance. For problems of highest importance, the conditions did not differ at all.

Problem Resolution as a Function of Solvability

Consistent with previous research (Oettingen et al., 2001), mental contrasting was more effective than indulging in resolving problems perceived as highly solvable (i.e., when success expectations were high). Specifically, participants in the mental contrasting condition who fantasized a desired future of problem resolution and then immediately imagined the main inner obstacle standing in the way were better able to capitalize on the problem's solvability and experienced greater progress in resolving the problem. In contrast, participants in the indulging condition, who only focused on positive fantasies about the desired outcome, showed less progress, likely because they mentally experienced the desired future as if it had already been attained (H. B. Kappes & Oettingen, 2011).

Furthermore, we had theorized that when solvability is low, mental contrasting might allow accepting the potentially irresolvable nature of the problem, which might in turn

prevent continued frustration. However, mental contrasting did not improve perceived problem resolution when solvability was deemed low by the participants. While in other life challenges (e.g., establishing a workout routine, or finishing university), disengaging from futile endeavors might be possible, disengaging from challenges within the romantic relationship might be more difficult (e.g., disagreeing on parenting styles). For problems perceived as low in solvability and medium in importance, mental contrasting participants reported even a lower problem resolution than those in the indulging condition. Potentially, mental contrasting may have allowed participants to accurately recognize the unresolved nature of the problem by confronting the seemingly insurmountable obstacle. Furthermore, participants in the indulging condition, by neglecting obstacles on the path to resolution, may have overestimated how much progress they had made in resolving the problem.

Results for the dwelling condition fell between those for mental contrasting and indulging but did not significantly differ from either. This pattern aligns with previous findings specific to romantic relationship research (Oettingen, 2000). It is possible that dwelling participants had already spontaneously imagined a positive resolution when selecting their problem to work on, given the intrinsic need to maintain a romantic relationship (Allen et al., 2022). Therefore, asking participants in the dwelling condition to confront two obstacles may have inadvertently led to a process resembling mental contrasting, albeit weaker.

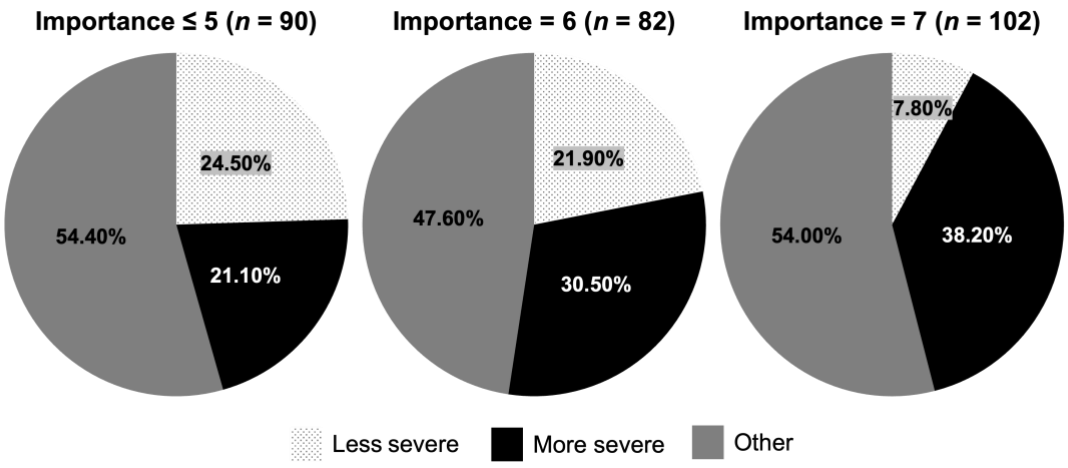
Problem Resolution as a Function of Importance

While a change in problem resolution was visible in problems of medium and high importance, problems of very high importance revealed no differences between conditions, regardless of the perceived solvability. One possible explanation for this finding is that these problems may have been too severe to be meaningfully resolved within the 2-week period of our study. A content analysis supports this interpretation. We classified problem topics based

on prior research linking specific topics to relationship satisfaction and conflict behavior. We classified the topics finances, parenting, communication, and sex—known to be associated with lower relationship satisfaction and more dysfunctional conflict behavior (Meyer & Sledge, 2022)—as more severe. In contrast, we classified problems related to household chores and time management—known to be linked to higher relationship satisfaction—as less severe (see Figure 2). Additionally, topics unrelated to relationship satisfaction, such as decision-making and personal or partner habits, were excluded from the severity classification. The analysis revealed that problems perceived as very highly important were also more likely to involve severe topics, suggesting a link between conflict importance and severity in this study.

Figure 2

Study 1: Problem Topics at Different Importance Levels



Note. Two independent raters, who were unaware of the experimental conditions and problem importance, conducted the content analysis ($\kappa = .80$; coding manual is available on the OSF). The distribution of topics differed between problems rated importance = 7 (*max*) and those rated ≤ 5, $\chi^2(18) = 30.87$, $p = .021$; Cramer's $V = 0.40$. From "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationships" by H. Jöhnk et

To rule out alternative explanations, we controlled for several variables in our regression analysis, including baseline relationship satisfaction, baseline problem resolution, and whether participants had children. Given that all participants were in cohabiting, heterosexual relationships, differences in relationship type or living arrangements cannot account for the observed non-effects. Therefore, the most plausible explanation is that highly severe problems require more time to achieve meaningful resolution, making a 2-week timeframe insufficient for substantial progress.

Measuring Problem Resolution

We assessed problem resolution by asking participants to indicate both the extent to which their problem had been resolved and their satisfaction with that resolution. However, this measure captures subjective perceptions, which may vary depending on the nature and severity of the problem. For less severe issues, such as disagreements over household chores, individuals may find it easy to identify practical solutions. In such cases, resolution could involve reducing frustration by expressing viewpoints and reaching mutual agreements. In contrast, more severe problems, such as intimacy-related or sexual difficulties, may present greater challenges in identifying concrete solutions. In these instances, participants may experience uncertainty about what resolution entails and how to achieve it, leaving the underlying issue unresolved despite their best efforts. As a result, subjective problem resolution may be more readily observed for less severe problems compared to more severe ones. To investigate whether mental contrasting still increases the commitment to resolve these more severe problems, we conducted Study 2.

Study 2: Mental Contrasting and Mental Engagement in Less Satisfied Relationships

In Study 2, we once again taught individuals in romantic relationships the mental contrasting technique geared toward resolving an ongoing relationship problem over a 2-week period. The study design and procedure largely mirrored that of Study 1, with a few key modifications. First, participants were pre-screened on Prolific, selecting only those who scored below the median in relationship satisfaction. According to Meyer and Sledge (2022), less satisfied couples are more likely to report conflict topics like sex, finances, parenting, and communication (i.e., potentially more severe problems). Second, to minimize spontaneous use of self-regulation strategies, we replaced the dwelling condition with a concentration task. Third, beyond assessing problem resolution, we examined participants' mental engagement with the problem.

Even when participants are not able to make tangible progress in resolving their problems, as observed for problems of highest importance in Study 1, participants might still mentally engage with the problem. Research suggests that when people are committed to a goal, they tend to think about it more frequently, including through daydreaming or goal-related thoughts (Klinger, 1971). Therefore, mentally engaging with a problem can be seen as a marker of commitment to resolving that problem (Klinger, 1975). Based on this notion, we predicted that mental contrasting (vs. indulging and concentration) would increase mental engagement with problems. Again, we explored whether this effect depends on the perceived importance and solvability.

Method

Participants

Based on the same power analysis conducted in Study 1 (d = .46 with 90% power one-tailed), we aimed for a sample size of 246 participants. To qualify for participation, individuals had to be in a romantic relationship for at least 1 year and living with their

partner. We pre-screened 800 U.S.-based Prolific users by assessing their relationship satisfaction using the RAS (Hendrick, 1988). Only participants scoring below the median (*Mdn* = 5.86) were invited to take part in the main study. The study, advertised as an opportunity to improve romantic relationships, attracted 287 participants. After accounting for dropouts between T1 and T2 (n = 10) and excluding those who had ended their relationship (n = 2), failed the attention check (n = 1), or reported an unrealistic change in relationship satisfaction (more than three standard deviations, indicating potential inattentiveness; n = 4), the final sample comprised N = 270 participants. Each participant received £2.60 as compensation. For detailed sample demographics, see Appendix A.

Procedure and Measures

T1: Baseline Measures, Problem Selection, Importance, and Solvability. As in Study 1, baseline relationship satisfaction was assessed using the RAS, along with general relationship information (e.g., relationship duration). Participants were asked to list three areas of major disagreement in their relationship and to select the most significant unresolved problem to address over the next 2 weeks. To ensure that participants still chose problems where progress was possible, we included the instruction, "Please choose a problem that is important to you and that you can address in the next two weeks." Following the selection of one problem, participants rated its importance and solvability using the same items as in Study 1.

T1: Baseline Problem Resolution. We measured participants' baseline problem resolution using the same two items as in Study 1. To enhance the scale's sensitivity to short-term effects, we added two items: "In the past two weeks, have you made progress towards resolving the problem?" (1 = *no progress*, 7 = *a lot of progress*) and "In the past two weeks, how satisfied have you been with the progress you've made towards resolving the problem?"

(1 = *not at all satisfied*, 7 = *fully satisfied*). The four items converged well (α = .93) and were combined into a single index.

T1: Baseline Mental Engagement. We measured mental engagement with two items: "During the past two weeks, have you been thinking about the problem?" and "During the past two weeks, have thoughts about the problem interrupted your everyday life?" Responses were recorded on 7-point scales (1 = *never*, 7 = *constantly*). The two items converged well (*r* = .87) and were combined into a single index.

T1: Intervention Procedures. Participants were randomly assigned to one of three experimental conditions: mental contrasting, indulging, or a concentration. The mental contrasting and indulging conditions were identical to those used in Study 1. In the concentration condition, participants completed an adapted version of the Concentration Performance Test (Düker & Lienert, 1965). Participants had to solve two basic mathematical equations (e.g., 7 + 4 and 5 – 3), memorize the results, and then perform an additional operation: if the first result was higher, they subtracted the second result from the first; if the first result was lower, they added the two results together. The task lasted 3 minutes, aligning with the duration of the mental contrasting and indulging tasks.

Additionally, we highlighted the adaptability of the mental contrasting technique for both long-term and short-term wishes, having participants practice the mental contrasting strategy. Specifically, in all conditions, participants would go on to formulate a relationship-related wish for the next 24 hours. Participants in the mental contrasting and indulging conditions repeated their respective strategies targeted at that 24-hour wish, while those in the concentration condition completed another set of equations for 3 minutes.

T2: Follow-up Measures. Two weeks after the intervention, participants were reminded of the problem they had selected at the beginning of the study. We then reassessed

problem resolution, mental engagement, and relationship satisfaction using the same items as those used at T1. After finishing the questionnaire, all participants were debriefed.

Data Analysis

To test our hypotheses, we again used hierarchical linear regression and PROCESS (A. F. Hayes, 2022) in SPSS. Mirroring the analysis in Study 1, we first included dummy-coded conditions (indulging and concentration, with the reference category mental contrasting), mean-centered importance and solvability, and the covariates (Model 1). Then, we added the two-way interactions, respectively (Model 2 and Model 3), and the three-way interactions (Model 4). We ran the hierarchical regression analysis twice: first with residualized change in problem resolution as the dependent variable, and then with residualized change in mental engagement as the dependent variable.

Results

Descriptive Analyses

The participants indicated medium relationship satisfaction ($M = 4.78$, $SD = 1.15$, 7-point scale). On a 7-point scale, a typical relationship satisfaction would be $M = 6$ (Hendrick, 1988). Thus, participants in our sample reported a lower than typical RAS score. At baseline, participants were moderately mentally engaged with their problems ($M = 4.21$, $SD = 1.34$, 7-point scale) and had a low baseline problem resolution ($M = 2.90$, $SD = 1.44$, 7-point scale). The participants rated resolving the problems highly important ($M = 6.16$, $SD = 0.98$, 7-point scale) but with moderate to low solvability ($M = 3.64$, $SD = 1.67$, 7-point scale). Table 3 provides descriptive statistics and variables' correlations.

Table 3

Study 2: Means, Standard Deviations, and Correlations of Study Variables (N = 270)

	Variable	*Min*	*Max*	*M*	*SD*	1	2	3	4	5	6	7
1.	Importance	3.00	7.00	6.16	0.98	-						
2.	Solvability	1.00	7.00	3.64	1.67	.06	-					
3.	Relationship satisfaction	1.14	6.57	4.78	1.15	-.04	.38**	-				
4.	Baseline problem resolution	1.00	6.50	2.90	1.44	-.19**	.59**	.32**	-			
5.	Problem resolution Δ	-4.21	3.91	0	1.46	.03	.17*	.21*	.00	-		
6.	Baseline mental engagement	1.00	7.00	4.21	1.34	.29**	.02	-.22**	-.12	-.04	-	
7.	Mental engagement Δ	-2.88	3.12	0	1.05	.00	-.21**	-.24**	-.19**	-.23**	.00	-

Note. Variables 1 to 5 were measured on 7-point scales. Δ = residualized change score (T1 to T2). From "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationships" by H. Jöhnk et al., 2025, *Journal of Social and Personal Relationships*, *42*(2), p. 382. Licensed under CC BY 4.0.

* $p < .05$, ** $p < .01$ (two-tailed)

We had intended for participants to be less satisfied with their relationship and dealing with more severe issues than participants in Study 1. As a result, 47 % of the participants dealt with the topics finances, sex, parenting, communication (i.e., more severe problems), and only 12 % dealt with household chores or time management (i.e., less severe problems; $\kappa = .78$), a ratio shifting even more in favor of more severe issues compared to problems of highest importance in Study 1. Furthermore, participants indicated lower satisfaction, lower baseline problem resolution, higher perceived importance, and lower perceived solvability (ps < 0.001) than participants in Study 1 (see Appendix D).

We observed no differences between conditions across the baseline variables relationship satisfaction, problem resolution, importance, solvability, age, relationship duration, and parental status (see Appendix E). Only the sex ratio differed between conditions (mental contrasting 60 % women, indulging 44 % women, concentration 41 % women), $F(2, 267) = 3.66$, $p = .03$. To take this into account, we controlled for biological sex during hypothesis testing.

Problem Resolution

In the hierarchical regression, we could not replicate mental contrasting's effect on problem resolution (full results are provided in Appendix F). While adding the conditions×importance×solvability three-way interaction (Model 4) significantly improved the model fit to $R^2 = .114$ ($\Delta R^2 = .040$, ΔF [3, 255] $= 3.82$, $p = .011$), the conditions×solvability interaction was neither significant at medium, nor at high, nor at very high importance Fs$(2, 259) < 2.50$, ps $> .084$. Even when probing the conditions× importance×solvability three-way interaction, there was no indication that mental contrasting leads to better (or worse) problem resolution at any combination of importance and solvability compared to both indulging and concentration (ts < 1.78, ps $> .076$).

Mental Engagement

We repeated the hierarchical regression using the residualized change in mental engagement as the dependent variable (see Table 4). Both adding the conditions×solvability two-way interactions (ΔR^2 = .005, ΔF [2, 258] = 0.69, p = .502; Model 3) and the conditions×importance×solvability three-way interactions (ΔR^2 = .009, ΔF [3, 255] = 0.91, p = .435; Model 4) did not significantly increase the explained variance in mental engagement. Only when adding the conditions×importance interaction in Model 2 did the model fit marginally increase to R^2 = .120 (ΔR^2 = .019, ΔF [2, 260] = 2.77, p = .065). Thus, the conditions' effects on mental engagement might only be moderated by the perceived importance of resolving the problem. While the increase in model fit was not quite significant, the more nuanced regression analysis indicated a significant interaction between concentration and importance (b = -0.36, SE = 0.15, p = .021). Specifically, mental contrasting (vs. concentration) increased mental engagement the higher the importance. However, the interaction between indulging and importance was not significant (b = -0.13, SE = 0.15, p = .41).

Using PROCESS Model 1 (A. F. Hayes, 2022), we probed the conditions×importance interaction to identify at which importance levels mental contrasting affects mental engagement. Partially supporting our hypothesis, mental contrasting increased mental engagement for problems of high (*M*) importance compared to indulging (b = -0.34, SE = 0.15, p = .025) and concentration (b = -0.37, SE = 0.15, p = .016; Figure 3). Furthermore, mental contrasting also increased mental engagement for problems of very high (+1 *SD*) importance compared to indulging (b = -0.44, SE = 0.20, p = .025) and concentration (b = -0.67, SE = 0.20, p = .001). For problems of only medium importance (-1 *SD*), conditions did not differ.

Table 4

Study 2: Interactive Effect of Condition, Importance, and Solvability on Mental Engagement

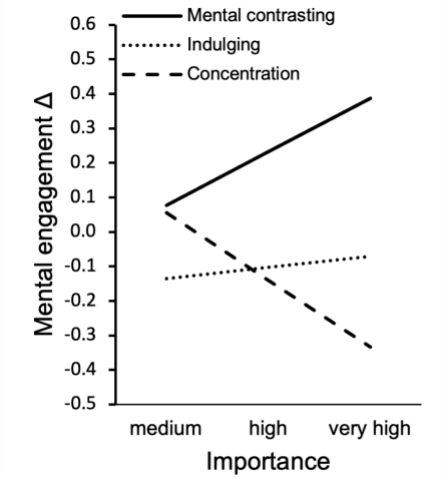
Variable	Model 1		Model 2		Model 3		Model 4	
	b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Constant	1.44**	0.51	1.44***	0.32	1.16***	0.32	1.20***	0.32
Relationship satisfaction	-0.17**	0.06	-0.18**	0.06	-0.18**	0.06	-0.19**	0.06
Indulging (IN)	-0.33*	0.15	-0.34*	0.15	-0.34*	0.15	-0.35*	0.15
Concentration (CT)	-0.36*	0.15	-0.37*	0.15	-0.38*	0.15	-0.38*	0.16
Importance (IMP)	0.00	0.06	0.16	0.11	0.16	0.11	0.13	0.11
Solvability (SOL)	-0.09*	0.04	-0.08*	0.04	-0.11	0.06	-0.10	0.07
IN x IMP			-0.13	0.15	-0.13	0.15	-0.10	0.16
CT x IMP			-0.36*	0.15	-0.38*	0.16	-0.36*	0.16
IN x SOL					-0.01	0.09	-0.02	0.09
CT x SOL					0.09	0.09	0.09	0.09
IMP x SOL							-0.10	0.07
IN x IMP x SOL							0.10	0.10
CT x IMP x SOL							0.05	0.09
R^2 (ΔR^2)	.101		.120 (.019$^+$)		.125 (.005)		.134 (.009)	
ΔF	4.21***		2.77$^+$		0.69		0.91	

Note. Indulging and concentration refer to the effect compared to mental contrasting, respectively. We included relationship duration and biological sex as covariates (*p*s ≥ .18). Adapted from "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationhips" by H. Jöhnk et al., 2025, *Journal of Social and Personal Relationships*, *42*(2), p. 376. Licensed under CC BY 4.0.

$^+$ $p < .10$ * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

Figure 3

Study 2: Effect of Condition on Mental Engagement at Different Importance Levels



Note. Δ = residualized change score. From "Mental Contrasting and Conflict Management in Satisfied and Unsatisfied Romantic Relationships" by H. Jöhnk et al., 2025, *Journal of Social and Personal Relationships*, *42*(2), p. 384. Licensed under CC BY 4.0.

Discussion

In Study 2, we targeted individuals in less satisfying romantic relationships who tended to report more severe problem topics. Unlike in Study 1, mental contrasting did not lead to improved problem resolution, even when participants perceived their problems as solvable. Instead, mental contrasting primarily increased mental engagement with problems that participants deemed highly important to resolve. Interestingly, the perceived solvability of the problems did not influence outcomes in this study, which may be due to participants viewing problem resolution as generally less feasible compared to Study 1 (see Appendix D).

Mental Engagement

As predicted, and in line with previous mental contrasting research (Oettingen, 2012; Oettingen & Sevincer, 2018), participants in the mental contrasting condition demonstrated higher mental engagement with problems perceived as highly important compared to those in

the indulging and concentration conditions. Increased mental engagement might indicate a strong commitment to resolve the problem (Klinger, 1975). Even if participants could not quickly find a solution, those using mental contrasting may have actively sought to tackle the problem by focusing their attention on the sources of their frustrations (Cloven & Roloff, 1995; Gollwitzer & Bayer, 1999; Zajonc, 1960). Through this process, mental contrasting could facilitate the development of long-term strategies for managing persistent problems in romantic relationships.

Overall, in relationships characterized by lower satisfaction and more severe issues, the effectiveness of mental contrasting does not appear to rely on the perceived solvability of the problem. Instead, mental contrasting promotes engaging with highly important problems, indicating a commitment to face the problem. This engagement could help individuals manage severe problems more effectively over time, whether by working toward solutions or by recognizing when letting go of futile efforts is the healthier course of action.

Individual vs. Dyadic Use of Mental Contrasting

Studies 1 and 2 investigated how mental contrasting can support relationship problem-solving by recruiting individuals from both predominantly satisfied and less satisfied relationships. In more satisfied relationships, mental contrasting facilitated the resolution of relatively solvable, less severe problems. In less satisfied relationships, mental contrasting increased mental engagement with highly important, more severe problems, even when quick resolution seemed unlikely. However, both studies overlooked the inherently dyadic nature of relationship problems (Baker & McNulty, 2020; Finkel et al., 2016; Fitzsimons et al., 2015). Specifically, each partner in a couple may perceive a shared problem, its resolution's outcome, and its primary obstacle differently. If one partner successfully overcomes their inner obstacle but the other partner remains stuck in their behavioral pattern, the couple may struggle to break more deeply ingrained behavioral cycles. This could explain why no

significant progress was observed in resolving highly important problems—both in Studies 1 and 2. To fully harness the potential of mental contrasting in romantic relationships, mental contrasting may need to be applied at the couple level rather than individually.

Additionally, Studies 1 and 2 focused on broader self-reported outcomes, such as perceived problem resolution and mental engagement, but did not capture more nuanced, observable behaviors critical to effective problem-solving, such as self-disclosure, reacting with acceptance, and suggesting solutions (e.g., Greene et al., 2006; Kaiser et al., 1998). These finer behavioral indicators may only be measurable during direct observation of couples' interactions. To address these limitations, we conducted Study 3.

Study 3: Mental Contrasting and Problem-Solving Behavior—A Dyadic Behavioral Observation

In Study 3, we allowed both partners of a given romantic couple to use mental contrasting geared towards resolving an ongoing relationship problem. Thus, Study 3 uses a dyadic research design and analytic methods that incorporate both partners' outcomes and account for interdependence between partners. Specifically, we conducted a dyadic observational study with two measurement points (T1 and T2) to examine the impact of mental contrasting on relationship problem-solving measured both via self-report and behavioral coding. At T1, couples first identified an ongoing relationship issue and rated the importance of resolving it, its perceived solvability, and the baseline problem resolution. Following these baseline assessments, dyads were randomly assigned to one of two experimental conditions: mental contrasting or indulging. Each partner completed the intervention independently. Afterward, couples participated in a problem-solving discussion, during which we coded their problem-solving behaviors. This coding allows analyzing the rate at which certain speaker (i.e., self-disclosure and solution suggestions) and listener behaviors (i.e., reacting to self-disclosure with acceptance) that are known to be effective in

relationship problem-solving (e.g., Kaiser et al., 1998) are displayed. Two weeks after the discussion, at T2, we asked the couples to reassess the degree to which their problem had been resolved.

Again, we predicted mental contrasting (vs. indulging) to improve the perceived problem resolution. Furthermore, mental contrasting may allow couples to display effective problem-solving behaviors when discussing their problem. That is, mental contrasting may facilitate (1) self-disclosure, (2) reacting to self-disclosure with acceptance, and (3) generating solutions.

First, mental contrasting prompts individuals to envision their desired future, activating their wishes and needs, as does indulging. However, mental contrasting goes further by encouraging individuals to confront their internal obstacles to achieving that future. These obstacles often include feelings (e.g., anger, insecurity), attitudes (e.g., specific parenting beliefs), or habits (e.g., neglecting household tasks). By forming strong associative links between the desired future and these inner obstacles, mental contrasting helps individuals connect their wish with the necessary behaviors to overcome said obstacles (A. Kappes et al., 2012, 2013; A. Kappes & Oettingen, 2014). Therefore, we expect couples using mental contrasting (vs. indulging) to disclose their wishes, needs, feelings, attitudes, and habits—core aspects of *self-disclosure* (Hahlweg, 2004)—more often. Such self-disclosure lays the groundwork for effective problem-solving by fostering intimacy and understanding between partners (Greene et al., 2006; Laurenceau et al., 2005; Lepore et al., 2000; Prager & Buhrmester, 1998; Reis & Shaver, 1988; Sprecher & Hendrick, 2004).

Second, by delving into their own wishes and facing the difficulties associated with overcoming inner obstacles, people may also be more empathetic toward their partner's wishes and difficulties. Similarly, mental contrasting has been found to foster perspective-taking between negotiation partners (Kirk et al., 2011). Mental contrasting may thereby allow

partners to recognize each other's struggles and efforts. Thus, we predict mental contrasting (vs. indulging) to make listeners respond to their partner's self-disclosure in an open-minded and understanding way (i.e., with *acceptance of the other*; Hahlweg, 2004). Reacting to the partner's self-disclosure with acceptance (rather than, e.g., with criticism) validates the partner's experiences, builds safety and trust during discussions, and encourages further self-disclosure (Laurenceau et al., 2005; Reis & Shaver, 1988).

Third, by considering both the desired future as well as the current reality—instead of just one of the two constituents—mental contrasting may broaden the partners' perspective on their problem (i.e., their *problem space;* Newell & Simon, 1972; Oettingen et al., 2001). Also, mental contrasting may enable partners to recognize that the obstacles in their current reality must be overcome to realize their mutual wish of resolving the problem (A. Kappes et al., 2013; Wittleder et al., 2020). Consequently, couples might be more likely to assess the feasibility of their solution ideas and collaboratively generate effective strategies to resolve their problems (Oettingen et al., 2001). Thus, we predict mental contrasting (vs. indulging) to stimulate the generation of solutions to relationship problems. Suggesting solutions is a crucial step in effective problem-solving, as these ideas form the foundation for any changes the couple aims to implement (Baker & McNulty, 2020; D'Zurilla & Goldfried, 1971; Hahlweg & Kaiser, 2018).

Methods

Participants

We aimed for a sample size sufficient for Actor-Partner Interdependence Model (APIM) analyses (100 couples; Ledermann & Kenny, 2017). We recruited 106 couples (one same-gender and 105 mixed-gender couples) through our department's participant pool, flyers distributed on campus, social media platforms, and websites advertising side jobs. The advertisement targeted couples interested in participating in a problem resolution

intervention. Eligibility criteria included being at least 18 years old, being in a relationship for a minimum of 1 year, and fluency in German. We excluded one same-gender couple from the analysis to allow testing gender effects in the mixed-gender couples. Thus, our final sample consisted of $N = 105$ mixed-gender couples at T1 and $N = 102$ mixed-gender couples at T2, due to dropouts. We compensated participants with 15 € or course credit. For detailed sample demographics, see Appendix A.

Considering, as in Study 1 and 2, an effect size of $d = .46$ (Houssais et al., 2013), power analyses conducted with APIMPowerR (Ackerman & Kenny, 2016) revealed a power of 92 % (T1) and 91 % (T2) for effects indistinguishable between genders and a power of 63 % (T1) and 62 % (T2) for effects distinguishable between genders (alpha level of .05, two-tailed, assuming correlation between partner scores of $r = .15$).

Procedure and Measures

All participants provided informed consent before taking part in the study. The study consisted of two measurement points (T1 and T2), held 2 weeks apart, with couples randomly assigned to one of two *between-dyad* conditions: mental contrasting or indulging. Both partners participated in the initial session (T1) online via Zoom, using separate laptops or PCs. To ensure privacy when filling out questionnaires, partners were instructed to join from separate rooms if possible. If separate rooms were unavailable, the experimenter ensured that partners were positioned far apart and unable to see each other's screens. A trained experimenter guided participants through the session using standardized instructions, shared slides, and a link to the online questionnaire. All experimenters involved in recruitment and behavioral coding were female.

T1: Baseline Measures, Problem Selection, Importance, and Solvability. First, we assessed the relationship satisfaction of each partner separately with the German version of the RAS (Hendrick, 1988; Sander & Böcker, 1993). Participants responded on a 7-point scale

(1 = *slightly dissatisfied*, 7 = *highly satisfied*). In Study 3, the internal consistency was α = .87. Second, each partner independently created a list of up to three topics that had been the cause of major disagreements in their relationship. After completing their individual questionnaires, partners came together to select one problem to work on. Third, the partners separated again to individually respond to questions about the agreed-upon problem. We measured perceptions of the problem's importance, solvability, and baseline problem resolution with German translations of the items used in Study 1. The two problem resolution items again converged well (r = .79) and were combined into a single index.

T1: Intervention Procedures. Next, couples were randomly assigned to one of two experimental conditions: mental contrasting or indulging. We conducted the assignment between dyads, which means that both partners within a couple were in the same condition. Each partner completed the intervention independently on their own devices by following text-based instructions and inputting their responses into designated fields. We used German translations of the mental contrasting and indulging instructions used in Study 1. That is, participants used mental contrasting (or indulging) once, geared towards resolving a problem in the next 2 weeks. A list of example responses is provided in Appendix B.

T1: Problem-Solving Discussion. Once both partners confirmed they had completed the intervention (using Zoom's "raise hand" feature), the experimenter invited them to rejoin in the same room in front of one and the same screen in their apartment (see Figure 4). The couples then received the instruction: "Please discuss your problem in the next 10 minutes. Find a solution together." To analyze couples' behaviors, we recorded their discussion. The experimenter muted themselves, disabled their camera, and initiated the recording. At the 8-minute mark, the experimenter informed couples about the remaining time. The experimenter only unmuted to address technical issues, ensure audio and video quality, or remind participants to conclude their discussion at the 10-minute mark. All couples were allowed to

finish their conversations, even if they exceeded the time limit slightly, and the recording was stopped once couples indicated they were done. Discussions lasted an average of 8 minutes and 55 seconds (*SD* = 2 minutes 27 seconds), with the longest lasting 14 minutes and 7 seconds. No significant differences in discussion times were observed between conditions ($t[103] = -1.38$, $p = .168$). The session concluded with a standardized slide reading "Thank you for your participation. Please use the next 2 weeks to work on your selected problem."

Figure 4

Videorecording Setting

Note. We instructed the couples to arrange themselves in this configuration, seated together in front of one camera. The image was generated using ChatGPT.

T1: Behavioral Coding. Two trained research assistants analyzed the verbal behaviors displayed by each partner during the problem-solving discussions. We conducted the coding using Mangold Interact (Mangold, 2020). For each video, one research assistant—unaware of the participants' condition and study hypotheses—began by segmenting the footage into distinct events. They then identified the speaker (man or woman) and assigned a behavioral code to each event. Each event represented the smallest behavioral unit that conveyed a complete thought, which could include brief statements like "I agree" or single-word expressions such as "no" or "why?" Speaker and behavioral codes were assigned in an

exhaustive (i.e., every event was coded) and mutually exclusive (i.e., no overlap between codes) way (Bakeman & Quera, 2011). Overall, we coded 11,891 events, with an average of $M = 113$ events per couple ($SD = 43$).

We used the Interactional Coding System (ICS; Hahlweg, 2004). The ICS is designed to systematically observe couples' behaviors during problem-solving discussions. The ICS is rooted in principles from Behavioral Marital Therapy (e.g., Jacobson & Margolin, 1979), communication training programs (e.g., Guerney, 1977; Thurmaier et al., 1992), and Systems Theory (Watzlawick et al., 1969). This coding system effectively distinguishes between couples who excel at problem-solving and those who struggle with problem-solving while also detecting changes in problem-solving behaviors following interventions (e.g., Kaiser et al., 1998). Our analysis focused on verbal behavior. Although we applied all verbal codes, the following section highlights the codes—both main and subcategories—relevant to our study's dependent variables: self-disclosure, acceptance and solution suggestions. To assess interrater reliability, a second rater coded a subset of 21 videos. For the main categories that we used for hypothesis testing, Cohen's kappa was $\kappa = .73$. For the subcategories, kappa was $\kappa = .67$.

Self-Disclosure. *Self-disclosure* has three subcategories (Hahlweg, 2004): (1) Expression of feelings, (2) expression of attitudes and behavior, and (3) expression of wishes and needs. *Expression of feelings* involves sharing emotional or physical states, often including specific triggers. For instance, "I felt hurt when you interrupted me." *Expression of attitudes and behavior* focuses on explaining *why* the speaker holds a particular viewpoint or behaves in a certain way. For instance, "I avoid bringing up this topic because it often leads to arguments." *Expression of wishes and needs* involves sharing desires or aspirations for the present or future. For instance, "I'd like us to spend more time together after work."

Acceptance. *Acceptance* (termed acceptance of the other in Hahlweg, 2004) has four subcategories: (1) paraphrase, (2) open question, (3) positive feedback, and (4) understanding

of the other. *Paraphrase* means rephrasing or restating the partner's statement. For instance, "So, you're saying you feel neglected because I often prioritize other things over our time together?". *Open questions* are characterized by showing genuine interest and asking targeted follow-up questions. For instance, "Can you tell me more about what's making you feel that way?" *Positive feedback* includes a verbal response indicating that the listener personally appreciates what the speaker has said or done. For instance, "That's great! I really appreciate how much effort you put into keeping things tidy for us." *Understanding of the other* includes statements that demonstrate empathy and understanding of the partner's experience. For instance, "I can imagine how stressful that must be for you."

Solution Suggestion. *Solution Suggestion* (termed positive solution in Hahlweg, 2004) has two subcategories: (1) specific, constructive proposal and (2) compromise suggestion. *Specific constructive proposal* involves suggesting concrete ideas or strategies aimed at resolving an issue or preventing future challenges in a positive manner. For instance, "We could set a reminder on our phones to track bill payments." *Compromise suggestions*, on the other hand, differ by explicitly integrating the partner into the proposed solution, emphasizing mutual contribution. For instance, "How about I handle grocery shopping if you take care of meal prep?"

T2: Problem Resolution. Two weeks after the discussion (T2), we sent both partners—separately—a link to a second online questionnaire that contained the follow-up assessment of perceived problem resolution. We instructed each partner to fill out the questionnaire individually on their device without their partner present. The follow-up questionnaire comprised the same two items assessing perceived problem resolution as used at baseline. Again, both items showed robust convergence (r = .78). After finishing the questionnaire, all participants were debriefed.

Data Analysis

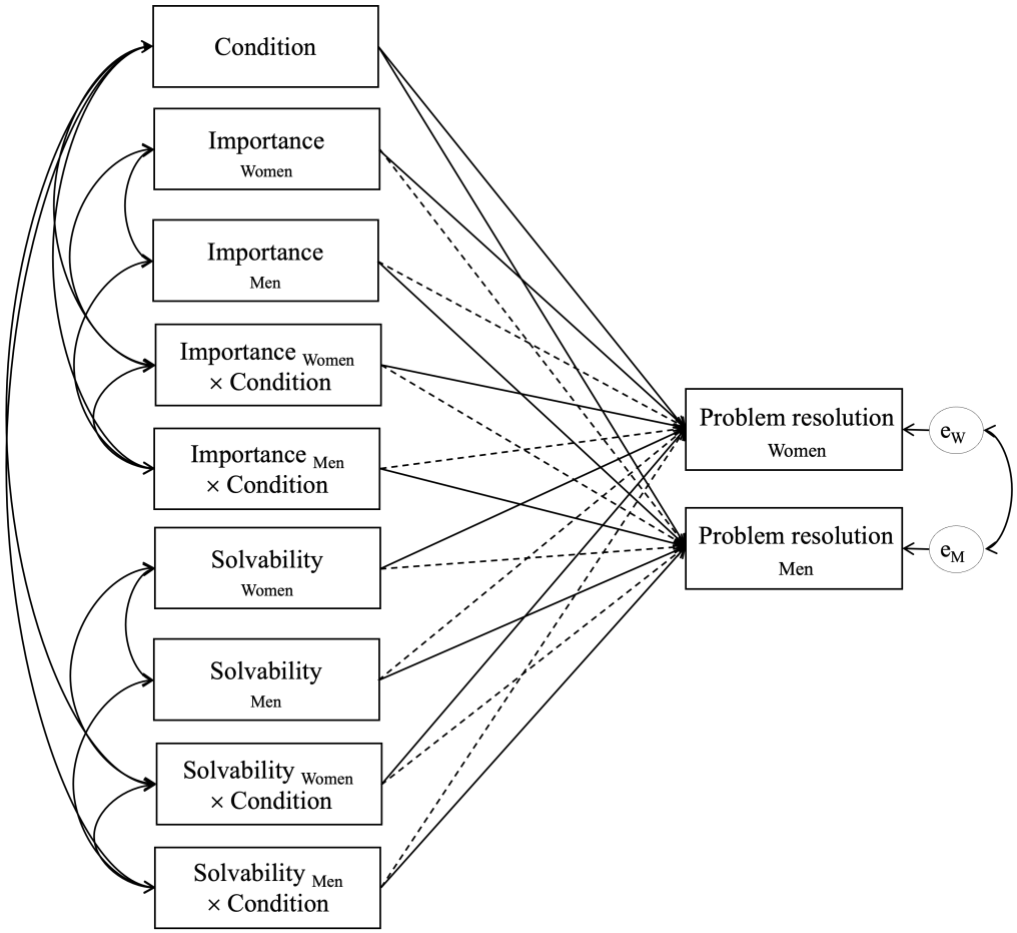
For data analysis, we used multiple approaches. For individual outcomes (i.e., perceived problem resolution, self-disclosure and solution suggestions), we used the Actor-Partner Interdependence Moderation Model (APIMoM; Garcia et al., 2015). For dyadic outcomes (i.e., self-disclosure-acceptance patterns), we used lag sequential analysis and path analysis. APIMoM and path analyses were conducted using the R package lavaan (Rosseel, 2012), interactions were probed using the R package semTools (Schoemann & Jorgensen, 2021), and the lag sequential analysis was conducted using the R package LagSequential (Draper & O'Conner, 2019).

APIMoM for Individual Outcomes. The APIMoM allows modeling the interdependence between partners and thus addresses the dyadic nature of our data (Cook & Kenny, 2005). Specifically, the APIMoM allows us to test whether condition affects the dependent variables but also whether condition interacts with both partners' perceptions of importance and solvability, respectively. Also, the APIMoM allows controlling for correlations between partners' scores. For each dependent variable, we modeled (1) the condition's effect, (2) *actor effects* of grand-mean-centered importance and solvability (e.g., association between Partner A's importance and Partner A's self-disclosure), and (3) *partner effects* of grand-mean-centered importance and solvability (e.g., association between partner A's importance and B's self-disclosure). Furthermore, we modeled (4) *actor moderation* (e.g., association between condition×Partner A's importance and Partner A's problem resolution) and (5) *partner moderation* (e.g., association between condition×Partner A's importance and Partner B's problem resolution). We did not include the conditions×importance×solvability three-way interactions in the models as the inclusion would exceed the recommended number of parameters for the given sample size (i.e., ten to twenty dyads per parameter; e.g., Kline,

2023).[2] Thus, for each partner in a dyad, we estimated the condition's effect, two actor effects, two partner effects, two actor moderations and two partner moderations for each dependent variable. An example is provided in Figure 5.

Figure 5

APIMoM With Between-Dyads Moderator Example



Note. Dashed lines are partner effects.

Lastly, in the models predicting problem resolution, we included both partners' T1 scores as covariates to control for baseline differences and used the T2 problem resolution as

[2] For all tested dependent variables in Study 3, omnibus tests revealed that models that include the three-way interactions do not fit the data better than models constraining the three-way interactions' effects to be zero (*p*s > .29).

the dependent variable. In the models predicting coded behavior, we used the *rate* of a behavior (i.e., occurrence per unit of time) rather than the raw frequency as the dependent variable in order to account for differences in discussion durations (Bakeman & Quera, 2011). Specifically, we divided the raw frequency of a behavior by the couples' discussion time in minutes, multiplied by ten. As an example, a score of 5 in self-disclosure would then indicate that the participant would display 5 self-disclosures per 10 minutes.

To make the interpretation of findings easier and to increase power, it is recommended to systematically reduce model complexity and to find the most parsimonious model (Cook & Kenny, 2005; Garcia et al., 2015). We applied a stepwise method proposed by Garcia and colleagues' (2015) to test different degrees of model complexity and evaluated which moderation effects are robust and should be included in the model. First, we tested whether the effects on the dependent variables differed by gender. Specifically, we tested the equality across genders by constraining the effect parameters (i.e., effect of condition and the interaction terms) to be equal across genders and comparing model fits using a χ^2 difference test. We considered the effects to be equal across genders (i.e., dyads are indistinguishable) if the difference was not statistically significant ($p > .20$; Kenny & Ledermann, 2010).

Second, proceeding with either the model that assumes distinguishability or proceeding with the model that assumes indistinguishability, we included all interaction terms in the model (i.e., the unrestricted model). Third, we constrained all interaction terms' effects to be zero to test whether assuming moderation is necessary. When there was no robust difference between the constrained model and the unrestricted model ($p > .20$ in a χ^2 test), we accepted the constrained, more parsimonious model (i.e., no interaction effects).

If we had to assume moderation, we tried constraining only the partner interactions (e.g., condition×men's importance predicting women's solution suggestions) to be zero. Again, when there was no robust difference between the constrained model and the

unrestricted model, we accepted the constrained, more parsimonious model (i.e., no partner interaction effects). Lastly, to not rely solely on sample-size sensitive χ^2 tests we also evaluated the sampling-error-adjusted Bayesian information criterion (SABIC) as a relative model fit index (see Appendix H).

Lag Sequential and Path Analysis for Dyadic Outcomes. Lag sequential analysis allows analyzing interdependencies between sequentially coded events (Bakeman & Quera, 2011). We investigated the likelihood that one partner's self-disclosure is immediately followed by the other partner's acceptance (i.e., Lag1 transition), and whether this likelihood is greater in the mental contrasting condition compared to the indulging condition. Additionally, we explored whether the occurrence of the self-disclosure-acceptance patterns is further moderated by both partners' perceived importance and solvability.

First, we calculated, in both conditions, the transitional probabilities that self-disclosure is followed by acceptance and tested whether these probabilities are significantly higher than the unconditional probability (i.e., the expected probability of acceptance) using *z* values. A *z* value above 1.96 indicates a significantly increased likelihood of acceptance following self-disclosure. Then, to test whether this transitional probability is significantly higher in the mental contrasting condition than in the indulging condition and whether this probability is further affected by the interaction between condition and both partner's importance and solvability, we used path analysis.

For the path analysis, we used an approach similar to our APIMoM analysis. One difference in this path analysis is that we do not need to test whether effects are indistinguishable between genders, because there is only one outcome for the dyad instead of one for each partner. Then, just as in the APIMoM, we started with an unrestricted model including condition, both partners' importance and solvability, and the interaction of condition with both the men's and the women's importance and solvability, respectively. As

the dependent variable, we used the rate of self-disclosure-acceptance patterns per 10 minutes. To ensure that we estimate the effect of mental contrasting on the transitional probability beyond the individual rates of self-disclosure and acceptance, we controlled for both partners' self-disclosure and acceptance rates by including them as covariates. Then, as in the APIMoM approach, we tried reducing the model complexity, testing whether assuming moderation was necessary or not.

Results

Descriptive Analyses

The participants reported high relationship satisfaction (M = 5.78, SD = 0.86; 7-point scale) and selected problems that were neither fully resolved nor unresolved (M = 3.09, SD = 0.92, 5-point scale). The participants rated resolving the problems highly important (M = 5.91, SD = 1.09; 7-point scale) with a moderate to high perceived solvability (M = 4.78, SD = 1.39; 7-point scale). Table 5 provides the descriptive statistics, separately for women and men. Compared to men, women perceived the problems as more important (d = 0.48), less solvable (d = -0.32), and less resolved at baseline (d = -0.36). The topics selected by the couples in Study 3 were overall less severe. For instance, less severe topics like household chores and time management were selected by 29 % of the couples, while 22 % of the couples selected more severe topics like communications, sex, parenting, and finances. In comparison, the ratio was 12 % less severe and 47 % more severe in Study 2.

Table 5

Study 3: Means, Standard Deviations, and Partner Similarity of Study Variables (N = 105 couples)

Variable	$min_{W/M}$	$max_{W/M}$	$M_{W/M}$	$SD_{W/M}$	*r*	*d*
Relationship satisfaction	2.86/3.43	7.00/7.00	5.79/5.78	0.86/0.85	.64	0.01
Importance	3.00/1.00	7.00/7.00	6.17/5.66	0.90/1.21	.19	0.48
Solvability	1.00/2.00	7.00/7.00	4.56/5.00	1.39/1.36	.24	-0.32
T1 problem resolution	1.00/1.50	5.00/5.00	2.92/3.25	0.94/0.86	.33	-0.36
T2 problem resolution	1.00/2.00	5.00/5.00	3.59/3.89	0.94/0.68	.41	-0.15
Self-disclosure	0/0	23.89/17.86	8.80/6.82	5.39/3.94	.13	0.42
of feelings	0/0	8.52/4.03	1.54/0.85	1.90/1.11	.28	0.45
of attitudes/behavior	0/0	15.18/17.86	5.10/4.70	3.66/3.62	.14	0.11
of wishes/needs	0/0	8.16/5.77	2.14/1.27	2.10/1.43	.28	0.49
Acceptance	0/0	9.89/8.88	2.12/1.54	2.32/1.88	.19	0.28
Solution suggestions	0/0	11.84/12.20	4.12/3.69	2.89/2.82	.20	0.15

Note. W = women; M = men; *r* = partner similarity (correlation between partner scores); *d* = difference between women and men. Self-disclosure, acceptance, and solution suggestions are behavior rates (i.e., occurrence per 10 minutes).

No differences were observed between conditions across the baseline variables importance, solvability, baseline problem resolution, relationship satisfaction, and age (*t*s[208] > 1.52, *p*s ≥ .131; see Appendix G). However, couples in the indulging condition had been together longer ($M = 4.08$, $SD = 4.39$ years) than those in the mental contrasting condition ($M = 2.98$, $SD = 2.74$ years). This difference was statistically significant ($t[208] = 2.19$, $p = .030$). Therefore, we controlled for relationship duration in our analyses.

Some findings should be highlighted. In both conditions, both women and men improved their degree of problem resolution from T1 to T2 by an average of 0.65 points (M_{T2} = 3.74, SD_{T2} = 0.83). Women showed more self-disclosure (d = 0.42), more acceptance (d = .28) and more solution suggestions than men (d = 0.15). Overall, we found positive correlations (i.e., interdependence) between partners' scores.

APIMoM Analysis

We tested whether mental contrasting affects individual-level outcomes (i.e., perceived problem resolution, self-disclosure, solution suggestions) using the APIMoM framework (Garcia et al., 2015). To determine the most parsimonious model for each dependent variable, we evaluated whether effects differed by gender and whether actor and partner moderation (i.e., condition×importance and condition×solvability) needs to be included. Table 6 displays the APIMoM results for all dependent variables within the most parsimonious model. Across all dependent variables, we found no significant interactions between condition and the partner's importance or solvability (ps ≥ .389). Detailed model fit parameters can be found in Appendix H. Consequently, for each dependent variable, we only report potential gender differences and whether we need to assume actor moderation before addressing the hypotheses.

Problem Resolution. The relevant effects (i.e., condition's main effect and the actor's interaction effects of condition×importance and condition×solvability) did not differ between women and men ($\chi 2[5] = 5.856$, p = .321). Thus, the following effects apply to both women and men. Condition significantly interacted with actor's importance. Specifically, mental contrasting, compared to indulging, improved problem resolution more the higher the actor's perceived importance (b = 0.194, SE = 0.083, p = .02).

Table 6

Study 3: APIMoM Analyses Results

Predictor	T2 Problem resolution[a]	Self-disclosure		Solution suggestions	
		Women	Men	Women	Men
Condition (C)	0.148	-1.141	1.593*	-1.109*	-0.445
Actor's importance (I_A)	-0.186**	0.628	0.226	-1.386**	0.190
Actor's solvability (S_A)	0.195**	0.075	-0.121	-0.177	0.109
C x I_A	0.194*	-	-	1.825**	-0.388
C x S_A	-0.128	-	-	0.254	0.253
Partner's importance (I_P)	-0.097*	-0.629	0.435	-0.135	-0.265
Partner's solvability (S_P)	-0.011	0.096	-0.172	-0.475*	0.160
C x I_P	-	-	-	-	-
C x S_P	-	-	-	-	-

Note. Effects that were constrained to zero in the most parsimonious model are indicated with dashes. Relationship duration was included as a covariate in all models and was associated with more self-disclosure (women's $p = .035$; men's $p = .079$), but not with the other dependent variables ($ps \geq .450$).

[a]Effects were indistinguishable between genders.

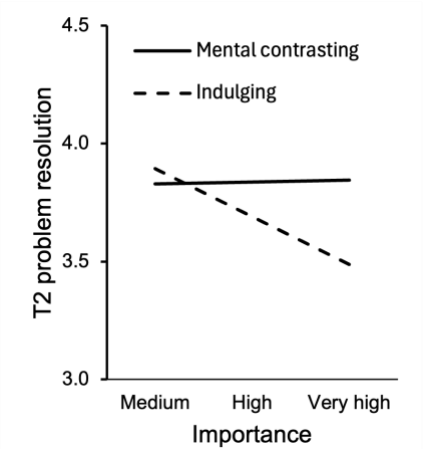
** $p < .01$, * $p < .05$ (two-tailed)

We probed the condition×importance interaction to identify at which importance levels mental contrasting affects T2 problem resolution (see Figure 6). Partially supporting our hypothesis, mental contrasting (vs. indulging) increased problem resolution at very high importance (+1 *SD*; $b = 0.358$, $SE = 0.147$, $p = .008$), but not at high importance (*M*; $b = 0.148$, $SE = 0.11$, $p = .09$), nor medium importance (-1 *SD*; $b = -0.063$, $SE = 0.139$, $p = .325$).

Lastly, mental contrasting, compared to indulging, improved problem resolution more the less solvable the problem was perceived ($b = -0.128$, $SE = 0.068$, $p = .062$). However, this interaction was not quite significant.

Figure 6

Study 3: Effect of Mental Contrasting on Problem Resolution at Different Importance Levels

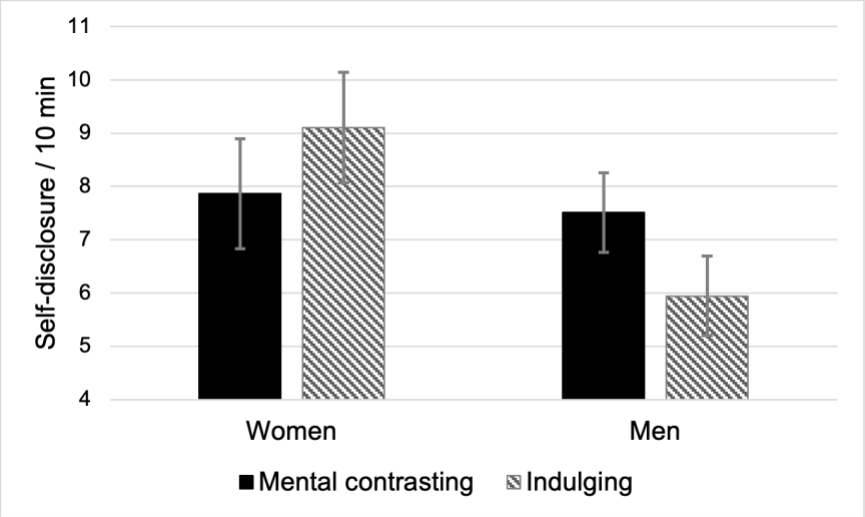


Self-Disclosure. The effects on self-disclosure were different between women and men ($\chi 2[5] = 8.593$, $p = .126$). Thus, we report the effects separately for women and men. The model constraining all interaction effects to be zero did not fit the data worse than the unrestricted model ($\chi 2[8] = 3.626$, $p = .889$). Therefore, we can report the main effect of condition without assuming any moderation by importance or solvability. As predicted, mental contrasting made men show more self-disclosure than indulging ($b = 1.593$, $SE = 0.755$, $p = .018$). Unexpectedly, this effect was not significant for women ($b = -1.141$, $SE = 1.044$ $p = .274$; see Figure 7).

As an exploratory analysis, we examined the subcategories of self-disclosure. For men, the effect of mental contrasting, compared to indulging, on self-disclosure remained significant in the subcategories of expressions of feelings ($b = 0.467$, $SE = 0.209$, $p = .013$) and expressions of attitudes and behavior ($b = 1.377$, $SE = 0.697$, $p = .024$). However, expressions of wishes and needs ($b = -0.251$, $SE = 0.259$, $p = .332$) were not affected. For women, the condition had no significant impact on any subcategory of self-disclosure ($ps > .148$).

Figure 7

Study 3: Effect of Mental Contrasting on Self-Disclosure

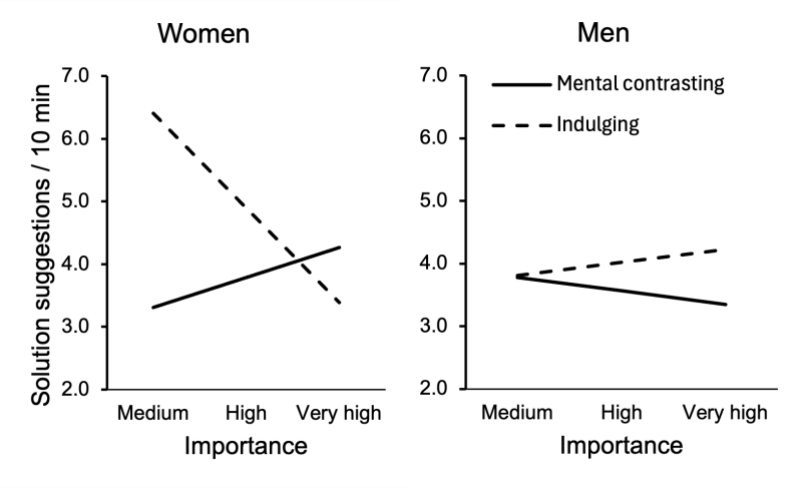


Solution Suggestions. The effects on solution suggestions were different between women and men ($\chi 2[5] = 11.527$, $p = .042$). Thus, we report the effects separately for women and men. For women, condition significantly interacted with their importance. Specifically, mental contrasting, compared to indulging, led to more solution suggestions the more important women perceived the problem ($b = 1.825$, $SE = 0.562$, $p = .001$). For men, the condition did not interact with their importance ($b = -0.388$, $SE = 0.441$, $p = .379$; see Figure 8).

For women, we then probed the conditions×importance interaction to identify at which importance levels mental contrasting affects the number of solution suggestions. Unexpectedly, mental contrasting, compared to indulging, led to fewer solutions at medium importance (-1 *SD*; $b = -3.10$, $SE = 0.92$, $p = .001$) and high importance (*M*; $b = -1.11$, $SE = 0.54$, $p = .041$). At very high importance (*max*), conditions did not differ ($b = 0.87$, $SE = 0.70$, $p = .213$). For men, mental contrasting did also not lead to more solution suggestions ($b = -0.453$, $SE = 0.563$, $p = .421$). Lastly, for both women and men, condition did not interact with solvability ($ps > .49$).

Figure 8

Study 3: Effect of Mental Contrasting on Solution Suggestions at Different Importance Levels



Lag Sequential Analysis and Path Analysis: Self-Disclosure-Acceptance

We investigated if mental contrasting affects the dyad-level outcomes (i.e., self-disclosure-acceptance patterns) using lag sequential analysis and path analysis. Lag sequential analysis revealed, supporting our hypothesis, that the likelihood of self-disclosure being followed by acceptance was significantly increased in the mental contrasting condition ($z = 6.25$, $p < .001$). This likelihood was not increased in the indulging condition ($z = 0.60$, $p = .546$).

Then, we used path analysis to test whether the rate of self-disclosure-acceptance patterns is significantly higher for couples in the mental contrasting (vs. indulging) condition, even when controlling for baseline rates of self-disclosure and acceptance. The most parsimonious model constrained the interactions between condition and the man's importance and solvability to be zero but still included interactions with woman's importance and solvability ($\chi2[2] = 0.706$, $p = .703$; detailed model fit parameters can be found in Appendix H). This model's results are displayed in Table 7.

Table 7

Study 3: Path Analysis Results

Predictor	Self-disclosure-acceptance
Condition (C)	0.340^{+}
Women's importance (I_W)	-0.254*
Women's solvability (S_W)	0.033
C x I_W	0.417*
C x S_W	0.161
Men's importance (I_M)	-0.025
Men's solvability (S_M)	-0.048
C x I_M	-
C x S_M	-

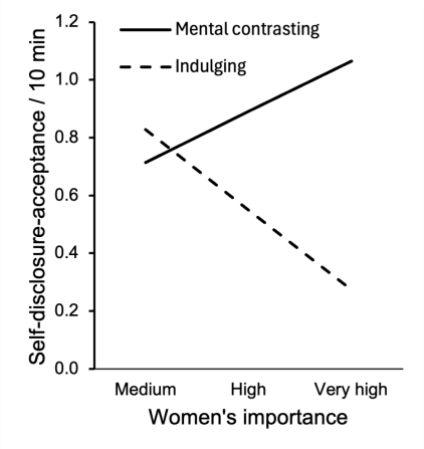
Note. Effects that were constrained to zero in the most parsimonious model are indicated with dashes. We included both partners' baseline rates of self-disclosure and acceptance as covariates ($ps \leq .103$), as well as relationship duration ($p = .277$).

** $p < .01$, * $p < .05$, $^{+}$ $p < .10$ (two-tailed)

Condition significantly interacted with woman's importance. Specifically, mental contrasting, compared to indulging, made couples display more self-disclosure-acceptance patterns the higher the woman's importance ($b = 0.417$, $SE = 0.180$, $p = .02$; see Figure 9). We then probed this interaction to identify at which importance levels mental contrasting increases the rate of self-disclosure-acceptance patterns. Partially supporting our hypothesis, mental contrasting, compared to indulging, increased the rate of self-disclosure-acceptance patterns at high importance (*M*; $b = 0.340$, $SE = 0.205$, $p = .049$) and very high importance (+1 *SD*; $b = 0.792$, $SE = 0.268$, $p = .002$). Only at medium importance (-1 *SD*), this effect was not significant ($b = -0.114$, $SE = 0.297$, $p = .701$).

Figure 9

Study 3: Effect of Mental Contrasting on Self-Disclosure-Acceptance at Different Importance Levels



Discussion

Study 3 extended the methods and findings of Studies 1 and 2 by involving both partners in romantic couples in the use of mental contrasting, rather than just one partner. Again, we examined how mental contrasting could enhance relationship problem-solving. Additionally, we explored whether the effects were moderated by both partners' perceptions of importance and solvability and whether they differed by gender. Most notably, unlike Studies 1 and 2, mental contrasting in Study 3 led to improved problem resolution even for problems that were perceived as being of highest importance.

While Studies 1 and 2 relied solely on self-reports, Study 3 provided a more objective perspective on couples' behavioral dynamics during problem-solving by observing and coding couples' behavior in discussions. First, mental contrasting led men—but not women—to engage in self-disclosure more often compared to those in the indulging condition. This increase in self-disclosure was significant for expressing feelings, attitudes, and behaviors but not for expressing wishes and needs. Second, when participants engaged in self-disclosure, their partners were more likely to respond with acceptance in the mental contrasting

condition than in the indulging condition, particularly for problems that women deemed of highest importance. Third, while participants in the mental contrasting condition suggested a similar number of solutions compared to the indulging condition, women in the mental contrasting condition proposed fewer solutions for problems of medium to high importance. In summary, mental contrasting enhances problem-solving by encouraging men to articulate their feelings, attitudes, and behaviors, promoting greater acceptance in response to self-disclosure, and enabling women to be more selective in their solution suggestions.

Perceived Problem Resolution

Participants in the mental contrasting condition who perceived resolving the problem as highly important reported greater perceived problem resolution 2 weeks later compared to those who indulged in the desired future, irrespective of the perceived solvability. This result aligns with Fantasy Realization Theory (Oettingen, 1999, 2012), which suggests that mental contrasting helps individuals address their internal obstacles in realistic ways when their goals are highly important. Specifically, mental contrasting facilitates identifying strategies and committing to these strategies in line with the perceived surmountability of the obstacles. When obstacles were surmountable, partners may have identified ways to overcome them. Conversely, when obstacles were insurmountable, mental contrasting may have helped partners accept the situation as irresolvable, reducing continued frustration. As illustrated in Figure 6, indulging in the desired future appears less effective as the importance of the problem increases. This finding supports prior research indicating that indulging in positive fantasies fosters passively hoping for better times, which saps the energy needed for actual change (H. B. Kappes & Oettingen, 2011; Oettingen, 2024; Oettingen et al., 2001).

As in Study 1, we found that more important problems in Study 3 also tended to be more severe. For example, when women's importance ratings were ≤ 6 ($n = 60$), the topic distribution was 38% less severe and 17% more severe. At importance = 7, the highest

importance (n = 45), this distribution shifted to 15% less severe and 29% more severe. Apparently, when both partners confronted their inner obstacles, even more severe problems like entrenched communication patterns—communication was the most frequently selected topic at the highest importance level—appeared responsive to change within a 2-week period. This finding underscores the necessity to work towards shared, dyadic goals conjointly to facilitate progress (Finkel et al., 2016; Fitzsimons et al., 2015). However, participants in Study 3 were younger, less likely to have children, and reported an overall higher solvability compared to those in Study 1, which limits the comparability of these samples. Additionally, the study setting may have influenced problem selection, as couples might have avoided discussing their most severe or intimate issues knowing they would be recorded. Overall, the topics chosen in Study 3 were generally less severe than those in Studies 1 and 2.

Problem-Solving Behavior

When observing couples' problem-solving discussion, we focused on both speaker and listener behavior indicative of effective problem-solving. We investigated self-disclosure, reacting to self-disclosure with acceptance, and the number of solution suggestions.

Self-Disclosure. In the mental contrasting condition, men displayed a higher rate of self-disclosure compared to men in the indulging condition. Consequently, the self-disclosure rates of men and women were more similar in the mental contrasting condition compared to indulging (see Figure 7). This increase in self-disclosure is notable, given that men typically disclose less than women (Dindia & Allen, 1992)— and may contribute to an improved mutual understanding within the couple. Exploratory analysis revealed that this effect was primarily driven by men more frequently expressing feelings, attitudes, and behaviors. Acknowledging and verbalizing emotional barriers might foster effective problem resolution by creating intimacy and helping couples identify and address the sources of their problems (Baker & McNulty, 2020; Laurenceau et al., 2005; Reis & Shaver, 1988).

Additionally, as men shared their attitudes (i.e., the reasons behind their feelings or behaviors), they may have enabled their partners to gain a deeper understanding of the problem, fostering greater sensitivity in their problem-solving approach. The balanced self-disclosure between women and men in the mental contrasting condition suggests that mental contrasting may encourage equal participation in the problem-solving process, rather than one partner dominating the discussion.

Self-Disclosure-Acceptance Patterns. Looking at the conditions separately, only in the mental contrasting condition, but not in the indulging condition, self-disclosure of one partner had an increased likelihood (i.e., higher than the unconditional probability) to be followed by acceptance of the other partner. When comparing the conditions, mental contrasting made partners respond to self-disclosure with acceptance more often, compared to indulging, when the problems were of high or very high importance to the woman. This finding aligns with previous studies, indicating that mental contrasting might foster perspective-taking in discussions (Kirk et al., 2011). Reacting with acceptance to self-disclosure may create a positive feedback loop that encourages further self-disclosure, may reduce defensiveness and may create a safe space for partners to express vulnerabilities and collaboratively address challenges (Laurenceau et al., 2005; Reis & Shaver, 1988).

Interestingly, the effect of mental contrasting on self-disclosure-acceptance patterns appears to depend primarily on the woman's perception of the problem's importance. Furthermore, women in Study 3 rated the resolution of the chosen problems as more important than their male counterparts did. Possibly, women in Study 3 may take greater responsibility for maintaining their relationships, which could make their perceptions of the problem more central to the problem-solving process compared to perceptions of men (Eagly et al., 2000; Stafford & Canary, 1991).

Solution Suggestions. In the mental contrasting condition, women suggested fewer solutions than those in the indulging condition, particularly for problems perceived as moderately to highly important. This result was unexpected, as the initial hypothesis predicted that mental contrasting would lead to a greater number of solution suggestions. However, it appears that mental contrasting encouraged women to be more selective in their suggestions, avoiding ineffective proposals. Notably, while women suggested fewer solutions for problems of medium and high importance, the overall problem resolution did not differ between the conditions.

For problems of highest importance, where the number of suggested solutions was similar across conditions for both women and men, mental contrasting was more effective than indulging in improving problem resolution. This pattern suggests that the solutions proposed in the mental contrasting condition may have been of higher quality or that participants were more effective at implementing these solutions. Additionally, the increased self-disclosure observed in men may have contributed by providing richer information, enabling both partners to generate more informed and targeted solutions. Our findings indicate that the quality of solutions, rather than their sheer quantity, may be critical for effectively resolving problems, particularly for problems of significant importance.

General Discussion

We examined how the self-regulatory strategy of mental contrasting influences relationship problem-solving in romantic couples. Across three experiments, we taught romantic partners mental contrasting geared towards the resolution of an ongoing relationship problem. We investigated various outcomes related to relationship problem-solving—including perceived problem resolution, mental engagement, and fine-grained problem-solving behaviors. Additionally, we explored whether the effects of mental contrasting on

these outcomes depended on the perceived importance and perceived solvability of the problem.

When used individually, mental contrasting, compared to indulging, improved perceived problem resolution for problems deemed highly solvable (Study 1). However, this effect diminished for the most important problems, likely because they were too severe to be meaningfully resolved within 2 weeks. While a quick resolution might not be feasible for such severe problems, mental contrasting, compared to indulging or a concentration task, increased mental engagement with these problems—indicating a strong commitment to resolve the problem (Study 2). When both partners used mental contrasting, perceived problem resolution improved even for the most important problems (Study 3), underscoring the necessity of joint efforts in resolving the most pressing issues. Beyond perceived problem resolution, we investigated key problem-solving behaviors when partners discussed their problem (Study 3). Mental contrasting, compared to indulging, increased self-disclosure in men, made participants more likely to respond to their partners' self-disclosure with acceptance, and led women to be more selective in their solution suggestions.

This research provides a comprehensive perspective on the applicability of mental contrasting for relationship problem-solving, considering various relationship contexts and demographics. In addition to capturing varying degrees of perceived importance, perceived solvability, and problem severity, we recruited individuals (Study 1 and 2) and couples (Study 3), from both relatively satisfied relationships (Study 1 and 3) and less satisfied relationships (Study 2). We examined both younger couples, mostly without children (Study 3 and part of Study 1) and middle-aged couples, mostly with children (Study 2 and part of Study 1). Additionally, we recruited samples across different cultural contexts: Europe (Study 1), the U.S. (Study 2), and Germany (Study 3). Considering these contextual differences allows us to

examine how mental contrasting operates across varying relationship dynamics and problem characteristics.

The Contextual Nature of Relationship Problems

Mental contrasting was particularly effective in improving problem-solving for relatively satisfied couples with less severe, solvable problems. These problems may be more responsive to exercises like mental contrasting because partners already have a solid relationship foundation and solutions are easily identified and implemented. However, mental contrasting's effectiveness appears to depend on solvability in a nuanced way: Highly solvable problems benefit from mental contrasting, whereas problems that are too easily resolved may not require intervention at all. In contrast, the most difficult problems likely require more time than 2 weeks. Interestingly, Study 1 captured a broad range of solvability, while Study 3 captured only the upper end of solvability (see Appendix I). For mental contrasting participants, compared to indulging participants, when a broad solvability range was considered, problem resolution increased as solvability increased. However, when only highly solvable problems were considered, problem resolution increased as solvability decreased, although not significantly. Thus, while higher perceived solvability might in general lead to stronger engagement in problem resolution (Johnson & Roloff, 1998; Roese & Sherman, 2007), moderate to high solvability may be the "sweet spot" for mental contrasting to be effective.

When mental contrasting was used individually, its effectiveness did not extend to problems of highest importance that we found to also be more severe. However, when used by both partners of relatively satisfied couples, we found mental contrasting to be especially effective at these highest importance problems. Typically, perceiving a problem as important fosters strong engagement in its resolution (Bandura, 2001; Overall et al., 2006). Our findings suggest that this association is further shaped by how people imagine a problem's resolution:

Mental contrasting was more effective than merely indulging in translating perceived importance into actual problem resolution. According to interdependence theory, resolving problems perceived as important (i.e., meeting one's standards) strengthens relationship satisfaction (Kelley & Thibaut, 1978). This highlights the practical value of mental contrasting in interventions such as counseling or self-help apps, where couples are most likely to seek help for highly important problems. However, to fully harness mental contrasting's benefits, both partners should engage in the exercise rather than relying on just one partner.

Mental contrasting did not improve problem resolution in less satisfied relationships dealing with more severe, less solvable problems. Instead, mental contrasting increased mental engagement when the problem was highly important, suggesting a strong commitment to addressing the issue (Klinger, 1975). However, it remains unclear whether this mental engagement reflects an increased focus (i.e., being tuned; Zajonc, 1960) on identifying the problem's sources (problem-solving Stage 1), finding solutions (Stage 2), or implementing changes (Stage 3; Gollwitzer & Bayer, 1999). Furthermore, mental engagement in dissatisfied couples may serve different functions: it could encourage partners to finally address long-standing issues, lead to rumination (Lyubomirsky & Nolen-Hoeksema, 1995), or even contribute to the decision to disengage from the relationship altogether (Oettingen & Gollwitzer, 2022).

Mental Contrasting Across the Stages of Problem-Solving

To better understand how mental contrasting facilitates relationship problem-solving, our three studies examine its effects across the first three stages of problem-solving (Baker & McNulty, 2020): (1) identifying a problem and its sources, (2) generating and evaluating solutions, and (3) implementing solutions. By analyzing mental contrasting's role at each

stage, we can clarify when and how mental contrasting contributes to relationship problem-solving.

Stage 1—Identifying a Problem and its Sources

Since all participants were already aware of their problems, we cannot determine whether mental contrasting aids in problem identification itself. However, mental contrasting may help uncover a problem's underlying causes. First, mental contrasting made men express their feelings, attitudes, and behaviors more frequently, possibly because they gained a deeper understanding of the problem's roots. By sharing this information, partners may have developed a shared understanding of the problem—a key component of effective problem-solving (Greene et al., 2006; Laurenceau et al., 2005; Lepore et al., 2000; Reis & Shaver, 1988). Second, mental contrasting encouraged greater acceptance of self-disclosure, fostering a positive feedback loop between partners, particularly for problems of highest importance. This reciprocal openness may have created an environment that facilitates deeper conversations about the problem, further enhancing both the individual and shared understanding of the problem (Laurenceau et al., 2005; Reis & Shaver, 1988).

Stage 2—Generating and Evaluating Solutions

Mental contrasting does not necessarily lead to generating more solutions. When the problem was of medium to high importance, women using mental contrasting even suggested fewer solutions than those who merely indulged in the desired future. Nevertheless, participants using mental contrasting resolved their problems at least as effectively—if not more effectively—than those who indulged in the desired future. This suggests that mental contrasting's effectiveness may lie in evaluating and selecting solutions rather than merely generating them. Consequently, solutions generated after mental contrasting may focus on realistic approaches tailored to the specific situation (Oettingen et al., 2001). Analyzing the content of the suggested solutions could provide further insights.

Stage 3—Implementing Solutions

When a problem is perceived as solvable, solutions should be easy to find and implement (Johnson & Roloff, 1998; Roese & Sherman, 2007). Still, in Study 1, only when using mental contrasting, but not when indulging in the desired future, was this high solvability translated into actual problem resolution. Also, in Study 3, even when participants suggested an equal number of solutions, only those in the mental contrasting condition, but not those in the indulging condition, were able to make meaningful progress in problem resolution. One explanation is that mental contrasting helps partners implement desired changes more efficiently, fostering goal-directed behavior (e.g., remembering to load the dishwasher after dinner) with greater ease and less effort (A. Kappes et al., 2012).

Limitations and Future Directions

Future research should address some limitations. First, our findings on problem-solving behavior—and particularly the effectiveness of dyadic mental contrasting in resolving even the highest-importance problems—apply primarily to relatively satisfied couples. Furthermore, couples in our studies showed little variance in "negative" behaviors (e.g., criticism, justification; Hahlweg, 2004). Examining less satisfied couples could provide deeper insights into whether applying mental contrasting dyadically helps resolve severe problems and reduces negative behaviors. Second, we assumed that mental engagement indicates commitment to problem resolution (Klinger, 1975) but did not assess thought content, leaving room for alternative explanations such as rumination. Future studies should examine thought processes directly through experience sampling. Third, it remains unclear which mode of thought partners spontaneously use when considering relationship problems (see Sevincer et al., 2024). Future research should examine which spontaneous modes of thought partners use when envisioning their problems to determine who benefits most from mental contrasting. Fourth, we conducted our studies in Western contexts, which limits

generalizability to more collectivistic cultures. Additionally, highly distressed couples and diverse relationship types remain underrepresented. Broader samples are needed in future studies. Lastly, we examined problem-solving over 2 weeks, leaving open questions about long-term effects and integration into relationship interventions (e.g., Bradbury & Bodenmann, 2020). Future studies should explore the long-term effectiveness of mental contrasting and its integration into couple therapy and prevention programs.

Conclusion

Romantic couples inevitably face problems, and how they navigate these problems influences relationship quality and stability. Across three studies, we demonstrated that mental contrasting—a brief, self-guided exercise—can foster effective relationship problem-solving. When used individually, mental contrasting helps resolve less severe, highly solvable problems. However, its effectiveness diminishes for the most important, more severe problems. For these problems, mental contrasting instead increases mental engagement, signaling strong commitment to resolution. When both partners engage in mental contrasting, even the most important problems can be addressed more effectively, possibly by fostering greater openness between partners. Mental contrasting may serve as a valuable tool for individuals and couples striving to navigate relationship challenges more effectively.

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Appendix A

Participant Demographics

Variable	Study 1 (N = 274)	Study 2 (N = 270)	Study 3 (N = 210; 105 couples)
Age	*Min* = 21, *max* = 60, *M* = 33.71, *SD* = 8.47	*Min* = 24, *max* = 68, *M* = 42.12, *SD* = 9.97	*Min* = 19, *max* = 60, *M* = 26.70, *SD* = 6.54
Gender	50 % women, 50 % men	53 % women, 47 % men	50 % women, 50 % men
Relationship duration (years)	*Min* = 1, *max* = 36, *M* = 9.38, *SD* = 6.47	*Min* = 1, *max* = 42, *M* = 14.71, *SD* = 9.29	*Min* = 1, *max* = 27, *M* = 3.5, *SD* = 3.7
Sexual orientation	*Not measured* 100 % heterosexual relationships (inclusion criterion)	86 % heterosexual, 10 % bisexual, 4 % gay/lesbian	*Not measured* 100 % mixed-gender relationships
Parental status	37 % with children, 63 % without children	71 % with children, 29 % without children	10 % with children, 90 % without children
Nationality	22 % Poland, 19 % Portugal, 12 % Italy, 6 % Greece, 6 % Hungary, 6 % Spain, 3 % U.K., 3 % Germany, 2 % Belgium, 2 % Czech Republic, 2 % Estonia, 2 % France, 2 % Netherlands, 2 % Russia, 2 % Slovenia, 2 % Turkey, others ≤ 1 %, respectively	100 % U.S.	100 % Germany
Ethnicity	*Not measured*	78 % White, 8 % Black, 6 % Mixed, and 6 % Asian	*Not measured*
Employment status	64 % full-time, 13 % part-time, 9 % unemployed (job-seeking), and 6 % not in paid work	77 % full-time and 21 % part-time	61 % university students or trainees, 25 % full-time, 8 % part-time, 3 % unemployed, and 4 % indicated “other”
Cohabitation status	100 % cohabiting (inclusion criterion)	100 % cohabiting (inclusion criterion)	57 % cohabiting

Appendix B

Example Participant Responses

Table B1

Studies 1 and 2: Example Participant Responses During Mental Contrasting

Problem	Positive outcome	Inner obstacle
	Study 1	
"Family relations"	"happy to live without conflicts"	"I avoid confrontations"
"because of my job, I had too little time for my family"	"I would have more time for my family, I would be very happy"	"the biggest problem is being attached to my job"
"Being open about our emotions"	"stable, happy, thankful"	"rational, too much thinking"
"Loyalty"	"I would feel happy?"	"Bad habits, fear"
"Cleaning up"	"it would make me feel happy and less stressed	"My laziness "
	Study 2	
"cheating"	"We would be happy again and get along"	"I have feelings for this other person."
"Childcare duties"	"I would feel more appreciated and human."	"I don't stand up for myself"
"My insecurity about my appearance."	"increased intimacy, physically and emotionally."	"believing that I am unworthy"
"How money is being saved or being spent/financial concerns."	"relief from stress"	"bad spending habits"
"communication"	"healthy, model, noncombative"	"mental health anger management"

Table B2

Study 3: Example Participant Responses During Mental Contrasting

Problem	Outcome woman	Outcome man	Obstacle woman	Obstacle man
„Chores“	“Feeling respected and seen in my needs”	„Feelings relaxed and having less pressure“	“Having control, not looking after own needs”	“I don’t want to change my priorities this way”
„Time management“	“Feeling relaxed, having a clear conscience”	„Feeling relieved and satisfied“	“Being scared of failing in independence”	“Fearing not having enough time together.”
“Not enough quality time together”	“A deeper connection through open communication”	„More quality time together“	“The fear of potential conflict”	“A very high workload in other areas of life”
„Appreciation“	„More security and trust“	“Beaming smile with inner satisfaction”	“Tit for tat mentality”	“Own ego that is reluctant to submit”
“Closeness / distance”	“Having clear boundaries, observing the partner before approaching”	“Joy, closeness, connection, understanding, sunshine”	“Lack of safe space”	“Fear of abandonment, jealousy, not wanting to be alone”
“Everyday stress”	“Harmony and closeness”	“Having a harmonious work routine in stressful times”	“Ego”	“Inner restlessness and emotions that guide me”
“Different standards of cleanliness in the shared home”	“Relaxing and enjoying time together at home”	“Calm, no tension”	“The feeling of not being taken seriously.”	“Lacking a reason to change”
„Communication“	“Feeling secure and appreciated”	„Feeling relaxed and relieved times“	“overthinking”	„Swallowing thoughts and words“

Appendix C

Study 1: ANOVA Results for Baseline Differences Between Conditions

Variable	MC (n = 90)		Indulging (n = 89)		Dwelling (n = 95)		F	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*		
Importance	5.69	1.33	6.06	1.08	5.75	1.31	2.25	.016
Solvability	4.19	1.64	4.46	1.69	4.33	1.72	0.58	.004
Relationship satisfaction	5.80	0.81	5.61	0.95	5.61	0.94	1.38	.010
Problem resolution	2.87	1.13	2.76	1.00	3.04	1.03	1.69	.012
Relationship duration	8.92	6.13	8.83	6.37	10.34	6.82	1.60	.012
Parental status	0.32	0.47	0.35	0.48	0.43	0.50	1.30	.010
Age	33.33	8.20	32.91	8.10	34.82	9.02	1.30	.010
Sex	0.48	0.50	0.53	0.50	0.48	0.50	0.27	.002

Note. MC = mental contrasting. Importance, solvability, and relationship satisfaction use 7-point scales; problem resolution uses a 5-point scale; relationship duration and age are indicated in years; parental status 1 = children, 0 = no children; sex 1 = woman, 0 = man.

Appendix D

T-test Results Comparing Baseline Variables Between Study 1 (*n* = 274) and Study 2 (*n* = 270)

Variable	Study 1		Study 2		*t*(542)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Relationship duration	9.38	6.47	14.71	9.29	-7.75	< .001	-0.67
Importance	5.83	1.25	6.16	0.97	-3.40	< .001	-0.29
Solvability	4.32	1.68	3.64	1.67	4.74	< .001	0.41
Relationship satisfaction	5.67	0.90	4.78	1.15	10.09	< .001	0.87
Problem resolution	4.05	1.48	2.90	1.44	9.17	< .001	0.79

Note. Variables refer to the baseline measures. Relationship duration is indicated in years and all other variables use 7-point scales. Problem resolution originally used a 5-point scale in Study 1 and was thus transformed to a 7-point scale for comparison. *P*-values are provided for two-tailed tests.

Appendix E

Study 2: ANOVA Results for Baseline Differences Between Conditions

Variable	MC (n = 91)		Indulging (n = 92)		CT (n = 87)		F	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*		
Importance	6.14	0.97	6.20	0.97	6.13	0.99	0.12	.001
Solvability	3.53	1.68	3.55	1.62	3.86	1.71	1.09	.008
Relationship satisfaction	4.78	1.16	4.60	1.23	4.97	1.02	2.28	.017
Problem resolution	2.77	1.45	2.98	1.54	2.95	1.33	0.55	.004
Mental engagement	4.26	1.34	4.19	1.41	4.16	1.29	0.14	.001
Relationship duration	13.96	9.34	14.95	9.85	15.25	8.67	0.47	.004
Parental status	0.65	0.48	0.74	0.44	0.75	0.44	1.32	.010
Age	42.70	10.16	41.57	10.35	42.09	9.41	0.30	.002
Sex	0.60	0.49	0.57	0.50	0.41	0.50	3.66*	.027

Note. MC = mental contrasting; CT = concentration task. Importance, solvability, relationship satisfaction, conflict resolution, and mental engagement use 7-point scales; relationship duration and age are indicated in years; parental status 1 = children, 0 = no children; Sex 1 = woman, 0 = man.

* $p < 0.05$ (two-tailed)

Appendix F

Study 2: Interactive Effect of Conditions, Importance, and Solvability on Problem Resolution

Variable	Model 1		Model 2		Model 3		Model 4	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Constant	-1.54*	0.73	-1.29**	0.46	-0.97*	0.46	-1.07*	0.46
Relationship satisfaction	0.22**	0.08	0.22**	0.08	0.22**	0.08	0.24**	0.08
Indulging (IN)	0.09	0.21	0.09	0.22	0.09	0.21	0.10	0.21
Concentration (CT)	0.14	0.22	0.14	0.22	0.11	0.22	0.06	0.22
Importance (IMP)	0.04	0.09	-0.13	0.16	-0.13	0.16	-0.06	0.16
Solvability (SOL)	0.08	0.06	0.08	0.06	0.04	0.09	0.01	0.09
IN x IMP			0.28	0.22	0.28	0.22	0.19	0.22
CT x IMP			0.23	0.22	0.18	0.22	0.14	0.22
IN x SOL					-0.02	0.13	-0.01	0.13
CT x SOL					0.16	0.13	0.15	0.13
IMP x SOL							0.23*	0.10
IN x IMP x SOL							-0.27*	0.13
CT x IMP x SOL							-0.02	0.13
R^2 (ΔR^2)	.060		.066 (.007)		.075 (.008)		.114 (.040*)	
ΔF	2.37*		0.94		1.16		3.82*	

Note. Indulging and concentration represent their effect when compared with mental contrasting, respectively. The covariates relationship duration and biological sex had no significant effects (*p*s ≥ .35).

* $p < .05$, ** $p < .01$ (two-tailed)

Appendix G

Study 3: T-test for Baseline Differences Between Conditions

Variable	Mental contrasting (n = 108)		Indulging (n = 102)		t(208)	p	Cohen's d
	M	*SD*	*M*	*SD*			
Importance	5.88	1.11	5.95	1.08	-0.47	.638	-0.07
Solvability	4.79	1.38	4.77	1.40	0.07	.948	0.01
Relationship satisfaction	5.83	0.80	5.73	0.91	0.89	.376	0.12
Problem resolution	3.00	0.90	3.19	0.93	-1.51	.131	-0.21
Relationship duration	2.98	2.74	4.08	4.39	-2.19	.030	-0.30
Parental status	0.10	0.30	0.09	0.29	0.33	.738	0.05
Age	26.09	5.46	27.34	7.49	-1.38	.167	-0.19

Note. Variables refer to the baseline (T1) measures. Relationship duration and age are indicated in years and all other variables use 7-point scales—except problem resolution using a 5-point scale. *P*-values are provided for two-tailed tests.

Appendix H

Study 3: Model Fit and Omnibus Test Parameters

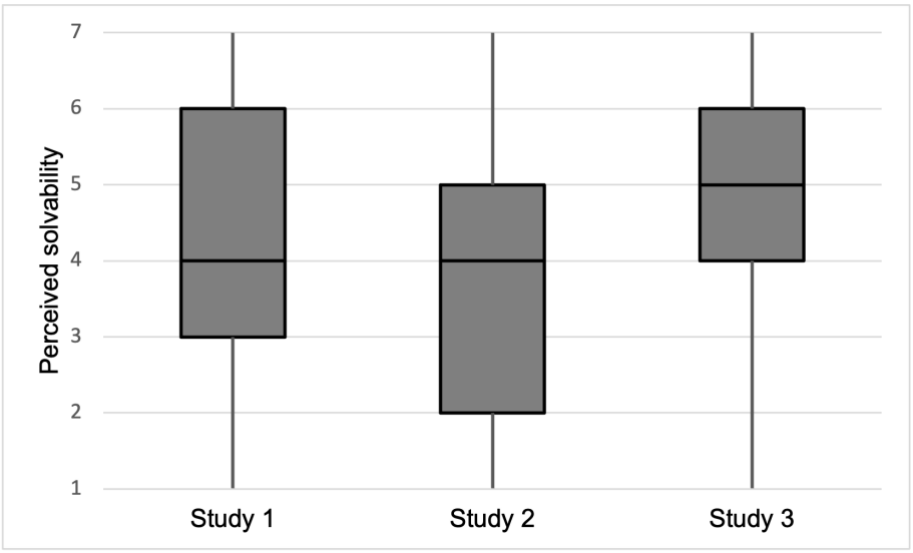
		Problem resolution	Self-disclosure	Self-disclosure-acceptance[a]	Solution suggestions
Gender constrained	χ^2 (*df*)	**5.856 (5)**	8.593 (5)	*NA*	11.527 (5)
	p	**.321**	.126		.042
	SABIC	**443.56**	1256.86		1043.79
Unrestricted model (all interaction effects free)	χ^2 (*df*)	11.181 (12)	0	0	0
	p	.513	*NA*	*NA*	*NA*
	SABIC	438.63	1255.74	315.17	1039.74
All interaction effects zero	χ^2 (*df*)	22.821 (16)	**3.555 (8)**	8.043 (4)	13.808 (8)
	p	.119	**.895**	.090	.087
	SABIC	444.40	**1247.34**	315.08	1041.590
Partner interaction effects zero	χ^2 (*df*)	**14.836 (14)**		**0.706 (2)[a]**	**1.489 (4)**
	p	**.389**		**0.703**	**.829**
	SABIC	**439.35**		**312.68**	**1035.250**

Note. SABIC = sampling-error-adjusted Bayesian information criterion, with smaller values indicating better fit. Bold parameters indicate the model that we chose for hypothesis testing.

[a]Self-disclosure-acceptance is a dyad-level outcome. Thus, we did not test gender distinctions. Furthermore, as there is no actor and partner distinction on dyad-level outcomes, we constrained the man's interaction effects instead of the partner interaction effects.

Appendix I

Perceived Solvability Boxplots for Studies 1 to 3



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Hiermit erkläre ich,

Henrik Döhnk (Vorname, Nachname),

dass ich mich an einer anderen Universität oder Fakultät noch keiner Doktorprüfung unterzogen oder mich um Zulassung zu einer Doktorprüfung bemüht habe.

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Eidesstattliche Erklärung nach *(bitte Zutreffendes ankreuzen)*

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