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Positive psychology intervention for couples: A pilot study

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Abstract

In this randomized study, a multicomponent, theory-driven, autonomous self-help positive psychology intervention (PPI) for couples was examined. This intervention was not designed for distressed couples but rather to address autonomous couples with a good initial level of functioning who, nonetheless, wished to improve it. The objective was to assess the efficacy of the PPI on satisfaction with life, affective life, communication patterns, and dyadic adjustment in each member of the dyad. The 4-week PPI encompassed dyadic and individual daily activities. Thirty-eight couples were assigned to an intervention group (n = 20 couples) or a waiting list control (WLC) group (n = 18 couples). Assessments were conducted prior to and after the PPI, with an immediate post-test and a follow-up. Ninety-two percent of the PPI was completed by the participants. Linear mixed models revealed improvements in positive emotions, communication patterns of mutuality, and dyadic adjustment from the pretest to the immediate post-test in the intervention group compared with the WLC group. Effects of dyadic adjustment were maintained from pretest to 1-month follow-up in the intervention group. This pilot study suggests that the realization of intentional dyadic activities presents an interesting approach to contribute to individual positive emotions and dyadic functioning.

KEYWORDS

couple, emotions, dyadic adjustment, dyadic approach, self-help, well-being

1 INTRODUCTION

Couple therapy has seen growing interest among couples, clinicians, and researchers over the last several decades (Gurman, 2015). Generally, the aim of this therapy is to correct dysfunctional communication and reinforce problem-solving skills, which become impaired in crisis contexts, and ensure marital success. Some of the most recent works have targeted the enhancement of coping (Bodenmann & Shantinath, 2004) or have emphasized the acceptance of partners' differences to resolve distress in couples (Dimidjian, Martell, & Christensen, 2008; for a review see Gurman, 2015). Integrative and pragmatic by nature, these therapeutic interventions emphasize the couple's resources, but the dysfunctions remain the target. Well-being as a primary target for couple interventions, on the basis of the positive psychology approach, remains an understudied field of research (Kauffman & Silberman, 2009). This lack of research is surprising considering the significant impact of well-being-based positive psychology interventions at the individual level (Bolier et al., 2013).

1.1 Dysfunction and distress, a usual target for couple therapies

Couple distress has become a major focus in recent decades, with a large body of research highlighting the factors and processes that could promote or impair a healthy romantic relationship (Lebow, Chambers, Christensen, & Johnson, 2012). Several types of interventions targeting impaired dyadic interactions, negative communication patterns, and marital dissatisfaction have been deployed. Some interventions have adopted a preventive basis of couple distress (e.g., on the basis of stress and coping, Bodenmann, Hilpert, Nussbeck, & Bradbury, 2014; Bodenmann & Shantinath, 2004, or on the basis of imago relationship therapy, Schmidt, Luquet, & Gehlert, 2016), and others have adopted a remediation basis of couple distress (e.g., behaviourally based couple therapy, Baucom et al., 2015, integrative behavioural couple therapy, Christensen & Doss, 2017, or emotion-focused therapy, Johnson, 2004; see Lebow et al., 2012 for a review). Whereas couple distress appeared as the main target of several couple interventions, for couples beyond the threshold of distressed relationships, a shift towards well-being promotion would be of interest, especially because some fields of research in psychology consider and support well-being as their primary goal.

1.2 Well-being matters in couple life

Subjective well-being is represented by the combination of satisfaction with life (the cognitive component), a low frequency of experiencing negative affectivity, and a high frequency of experiencing positive affectivity (the affective component; Diener, 2000; Lucas & Diener, 2008). Positive emotions are important because they activate an urge to explore, to be creative, to be kind, and to create social connections—in short, they broaden one's thought and action repertoire (Broaden-and-build model; Fredrickson, 2001). In this way, numerous resources can be built and stored (e.g., knowledge and skills, sense of oneself, optimism, and social bonds) and may even create an upward spiral towards more fulfilling positive emotions (Fredrickson, 2013). Thus, by experiencing positive emotions, one can access a world of opportunities, including enduring congruent social bonds (Fredrickson, 2013).

Well-being and positive emotions represent fundamental resources of human beings (Fredrickson, 2013; Hilpert, Bodenmann, Nussbeck, & Bradbury, 2016). They are more than a protective factor for individual mental health (Kobau et al., 2011; Layous, Chancellor, & Lyubomirsky, 2014), as they also appear to have several positive effects on general health and social aspects, such as relationships and support (Chida & Steptoe, 2008; Lyubomirsky, King, & Diener, 2005; Steptoe, Dockray, & Wardle, 2009; Steptoe, Wardle, & Marmot, 2005). Happy people, or people who frequently experience positive affect, tend to experience more satisfying interpersonal relationships, especially committed romantic ones, and to possess more social and conflict resolution skills (Hilpert et al., 2016; Lyubomirsky et al., 2005; Myers, 2000).

The promotion of health and well-being (e.g., life satisfaction and momentary happiness) has been found to benefit from satisfying romantic bonds and conjugal quality (Carr, Freedman, Cornman, & Schwarz, 2014; Headey, Veenhoven, & Wearing, 1991; Kiecolt-Glaser & Wilson, 2017; Robles, Slatcher, Trombello, & McGinn, 2014). High conjugal quality involves satisfaction with the relationship, positive attitudes towards the partner, and few hostile and negative behaviours (Robles et al., 2014). People's sense of feeling understood, cared for, and validated by their partners, otherwise called perceived partner responsiveness, is a significant predictor of health (Kiecolt-Glaser & Wilson, 2017). Furthermore, social sharing of emotions between romantic partners deepens and is likely to enhance an upward spiral of positive interactions within the relationship, which can be nurtured by positive emotions and savouring (Camgoz, 2014; Gable & Reis, 2010). The quality of the relationship with the intimate partner seems to be a key factor in the enhancement and maintenance of happiness at the individual level (Hilpert et al., 2016). Married people seem more likely than others to display full life aspects, that is, a life filled with meaning, pleasure, and engagement, with significant levels of life

satisfaction and positive emotions (Peterson, Park, & Seligman, 2005). Finally, marital adjustment and life satisfaction bidirectionally influence each other (Be, Whisman, & Uebelacker, 2013).

1.3 Couple positive psychology intervention

The positive psychology field suggests that intentional activities influence well-being at the individual level and increase happiness with lasting changes (Bolger et al., 2013; Donaldson, Dollwet, & Rao, 2015; Mitchell, Vella-Brodrick, & Klein, 2010; Seligman, Steen, Park, & Peterson, 2005; Sin & Lyubomirsky, 2009). Positive social bonds are fundamental for the growth of personal happiness (Reis & Gable, 2003), and happiness can become a dyadic quest (Hilpert et al., 2016) for specific activities that promote couples' positive attributes (e.g., Algoe & Zhaoyang, 2016; Coulter & Malouff, 2013).

There are already a few couple interventions on the basis of the positive psychology approach. For example, one study examined the injection of gratitude into romantic relationships and underlined that it promoted positive emotions (Algoe & Zhaoyang, 2016). Moreover, when partners were perceived as being particularly responsive when expressing gratitude, improvements in daily subjective well-being were found—such as decreases in negative emotions and improvements in satisfaction with life and positive emotions (Algoe & Zhaoyang, 2016). Furthermore, if one partner experienced gratitude, relational growth was nurtured by an upward spiral for each partner in the relationship, adding adaptive value for both partners, as suggested by the find-remind-and-bind theory (Algoe, 2012; Algoe & Zhaoyang, 2016). Another intervention intended to enhance committed-relationship excitement, with activities practiced for 90 min a week, also led to positive affectivity and relationship satisfaction, with follow-up data showing effect maintenance (Coulter & Malouff, 2013). In another study, training on the basis of active-constructive responses (i.e., enthusiastic and supportive responses to the partner's good news) created a positive impact with successful capitalization (i.e., social sharing of positive experiences) of positive events by the partner (Gable, Reis, Impett, & Asher, 2004; Woods, Lambert, Brown, Fincham, & May, 2015). This training also led to improvements in relationship well-being, especially in the perceived relationship satisfaction of the partners and the receipt of gratitude (Woods et al., 2015).

It is noticeable that these existing couple positive psychology interventions (CPPIs) are single-component interventions. This structure is rather surprising given that multicomponent interventions may be more effective than single-component interventions (Sin & Lyubomirsky, 2009). Moreover, multicomponent interventions could allow participants to find activities that are consistent with their own aspirations, as defined in the self-concordance motivation model (Sheldon & Elliot, 1999; Sheldon & Lyubomirsky, 2006) and the person-activity fit model (Lyubomirsky & Layous, 2013; Schueller & Parks, 2014). Moreover, because the longest interventions show better outcomes than shorter ones (Sin & Lyubomirsky, 2009), we chose to conduct a 4-week intervention. Therefore, the current study introduces a multicomponent intervention addressing couples wishing to improve their well-being.

1.4 Couple+: A new CPPI

Cultivating well-being and strengths within a dyadic approach represents a meaningful and promising preventive step in addressing conflicts that occur in daily life and promoting relationship quality and stability (Bradford, Mock, & Stewart, 2016). Many couples seek novel alternatives to obtain advice or assistance rather than more typical clinical sessions (Doss, Rhoades, Stanley, & Markman, 2009), where engagement and retention can be a challenge (Lebow et al., 2012). Couple+ intervention was designed as an easily accessible self-help programme. This type of CPPI was meant to overcome noticeable drawbacks of one-to-one interventions (e.g., dissemination, financial and time costs, and organization for childcare; Bradford et al., 2016; Halford, Markman, Kline, & Stanley, 2003; Halford, Markman, & Stanley, 2008). Moreover, because a variety of interventions have previously been found to provide benefits, this CPPI was innovatively based on a multicomponent approach (Parks, 2015; Thompson,

Peura, & Gayton, 2015).

This theory-driven preventive CPPI was based on Kauffman and Silberman's (2009) assumption that CPPIs are feasible and of interest for encouraging romantic relationship development, maintenance, and functioning. Couple+ intervention followed the Seligman's (2012) interventional model, which identifies five major components that cultivate well-being: positive emotions, engagement in life (global involvement in one's commitments), meaning (developing the belief that one belongs to something larger than oneself), accomplishments (achieving something for its own sake), and positive relationships.

This intervention was not designed for distressed couples but rather to address autonomous couples with a good initial level of functioning who, nonetheless, wished to improve it. Couple+ offered a way to nurture positive emotions, strengths, and attuned communication patterns within the couple through intentional daily activities for 4 weeks. The aim was to cultivate resources that might improve the quality and stability of couples' romance and to prevent any issues from arising (Atkinson, 2013; Bradford et al., 2016). Therefore, this pilot CPPI targeted several constructs that have been found to nurture a healthy and flourishing intimate relationship (i.e., "positive relationships"): individual satisfaction, shared moments, kindness and gratitude (i.e., "positive emotions"), active and constructive communication (i.e., "meaning"), and identification and use of the partners' and the couple's strengths (i.e., "engagement"; Fincham & Beach, 2010; Moore et al., 2004; Seligman, 2012), with a weekly touch of mindfulness to cultivate the relationship (Atkinson, 2013). More information about Couple+ is available in Table 2.

1.5 Hypothesis

The study is a randomized control trial including couples who have no major dysfunctions separated into two groups: an intervention group and a control group on the waiting list.

Hypothesis 1 On the basis of assumptions by Algoe and Zhaoyang (2016) and Coulter and Malouff (2013), we hypothesize that couples in the intervention group will show benefits in subjective well-being compared with couples from the waiting list control (WLC) group. That is, we expect improvements in satisfaction with life and positive emotion and a decrease in negative emotion in couples from the intervention group compared with couples from the WLC group.

Hypothesis 2 As social sharing of emotions between romantic partners seems to deepen and enhance positive interactions within the relationship (Camgoz, 2014; Gable & Reis, 2010), we expect that couples in the intervention group will show benefits in dyadic variables such as communication pattern improvements and dyadic functioning compared with couples from the WLC group.

Hypothesis 3 Finally, we will explore whether the effects observed in the intervention group couples last beyond a 1-month follow-up. On the basis of assumptions by Coulter and Malouff (2013), we expect lasting changes in positive emotions in the intervention group couples.

2 METHOD

2.1 Participants

Ninety-eight individuals (a total of 49 heterosexual couples) were recruited from the French population in 2015 by Lille University psychology students. The recruitment pool included students' social networks (i.e., relatives, online, or leisure networks). On the basis of the individuals' declarations, the exclusion criteria were Axis I disorders of the Diagnostic and Statistical Manual of Mental Disorders IV-TR, people receiving therapy, and deafness. To be included in the study, partici-

pants had to be older than 18 years old and in a committed relation- ship for more than a year. No remuneration was provided. The participants' characteristics are displayed in Table 1. A flow diagram of the participants (Figure 1) represents each stage of the study.

2.2 Procedure

This study was approved by the Ethical Committee of the University of Lille Human and Social Sciences. Information about the study was provided, and all the participants included in the study gave their writ- ten informed consent. Groups were balanced and controlled through a stratified randomization according to the participants' age and

TABLE 1 Participants' characteristics

Variables	Value	WLC group (<i>n</i> = 36)	Intervention group (<i>n</i> = 40)
Sex	Female (%)	18 (50)	20 (50)
Age	Mean	39.8	37.5
	(range; <i>SD</i>)	(22-68; 13.9)	(21-80; 11.9)
Years of schooling (after primary school)	Mean (range; <i>SD</i>)	7.27 (0-13; 3.46)	9.07 (2-20;3.48)
Activity	Professional (%)	31 (86.1)	36 (90)
	Student (%)	1 (2.8)	2 (5)
	Retired (%)	3 (8.3)	0 (0)
	Unemployed (%)	1 (2.8)	2 (5)
Marital status	Married (%)	20 (55.6)	24 (60)
	Civil union (%)	4 (11.1)	0 (0)
	Cohabitation (%)	12 (33.3)	16 (40)
Couples have been together for... (years)	Mean (range; <i>SD</i>)	13.45 (3-38; 11.3)	13.26 (1.5-35;11.1)
Lived together for... (years)	Mean (range; <i>SD</i>)	12.29 (2-38; 12.2)	10.61 (0.41-32;10.8)
Number of children	Mean (range; <i>SD</i>)	1.25 (0-4; 1.3)	1.57 (0-7; 1.8)

Abbreviation: WLC, waiting list control.

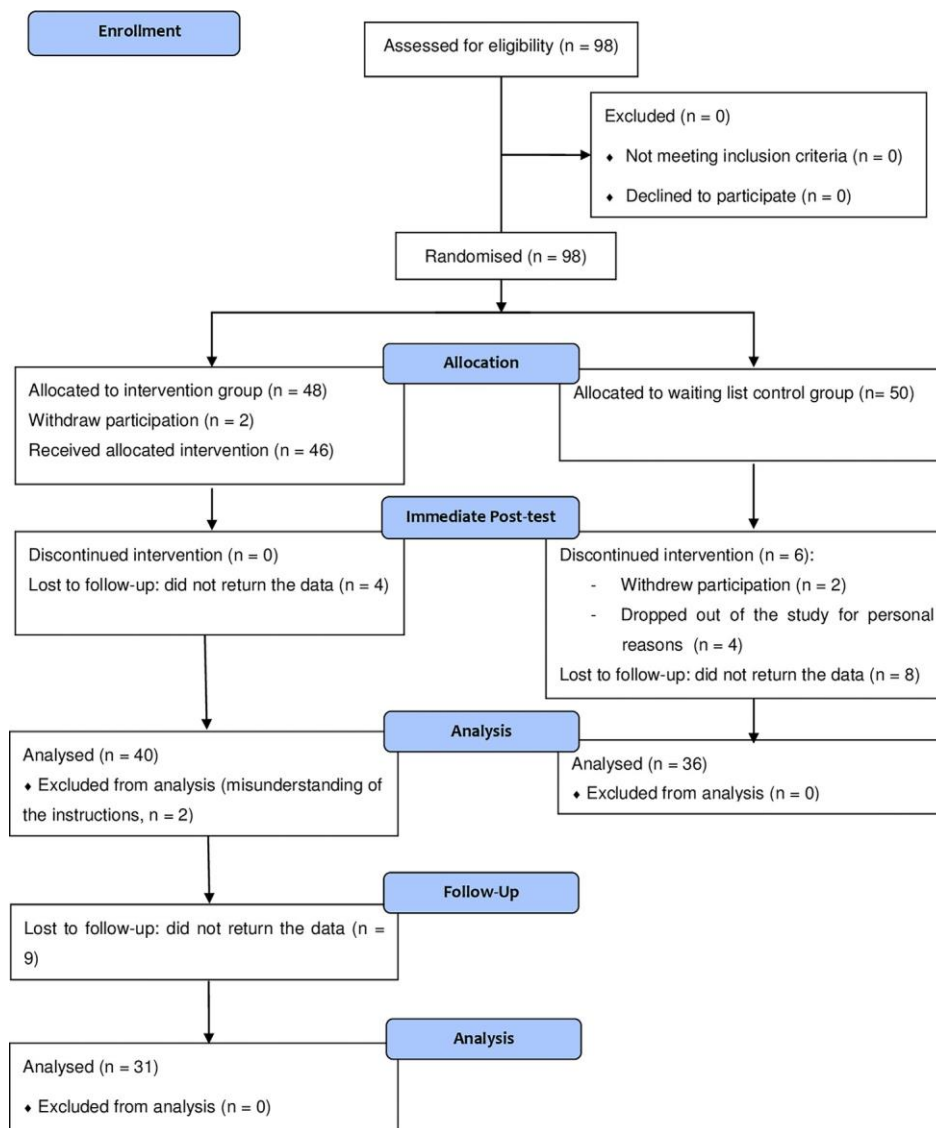


FIGURE 1 The flow diagram

TABLE 2 Overview of the positive psychology intervention for couples

Week 1

- Acknowledge and share positive emotions with my partner (Kauffman & Silberman, 2009; Seligman et al., 2005)
- Create of a list of positive moments I want to share with my partner
- Schedule one of the selected positive moments in the near future
- Learn how to respond in an active and constructive way to my partner's good or bad news (Gable, Gonzaga, & Strachman, 2006; Kauffman & Silberman, 2009; Seligman, Rashid, & Parks, 2006)
- Write a gratitude letter to my partner (Gable et al., 2004; Seligman et al., 2005; Sheldon & Lyubomirsky, 2006)
- Talk together about the gratitude letters written
- Participate in a 10-min guided breathing mindfulness meditation (Atkinson, 2013)

Week 2

- Cultivate happiness through the realization of intentional activities (first identify activities, then schedule them)
- Cultivate happiness through couple's activities (first identify enjoyable activities, then share with the partner, and select and schedule one)
- Nurture my relationship by writing its positive story
- Share the positive story of my relationship with my partner
- Address my resentment and share it in an adaptive and constructive way with my partner
- Note the positive moments of the day and savour them
- Participate in a 10-min guided breathing mindfulness meditation (Atkinson, 2013)

Week 3

- Cultivate tenderness within the couple
- Identify my partner's character strengths
- Use my character strengths (Kauffman & Silberman, 2009; Seligman et al, 2005)
- Practice mindful breathing awareness during daily activities
- Draw my couple's current happiness pie chart (representing the overall couple's happiness level divided into as many portions as there are happy domains in the couple's life—the size of the portions indicates the time and energy allocated to each)
- Draw my couple's desired happiness pie chart (representing the size that matches the couple's desires)
- Implement minimal changes to get a step closer to our desired happiness pie chart

Week 4

- Interplay with my partner's differences
- Recognize and cultivate our strengths as a couple
- Play a humorous game of couple's representation with metaphors
- Select and show my partner five significant objects reflecting my thoughts when I contemplate future possibilities
- Nurture my couple's strengths
- Participate in a 10-min guided breathing mindfulness meditation (Atkinson, 2013)

number of children. Baseline questionnaires were completed individually and confidentially by the participants in the intervention and WLC groups at the same time. Then the intervention group participants began the 4-week CPPI, which was mailed to them with detailed instructions and the investigators' contact details. Post-test questionnaires were completed immediately at the end of the CPPI. The WLC group participants completed the same questionnaires. The intervention group participants were invited to complete a follow-up questionnaire 1 month later.

2.3 PPI overview

This programme stemmed from a literature review of PPIs that was adapted for couples from a French population. Every participant received an activity diary that could be completed individually. The activities were mostly conceived as dyadic, but some were individual activities. Individual activities could be similar or complementary for the two partners (i.e., if one exercise of the day invited one member of the dyad to share a good event with his or her partner, then the partner was invited to learn how to respond in a constructive and active way). The activities depended on mutual openness and self-awareness. They were intended to take less than 20 min per day. The participants were invited to engage nonjudgementally with each other during the course of the activities. The content for each week of the CPPI for couples is illustrated in Table 2.

2.4 Measures

Questionnaires were always administered in the same order across groups and times. The intervention group couples received three measurement times: pretest, post-test, and follow-up at 1 month, whereas the WLC group received two measurement times: pretest and post-test. The WLC group couples received access to the Couple+ after completing the immediate post-test questionnaire.

2.4.1 Sociodemographic variables

A questionnaire allowed us to collect information about the participants' age, sex, family, education, and professional status.

2.4.2 Satisfaction with Life Scale

This 5-item scale evaluated the respondents' overall satisfaction with life on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The overall scores varied from 5 to 35 (Diener, Emmons, Larsen, & Griffin, 1985). Cronbach's alpha in the French student population and elderly individuals was .80 and .84, respectively (French version by Blais, Vallerand, Pelletier, & Brière, 1989), and .87 in the current study.

2.4.3 Emotional Valence Measure

This scale, on the basis of the Diener model of subjective well-being (Diener, Smith, & Fujita, 1995), included 23 items representing 23 emotions. Respondents indicated the frequency they experienced each emotion on a 7-point scale from never to several times a day. Two second-order factors identified positive or negative valence. The internal consistencies established among French health care professionals were .92 and .81 for the negative and positive affectivity scales, respectively (Antoine, Poinot, & Congard, 2007), and were .91 and .88, respectively, in the current study.

2.4.4 Communication Patterns Questionnaire

This scale addressed the interaction strategies a couple used when conflict arose in the relationship, during relationship issues, and after a discussion of a relationship issue using 35 items rated on a 9-point scale ranging from not at all to a lot. Four factors were represented: coercion (with notions of blame, threat, physical, and verbal aggression), mutuality (highlighting mutual discussion, understanding, and lack of avoidance), destructive process (patterns of demand-withdrawal, pressure-resist, and criticize-defend) and post-conflict distress (guilt, feeling hurt, and withdrawal from the situation; Noller & White, 1990). On the basis of Christensen's (1988) instrument, Noller and White (1990) validated a 4-factor model with internal consistencies of .86, .88, .79, and .73, respectively. Lecocq and Antoine (2014) validated a French version with a total internal consistency of .72. In this study, internal consistencies were .75 for mutuality, .75 for coercion, .73 for post-conflict distress, and .84 for destructive process. The overall scale's internal consistency was .84.

2.4.5 Dyadic Adjustment Scale

The Dyadic Adjustment Scale (DAS)-16 is a French adaptation and factorial revision (Antoine, Christophe, & Nandrino, 2008) of the DAS (Spanier, 1976). This revised scale assessed two dimensions, the degree of agreement in a couple and the quality of the dyadic interactions, which were represented by 16 items in the French version. An overall score reflected the quality of the dyadic adjustment. Answers were given on 6-point Likert scales. First, the respondents were asked about their degree of agreement with each other in several domains (from never agree to always agree). Second, they indicated to what extent the items matched their current experience (from never to always). Finally, they shared their degree of happiness within the relationship (from extremely unhappy to extremely happy). The validation of the DAS-16 found internal consistencies of .89 and .75 for the degree of agreement and quality of interactions dimensions, respectively (Antoine, Christophe, & Nandrino, 2008). In this study, internal consistency of .78 was found for degree of agreement, .72 for quality of dyadic interaction, and .82 for dyadic adjustment.

2.4.6 Compliance with the intervention

Compliance with the intervention measures allowed us to note the number of positive psychology activities completed during the CPPI. Compliance was measured on a self-report sheet that was returned along with the immediate post-test questionnaires.

2.5 Statistical analyses

Statistical analyses were conducted with Jamovi 0.8.6.0 for Windows. Chi-squared and between-group t-test baseline analyses were used to assess baseline and sociodemographic variables between the two groups. Mann–Whitney analyses were used to perform attrition analysis due to the small sample size and to the violation of the normality assumption.

The data were analysed using a linear mixed model, allowing us to study the hierarchical structure of the data and interactions (Faraway, 2016). Longitudinal couple data are nested because repeated measures are nested within a person and persons are nested within couples, which are then nested within an intervention. The linear mixed model provides an analysis and description of the variables that change with time by couple controlling for subject influence.

Repeated-measure analyses of variance were conducted to study changes in the intervention group at the three measurement times (pretest, immediate post-test, and follow-up). We were therefore able to obtain information about the main effect of time in the intervention group. Bonferroni post hoc tests were conducted for significant outcomes to capture the pairwise significance testing. Cohen's *d* was used to assess Bonferroni post hoc test effect sizes. The Bonferroni post hoc test was selected because of its robustness, even when the sphericity assumption was violated (Field, 2009, p. 472). The assumption of sphericity was tested with Mauchly's test.

3 RESULTS

3.1 Path of participants

This CPPI appeared acceptable and feasible for couples who could implement it in their daily life. The intervention group participants completed 92.2% of the CPPI on average (*SD* = 9.0), ranging from 70.4% to 100%.

The flow diagram (Figure 1) displays participants' attrition and provides associated reasons. In the intervention group, attrition rates were 12.5% at the immediate post-test and 35.4% at follow-up, whereas in the WLC group, the attrition rate was 28% at the immediate post-test. Analyses revealed several differences in demographic variables

and the pretest questionnaires between the nine persons from the intervention group who did not return the follow-up questionnaires (subgroup NC) and the participants who returned them (subgroup C). Significant differences were noted between the two subgroups in the type of activity ($\chi^2 [1] = 7.662, p = .022$), with more students and employed participants in subgroup C than in subgroup NC. Differences were also found for baseline satisfaction with life (higher level in subgroup C than NC; $M_C = 26.3, SD_C = 5.3; M_{NC} = 21.3, SD_{NC} = 4.6$; and $U = 451.0, p = .016$), coercion (lower level in subgroup C than NC; $M_C = 14.9, SD_C = 7.9; M_{NC} = 23.4, SD_{NC} = 7.9$; and $U = 116.5, p = .002$), post-conflict distress (lower level in subgroup C than NC; $M_C = 17.5, SD_C = 8.0; M_{NC} = 23.2, SD_{NC} = 7.4$; and $U = 176.5, p = .04$), destructive process (lower level in subgroup C than NC; $M_C = 25.2, SD_C = 12.1; M_{NC} = 40.7, SD_{NC} = 11.3$; and $U = 112.5, p = .002$), and degree of agreement (higher level in subgroup C than NC; $M_C = 48.6, SD_C = 5.3; M_{NC} = 45.2, SD_{NC} = 3.3$; and $U = 443.5, p = .02$).

3.2 Preliminary analyses

Equivalency between the groups at pretest was assessed with chi-square and between-group t-tests. The analyses identified no differences, except in terms of years of schooling. The intervention group participants had studied significantly more years after primary school ($M = 9.07, SD = 3.4$) than the WLC group participants ($M = 7.27, SD = 3.4, t [74] = 2.248$, and $p = .02$).

3.3 Main analyses

The efficacy of the intervention was studied with linear mixed model analyses, and pretest scores were controlled to do so. The differences between subjects and couples were controlled for each variable before and after the intervention. The group and time interactions are shown in Table 3.

Hypothesis 1 The hypothesis that couples in the intervention group would show benefits in subjective well-being compared with couples from the WLC group was not entirely supported. The analyses showed improvements in positive emotions but not in satisfaction with life and a decrease in negative emotions in couples from the intervention group compared with couples from the WLC group.

TABLE 3 Interaction between groups and times

Variable	Group	Pretest M (SD)	Post-test M (SD)	Interaction group \times time			
				F	Num df	Den df	p
Life satisfaction	WLC	25.02 (5.3)	25.05 (4.7)	2.770	1	74	.100
	INT	26.32 (5.5)	27.52 (4.6)				
Positive emotions	WLC	39.14 (7.2)	38.13 (6.8)	8.284	1	74	.005
	INT	40.72 (6.9)	42.42 (5.5)				
Negative emotions	WLC	52.08 (14.1)	48.05 (15.8)	0.056	1	73.5	.812
	INT	44.77 (16.0)	41.60 (17.8)				
Coercion	WLC	15.83 (8.0)	14.91 (6.6)	1.159	1	74	.285
	INT	16.05 (8.6)	13.52 (6.4)				
Mutuality	WLC	53.22 (11.9)	51.75 (11.1)	5.079	1	74	.027
	INT	53.65 (9.3)	56.62 (9.3)				
Post-conflict distress	WLC	18.63 (8.2)	16.22 (8.3)	0.005	1	74	.939
	INT	17.92 (8.0)	15.40 (8.6)				

Destructive process	WLC	27.22 (12.7)	23.97 (13.5)	0.157	1	74	.693
	INT	26.95 (13.4)	22.90 (13.4)				
Degree of agreement	WLC	47.08 (5.9)	47.11 (5.7)	1.680	1	74	.199
	INT	49.27 (4.4)	50.52 (4.6)				
Quality of interaction	WLC	26.05 (4.4)	25.33 (5.0)	4.331	1	74	.041
	INT	26.90 (4.5)	27.85 (3.9)				
Dyadic adjustment	WLC	73.13 (8.9)	72.44 (9.9)	4.450	1	74	.038
	INT	76.17 (7.8)	78.37 (7.6)				

Note: WLC, WLC group ($n = 36$) and INT, intervention group ($n = 40$). Abbreviation: WLC, waiting list control.

TABLE 4 Intervention group change from pretest to follow-up ($N = 31$)

Variable	Pretest $M (SD)$	Post-test $M (SD)$	Follow-up $M (SD)$	Effect of time		
				$F(2, 58)$	p	η_p^2
Positive emotions	40.55 (7.2)	42.42 (5.8)	41.55 (5.92)	3.938	.025	.12
Mutuality	55.10 (9.2)	58.19 (9.3)	59.13 (9.13)	3.735	.03	.11
Quality of interaction	27.55 (3.7)	28.13 (4.1)	29.10 (3.96)	5.832	.005	.17
Dyadic adjustment	78.00 (6.6)	79.81 (7.7)	81.03 (6.95)	7.295	.001	.20

TABLE 5 Bonferroni post hoc comparisons

	Time		Mean difference	t	p_{bonf}	Cohen's d
Positive emotion	Pretest	Post-test	-1.871	-2.639	.039	-.47
		Follow-up	-1.000	-1.474	.453	-.26
	Post-test	Follow-up	0.871	1.342	.569	.24
Mutuality	Pretest	Post-test	-3.097	-2.071	.141	-.37
		Follow-up	-4.032	-2.306	.085	-.41
	Post-test	Follow-up	-0.935	-0.746	1	-.13
Quality of interaction	Pretest	Post-test	-0.581	-1.144	.785	-.20
		Follow-up	-1.548	-3.669	.003	-.65
	Post-test	Follow-up	-0.968	-2.125	.126	-.38
Dyadic adjustment	Pretest	Post-test	-1.806	-2.049	.148	-.36
		Follow-up	-3.032	-3.676	.003	-.66
	Post-test	Follow-up	-1.226	-1.497	.434	-.26

Hypothesis 2 The results only partially supported the hypothesis that couples in the intervention group would show benefits in communication and dyadic variables. Indeed, analyses supported the fact that communication patterns of mutuality, quality of interaction, and dyadic adjustment improved in the intervention group compared with the WLC group. However, no group by time interactions was found

for coercion, post-conflict distress, destructive process, and degree of agreement.

Hypothesis 3 The prediction that improvements in the intervention group would persist for 4 weeks after the end of the intervention was supported for quality of interaction and overall dyadic adjustment with moderate effect sizes (see Table 4 for the effect of time and Table 5 for Bonferroni post hoc comparison). The effects of time for positive emotions and mutuality were not confirmed by Bonferroni post hoc comparisons.

4

DISCUSSION

This randomized study examined the impact of a multicomponent, theory-driven, autonomous self-help CPPI on individual well-being and dyadic variables. Over this 4-week self-help intervention, the attrition level was 12.5% at an immediate post-test and 35.4% at follow-up. Individuals completed more than 70.4% of the activities. These elements thus underlined this intervention's feasibility, in line with Kauffman and Silberman's (2009) assumption. The current finding revealed that the implementation of intentional activities in couples' daily lives produced immediate changes from the pretest to the post-test for some positive indicators (i.e., positive emotion, mutuality communication pattern, quality of interaction, and dyadic adjustment). The improvement in positive emotion was consistent with Coulter and Malouff's (2013) 4-week single-component intervention and with Algoe and Zhaoyang's (2016) 28-day single-component gratitude intervention. In the current study, couples in the intervention group showed improvements in dyadic variables (i.e., quality of interaction and dyadic adjustment) and in mutuality communication patterns over the course of the intervention compared with those in the control condition. Such observations are in line with the fact that social sharing of emotions between romantic partners, involving savouring and capitalization processes, may improve positive interactions within the couple (Camgoz, 2014; Gable & Reis, 2010). Moreover, the addition of a short weekly mindfulness practice might have added another tool to foster communication improvement (Atkinson, 2013).

A deferred impact of the intervention was highlighted in the intervention group, from pretest to the 4-week follow-up for dyadic adjustment and quality of the interaction. This maintenance is in line with that of another type of activity encompassed by the CPPI, encouraging sharing, savouring, and capitalizing, which invited participants to appreciate shared activities (i.e., create and schedule positive moments with my partner and how to respond in an active and constructive way to my partner; Bryant, Chadwick, & Kluwe, 2011; Camgoz, 2014; Gable, Gonzaga, & Strachman, 2006; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). These CPPI activities aimed to expand the participants' focus on all aspects of their ongoing romantic relationship and to increase their positive interactions (Kauffman & Silberman, 2009). Immediate improvements in positive emotions from pretest to post-test could have contributed to enriching the bounding resources developed over the course of the CPPI, as underlined by its immediate effects on dyadic adjustment and mutuality patterns of communication.

In contrast to our assumption, we did not notice a decrease in negative emotion in couples in the intervention group compared with couples from the WLC group. We noticed no improvement in "negative" communication patterns such as coercion, post-conflict distress, and destructive processes. This finding can be explained by the fact that participants were coming from a community sample with no initial major dyadic dysfunctions. It is also possible that Couple+, by emphasizing the development of positive interactions, could only act on this side and neglected to address the difficulties experienced at the individual or dyadic levels. Moreover, the limited duration may not have allowed the benefits on the positive side to have a cascading impact on the difficulties experienced. Regarding the maintenance of the effects at 1 month, the results did not show long-term improvements in positive emotion, in contrast to our assumption and Coulter and Malouff's (2013) work. This result is surprising considering the current literature, including that on individual single-component interventions such

as Seligman et al.'s (2005) study from which some of the content of our intervention was adapted (i.e., acknowledge and share positive emotions with my partner, write and share a gratitude letter, and use character strengths). Indeed, Seligman et al. found that for these individual activities, effects were maintained at 1-month follow-up on a global happiness level. Several factors may explain these results. The multicomponent nature of Couple+ may have resulted in a dilution of some of these effects and a loss of power. It would be interesting to compare the efficiency and indications of single-component versus multicomponent programmes. In addition, it is possible that the self-administered nature of the intervention was more conducive to the development of positive interactions than to the regulation of negative interactions, for which a programme administered and mediated by a face-to-face therapist would be necessary. To address couples' distress, we recommend a group workshop facilitated by a therapist to strengthen the effectiveness of the programme and to use a single aspect to address specific issues. More broadly, we can question the relative power of these two types of interventions, particularly in couple therapy.

This study had several limitations, such as its small sample size, which did not allow us to compute dyadic analysis, and the lack of screening for relationship issues before the intervention. The results should be interpreted with caution due to power-related issues. Differences between participants who did or did not fully complete the intervention by returning all the data may weigh in favour of systematic attrition, which would limit the generalizability of the results of the current study. Indeed, participants who chose not to complete the intervention were less satisfied with their life, showed more coercion, more post-conflict distress, more destructive processes, and a lower degree of agreement than couples who completed the intervention. Conceived as a proof of concept and, therefore, conducted with a small sample, the data do not allow for more detailed analyses that would be necessary to identify the couples that benefited the most from the intervention or to identify the moderating factors of the intervention's impact. Moreover, this pilot study relied on participants' self-reports to assess the number of activities completed, and self-report measures are subject to social desirability bias. Another limitation is the lack of measurement of couple-enhancement activities attempted by the WLC group to determine the proportion of potential uncontrolled activities that might have affected the analyses and results. Instead of a WLC group, an active control group might have been more appropriate (Algoe & Zhaoyang, 2016). Finally, a follow-up at 4 weeks for the WLC group participants would have been useful to compare both groups.

Overall, this pilot study suggests that injecting intentional dyadic activities into daily life for 4 weeks seems to present a promising approach for increasing positive emotions on a short-term basis and improving dyadic functioning. Future recruitment processes should ensure that the trial excludes couples who display relationship issues (e.g., ongoing affairs or interpersonal violence) and should select couples with a longer shared life experience. To enhance the quality of the findings, a replication of this study with a larger sample appears crucial due to power-related implications. Moreover, the time course of the CPPI could be expanded (e.g., Antoine, Dauvier, Andreotti, & Congard, 2018) and utilizing a design that would better allow us to understand the CPPI impact temporal entanglement.

Future research might also look for specific patterns of change according to baseline characteristics to better adjust interventions to people's needs and expectations. For instance, according to Bryant et al. (2011), women may be prone to engage in more sharing with others and behavioural expression when encountering positive events than men. Moreover, as partners mutually influence each other, if one partner in the dyadic interaction changes his or her own behaviour due to specific tasks that create more change for her or him, it is likely that the dynamic system will shift and induce changes in the other partner (Hilpert et al., 2016).

Finally, it is necessary to be cautious and not overly prone towards "positivity" within interventions designed for couples. A review established that positive valence does not always produce favourable outcomes depending on the context (McNulty & Fincham, 2012). Additionally, a remediation intervention found that for a small portion of couples, excessively improving women's positive communication skills could lead to a larger decline in relationship satisfaction across 5 years (Baucom, Hahlweg, Atkins, Engl, & Thurmaier, 2006). This finding highlights the fact that it is important to pay

attention to the outcomes of such interventions and to take a differential approach (Woodworth, O'Brien-Malone, Diamond, & Schüz, 2016). Thus, all changes within the couple, even positive ones, could be a potential source of destabilization and readjustment. Future studies could also capture within-dyad information rather than focusing on the individual level (Robles et al., 2014) and could explore actor– partner effects or the extent to which one partner's experience influences the other member of the dyadic relation (Kenny, Kashy, & Cook, 2006; Kiecolt-Glaser & Wilson, 2017). Furthermore, daily affective processes could be explored in addition to perceived changes in relationship quality to obtain more insight into the longitudinal aspects and respective influences of one partner on the other (Robles et al., 2014). It also seems relevant to determine whether the effects are maintained over a longer follow-up.

An optimistic perspective towards clinical practice is offered by this CPPI. This tool could be adapted according to couples' specificities and could be used by clinicians among community couples as a complementary approach in couple therapy sessions initially remedying negative patterns.

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