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Linking internalizing symptoms and dyadic adjustment during pregnancy among Portuguese first-time parents: The mediating role of dyadic coping

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Abstract

This study examined the mediating role of dyadic coping (DC) in the association between internalizing symptoms and dyadic adjustment in a sample of 184 couples expecting their first child. Each partner completed self-report questionnaires assessing symptoms of depression and anxiety, dyadic adjustment and DC during the second trimester of pregnancy. An extension of the actor-partner interdependence model for testing direct and indirect effects was used. Compared to men, women presented higher levels of internalizing symptoms and dyadic adjustment and engaged more in DC by self. Significant indirect effects of internalizing symptoms on dyadic adjustment via common DC and DC by one's partner were found. Specifically, higher internalizing symptoms were associated with lower common DC and DC by one's partner, which, in turn, were associated with lower dyadic adjustment. This mediation occurred either within a person as well

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as across partners and occurred similarly for women and men. These results suggest that primiparous couples may benefit from DC-enhancing interventions, such as the cognitive-behavioral couple-based programs Couples Coping Enhancement Training (CCET) and Coping-Oriented Couple Therapy (COCT), to assist them in responding sensitively to their partners' psychological symptoms, which may have a positive effect on marital adjustment.

Keywords*:* dyadic adjustment, dyadic coping, internalizing symptoms, pregnancy, first--time parents.

Associação entre sintomas internalizantes e ajustamento diádico durante a gravidez em pais Portugueses primíparos: O papel mediador do *coping* diádico

Resumo

Neste estudo analisou-se o papel mediador do *coping* diádico (CD) na associação entre os sintomas internalizantes e o ajustamento diádico numa amostra de 184 casais à espera do primeiro filho. Cada elemento do casal preencheu, no segundo trimestre de gravidez, um conjunto de questionários que avaliavam os sintomas depressivos e de ansiedade, o ajustamento diádico e o *coping* diádico. Uma extensão do *actor--partner interdependence model* foi utilizada para testar os efeitos diretos e indiretos. Comparativamente aos homens, as mulheres reportaram maiores níveis de sintomas internalizantes e de ajustamento diádico, e envolveram-se em mais CD pela própria. Foram encontrados efeitos indiretos significativos dos sintomas internalizantes no ajustamento diádico via CD conjunto e CD pelo parceiro. Especificamente, mais sintomas internalizantes mostraram-se associados a menor envolvimento em formas de CD conjunto e CD pelo parceiro, que por sua vez se associavam a um menor ajustamento diádico. Esta mediação ocorreu quer intra-sujeitos quer entre-casal e ocorreu de forma similar para mulheres e homens. Estes resultados sugerem que os pais primíparos podem beneficiar de intervenções promotoras de CD, tais como os programas de base cognitivo-comportamental para casais, o *Couples Coping Enhancement Training* (CCET) e o *Coping-Oriented Couple Therapy* (COCT). Estes programas podem ser particularmente uteis para ajudar os casais a responder de forma mais sensitiva aos sintomas psicológicos do(a) parceiro(a), o que pode ter um efeito positivo no ajustamento conjugal.

Palavras-chave*:* ajustamento diádico, coping diádico, sintomas internalizantes, gravidez, pais primíparos.

INTRODUCTION

Becoming a parent represents a source of joy and satisfaction and has the capacity to strengthen the bonds within couples and families. However, it may also be considered a stressful experience, enhancing new difficulties or increasing pre-existing difficulties (Cowan & Cowan, 1995), which requires the development of new resources and coping strategies by both parents (McKellar et al., 2009), not only as individuals but also as a couple. Pregnancy and the transition to parenthood may be easily understood as a context of dyadic stress, which represents "any form of emotional or problem-centered stress directly concerning the couple as a unit" (Bodenmann, 1995, pp. 35-36). This is particularly relevant for first-time parents, with consistent empirical evidence showing an increase in or the development of psychological symptoms (most notably symptoms of anxiety and depression) during pregnancy and after childbirth (e.g., Morse et al., 2000; Parfitt & Ayers, 2014; Vismara et al., 2016) and a decline in relationship satisfaction (e.g., Bäckström et al., 2018; Don & Mickelson, 2014; Doss et al., 2009; Lawrence et al., 2008).

For both mothers and fathers and regardless of parity, several studies have shown a negative association during the transition to parenthood between psychological symptoms (stress, depression, anxiety) and diverse relationship outcomes (e.g., relationship satisfaction, couples' positive and negative interactions; Bower et al., 2013; Figueiredo et al., 2008; Figueiredo et al., 2018; Parfitt & Ayers, 2014). However, it has also been suggested that the association between stress (and psychological symptoms) and relationship outcomes can be explained by adaptive processes, which can be generally defined as the ways in which couples cope with conflict and marital difficulties (Kluwer, 2010). From this perspective, the ability of both partners in a couple to adjust well to the transition from partner to parent is likely to be influenced by their individual coping strategies (McKellar et al., 2009); however, because expecting and having a child affects both members of the couple as a unit, we argue that coping with this event also encompasses strategies at the dyadic level. Hence, it is important to increase our understanding of which shared (dyadic) strategies, such as dyadic coping (DC), should be promoted during pregnancy to help first-time parents successfully adjust to this transition.

Dyadic coping is the basic interpersonal process of the systemic transactional model (STM; Bodenmann, 1995), which emphasizes the reciprocal nature of stress appraisals and coping efforts among couples. The underlying idea of DC is that the stress of one of the partners will always affect the other ("we-stress"), and therefore, their coping strategies are interrelated. According to the STM, when partners face a stressful situation, once one of the partners communicates stress, the other can either not respond or engage in positive or negative forms of DC. In

brief, positive DC includes supportive DC (when a partner assists the other in his/her coping efforts with the goal of reducing the partner's and his/her own stress, for example, by helping with daily tasks or providing practical advice or helping the other to reframe the situation) and delegated DC (when one partner, when asked by the other, takes over responsibilities in order to reduce the other partner's stress). In contrast, negative forms of DC include hostile (e.g., disinterest, distancing, minimizing the partner's stress), ambivalent (when the partner provides support in a way that is inadequate) and superficial (e.g., not listening to the partner's answer when he/she expresses his/her feelings) efforts to assist the stressed partner (Bodenmann, 2005). To overcome any dyadic stressor, both members of the couple can also engage in common DC, which occurs when both partners participate in the coping process in a complementary way through, for example, joint problem solving, joint information seeking, and the sharing of feelings.

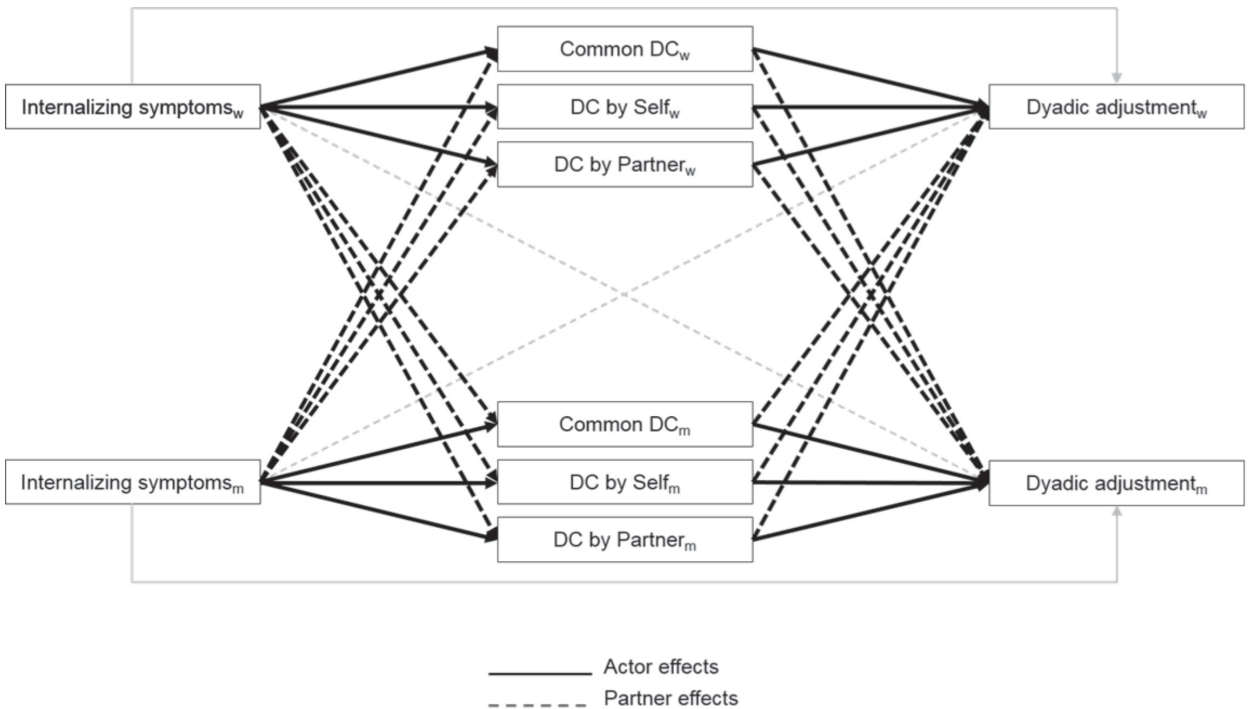
There is a noteworthy body of literature consistently showing a significant and direct association between different forms of DC and diverse relationship outcomes as well as (less consistently) individual indicators of well-being (e.g., stress, symptoms of anxiety and depression, quality of life; Bodenmann et al., 2010; Bodenmann et al., 2011; Falconier, Nussbeck et al., 2015; Gasbarrini et al., 2015; Levesque et al., 2014; Regan et al., 2014), including during pregnancy (Alves et al., 2018; Brandão et al., 2020; Molgora et al., 2019). For instance, Alves et al. (2018) showed that couples in which women presented high levels of depressive symptoms during pregnancy reported lower DC strategies as well as lower dyadic adjustment compared to couples in which women presented minimal or no depressive symptoms. This suggests that psychological distress among pregnant women may have negative repercussions on couples' dyadic adjustment as well as on the ways they manage stress as a couple. Hence, it is possible that coping with stress as a couple may also have a role in the link between psychological symptoms and the dyadic adjustment of couples. Indeed, across multiple contexts, it has been shown that DC serves as an adaptive interpersonal process explaining the association between individual and relationship well-being (e.g., Alves et al., 2020; Alves, et al., 2019; Bodenmann et al., 2008; Chaves et al., 2018; Gasbarrini et al., 2015; Karademas & Roussi, 2017; Rusu et al., 2018). For example, one study of couples in the general population tested two competing models of common DC as a mediator of the association between relationship satisfaction and depressive mood (Gana et al., 2017). These authors found stronger support for the mediation of common DC in the link between depression and relationship satisfaction (vs. in the link between relationship satisfaction and depression), but only for men. In other recent studies, DC was also found to be a significant mediator in the association between stress and the emotional and dyadic adjustment of infertile couples (Chaves et al., 2018)

as well as of couples coping with financial strain (Karademas & Roussi, 2017). This evidence supporting the mediating role of DC is particularly notable and was found to occur not only within individuals but also across partners (e.g., Alves et al., 2020; Brandão et al., 2020; Gabriel et al., 2016; Rusu et al., 2018), particularly when dyadic analytic methods were used, such as the actor-partner interdependence model (APIM; Cook & Kenny, 2005). However, despite recent evidence in the context of the transition to parenthood, to the best of our knowledge, no studies have examined the mediating role of DC in the association between individual and dyadic adjustment among first-time parents.

Adopting a dyadic approach, the main objective of the present study was to assess the mediating role of DC (enacted by the self, by the partner and common DC) in the association between couples' internalizing symptoms (symptoms of anxiety and depression) and dyadic adjustment in first-time parents during pregnancy (see Figure 1). Based on the literature review, it was posited that higher common DC and DC enacted by oneself or by one's partner would be associated with lower levels of internalizing symptoms and greater dyadic adjustment for both mothers and fathers. Considering the evidence showing the indirect role of DC in the association between different forms of stress and relationship adjustment (e.g., Chaves et al., 2018; Karademas & Roussi, 2017), we hypothesized that higher internalizing symptoms would be associated with lower DC, which, in turn, would be associated with decreased dyadic adjustment. Given the reciprocity and mutuality between members of a couple that characterize pregnancy and the transition to parenthood, as well as the evidence showing both within-subjects and between-subjects effects in the association between DC and relationship satisfaction (for a review, see Falconier, Jackson et al., 2015), significant actor and partner effects (direct and indirect) were also expected.

Figure 1

Conceptual diagram showing the proposed actor partner interdependence mediation model. *Note*. Internalizing symptoms as the independent variable, common dyadic coping (Common DC), DC by Self, and DC by partner as mediators, and dyadic adjustment as the dependent variable. Partners' predictors and error disturbances for the mediators and outcome variables were correlated, but were omitted from the figure for the sake of clarity. Psychological problems history and infertility history were included as covariates in the model. w = women; m = men.



METHOD

Participants and procedure

This study was approved by the Research Ethics Committees of the host institution and of one university hospital (Centro Hospitalar e Universitário de Coimbra, E.P.E. [CHUC-EPE]). The inclusion criteria of the study were as follows: (1) women are in the second trimester of a singleton pregnancy without any complications with the baby (e.g., fetal anomalies or other medical problems) or other adverse clinical events; (2) both partners are in a relationship (formally married, cohabiting or dating); (3) both partners are at least 18 years old; and (4) both partners are able to read and understand the Portuguese language to complete the set of questionnaires.

The data collection occurred between November 2015 and November 2016 in the university hospital (CHUC-EPE). Eligible women (and their partners, when applicable) were first informed about the general aim of the study by their obstetrician. Those who agreed to be contacted by the researchers were presented detailed information about the study (specific aims and instructions, confidentiality considerations). Participants who decided to participate signed a consent form (a copy of which was given to all participants) and were given the questionnaires in a sealed envelope. They were asked to complete them independently at home without collaboration and to return them at the next obstetric appointment.

The researchers initially contacted 611 women/couples, 52 of whom refused to participate (due to a lack of time or interest in the study). A total of 551 women/couples agreed to participate in the study, 335 of whom returned the questionnaires (participation rate: 60.8%); 25 questionnaires were excluded from the analyses because the questionnaires were completed only by the woman. Of the remaining 310 couples, seven couples were excluded because they did not meet the inclusion criteria. Given the aim of the present study, 119 multiparous couples were also excluded.

The final sample consisted of 184 heterosexual primiparous couples. The sociodemographic and clinical characteristics of the sample are presented in Table 1. Overall, women were younger than men. More women than men reported having a university-level education, and fewer women than men reported having a middle-school education. Men reported being employed more frequently than women did. Women reported a history of psychological problems and treatment more frequently than men did.

Table 1
Sociodemographic and clinical characteristics of the sample (N = 184 couples)

	Women	**Men**	t / χ^2	d / φ_c
Age (years), *M* (*SD*) Min - Max	30.29 (4.58) 19-43	32.16 (4.97) 19-46	-6.45***	0.67
Educational level, *n* (%)				
Middle school	6 (3.3)	42 (23.0)	34.38***	0.31
High school	63 (34.8)	66 (36.1)		
University	112 (61.9)	75 (41.0)		
Professional status, *n* (%)				
Employed	147 (80.8)	164 (91.1)	8.00**	0.15
Unemployed/Other[a]	35 (19.2)	16 (8.9)		
Psychopathology history, *n* (%)				
Psychological problems (yes)	59 (32.4)	12 (6.7)	38.06***	0.32
Psychological treatment (yes)	52 (28.7)	20 (11.0)	17.75***	0.22
Relationship status, *n* (%)				
Married	101 (54.9)			
Cohabitating	74 (40.2)			
Dating	9 (4.9)			
Relationship length (years), *M* (*SD*)	6.04 (4.04)			
Obstetric history, *n (%)*				
Pregnancy loss history (yes)	28 (15.2)			
Infertility history (yes)	21 (11.4)			
Current pregnancy, *n* (%)				
Desired pregnancy (yes)	181 (98.4)			
Pregnancy complications (yes)	63 (34.2)			
Gestational weeks, *M* (*SD*)	22.77 (5.58)			

[a] Other situations included three students (1 man and 2 women).

** $p < .01$; *** $p < .001$

Measures

Sociodemographic and clinical characteristics

Sociodemographic data and psychopathology history were obtained by self-report from both partners. Women also provided data concerning their obstetric history and current pregnancy through yes/no questions.

Internalizing symptoms

Two scales were used to assess internalizing symptoms. The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987; Portuguese version [PV]: Areias et al., 1996) is a 10-item self-report questionnaire specifically designed to assess depressive symptoms during the perinatal period. The items cover different emotions (e.g., sadness, tearfulness) that individuals are asked to rate based on the previous seven days. Each item was rated using a 4-point response scale (range 0 – 3), with higher values indicating more depressive symptoms. In this sample, Cronbach's α was .86 for women and .84 for men. The anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A; Zigmond & Snaith, 1983; PV: Pais-Ribeiro et al., 2007) was used to assess anxiety symptoms. This subscale includes 7 items to be answered on a 4-point response scale (range 0 – 3) based on the previous week. Higher values indicate more anxiety symptoms. In this sample, Cronbach's α was .84 for women and .78 for men. Given the strong correlations between depressive and anxiety symptoms ($r > .70$, $p < .001$) and the absence of hypotheses for each dimension separately, we aggregated the two subscales on a single score for internalizing symptoms.

Dyadic coping

DC was assessed using the Dyadic Coping Inventory (DCI; Bodenmann, 2008; PV: Vedes et al., 2013). This inventory consists of 37 items answered on a 5-point response scale (1 = *very rarely* to 5 = *very often*). The DCI assesses different components of the STM, including subscales for stress communication (4 items), partner-oriented behaviors such as emotion (3 items) and problem-focused (2 items) supportive DC, delegated DC (2 items) and negative DC (4 items), as well

as couple-oriented behaviors such as emotion (2 items) and problem-focused (3 items) common DC. Except for common DC subscales, two item-parallel versions exist for each subscale: respondents rate one's own stress communication and coping efforts to help the partner when he/she communicates stress (subscales of DC enacted by oneself) and their partners' stress communication and coping efforts when one communicates stress (subscales of DC enacted by the partner). Different total scores can be separately calculated: total scores for each of these specific subscales (by computing the mean of the items on the subscale), with higher scores denoting more of the behavior of interest; and composite scores that include all the subscales enacted by oneself (composite score of DC by oneself; 15 items) and all the subscales enacted by the partner (composite score of DC by the partner; 15 items). The composite scores were obtained by computing the mean of all the items of the respective subscales (items from the negative DC subscale were reverse-coded), with higher scores reflecting more perceived DC in oneself and in one's partner, respectively. In this study, we used both individual subscale scores and composite scores. In this sample, Cronbach's α varied between .84 (DC by self – women) and .89 (common DC – women).

Dyadic adjustment

The Revised Dyadic Adjustment Scale (RDAS: Busby et al., 1995) was used to assess relationship satisfaction (4 items), cohesion (4 items) and consensus (6 items). The 14 items are rated on a 6-point response scale (e.g., 0 = *always disagree* to 5 = *always agree*) or a 5-point response scale (e.g., 0 = *never* to 4 = *every day*), with higher scores indicating higher relationship quality. In this sample, Cronbach's α was .84 for both women and men.

Data analyses

Descriptive statistics were computed using IBM SPSS version 23 for sample and main study variable characterization. Bivariate Pearson correlations were performed between the main study variables, including between both partners' scores, to estimate dyadic nonindependence. Paired *t*-tests were computed to assess differences between women and men on the main study variables. We used an extension of the APIM (Cook & Kenny, 2005) for testing direct and indirect effects (Ledermann et al., 2011) in Mplus version 8 (Muthén & Muthén, 1998-2017). The APIM allows us to simultaneously estimate the effects of one partner's characteristics on one's own

(actor effects) and the other's (partner effects) adjustment while controlling for the other partner's characteristics. This approach accounts for the interdependence of both partners' scores within dyads by specifying correlations between the predictors as well as the error disturbances for the mediators and outcome variables (not shown in Figure 1 to maintain clarity). The predictor and mediator variables were grand-mean centered prior to the analyses, and unstandardized path coefficients and their standard errors were reported (Kenny et al., 2006). In this study, mediation is evident when the effect of women's and men's internalizing symptoms on women's or men's dyadic adjustment can be explained by a significant indirect effect via one's own or the partner's DC dimensions (common DC, DC by self, and DC by one's partner). A single model was performed that included all the mediators simultaneously. Statistically significant direct effects of the independent variables on the outcomes are not necessarily required for mediation (Shrout & Bolger, 2002). To test for the significance of indirect effects, maximum likelihood bootstrap procedures using 1000 samples were performed (Shrout & Bolger, 2002). This strategy generates 95% bias-corrected and accelerated confidence intervals (BCa CIs) of the indirect effects, which are considered significant if zero does not fall within the lower and upper CIs. Sociodemographic, obstetric and psychological variables that were significantly associated with the outcome variables (i.e., women's history of infertility and men's history of psychological problems) were included as covariates in the mediation analyses.

To reduce the model's complexity and because we did not establish specific hypotheses for women and men, we started by examining the fit of a full constrained model (i.e., actor effects and partner effects, respectively, were fixed as equal for women and men). If the model yields a nonsignificant chi-square value ($p > .05$), this suggests that women and men are empirically indistinguishable, and then there will be only one estimate for the actor effects and one estimate for the partner effects; on the other hand, a rejectable chi-square value ($p < .05$) suggests that at least one pair of path coefficients was significantly different between women and men (Ackerman et al., 2010). In such cases, the paths will be successively unconstrained to address model misspecification. We assessed the overall model fit considering the following criteria: a nonsignificant chi-square statistic ($p > .05$), a comparative fit index (CFI) above .95, a standardized root mean square residual (SRMR) below .08, and a root mean square error of approximation (RMSEA) below .05 (Hu & Bentler, 1998). Significance was set at the level $p <. 05$. Effect sizes were interpreted as follows: small: $d \geq 0.20$, $\varphi_c \geq .10$, $r \geq .10$, $R^2 \geq .02$; medium: $d \geq 0.50$, $\varphi_c \geq .30$, $r \geq .30$, $R^2 \geq .13$; and large: $d \geq 0.80$, $\varphi_c \geq .50$, $r \geq .50$, $R^2 \geq .26$ (Cohen, 1988). Missing data were managed using full information maximum likelihood (i.e., the model was estimated considering all available data) in Mplus.

RESULTS

Descriptive statistics and correlations

Table 2 shows the means, standard deviations, paired *t*-tests and intercorrelations for the main study variables. Compared to men, women presented higher levels of internalizing symptoms and dyadic adjustment, and they engaged more in DC by self. Partners' variables were moderately to strongly correlated, underlining the nonindependence within couples. We found significant associations between women's history of infertility and dyadic adjustment (r = -.16, p = .044) and between men's history of psychological problems and dyadic adjustment (r = -.16, p = .037). These variables were controlled for in the mediation models.

Table 2
Descriptive statistics and bivariate correlations between study variables

	Descriptives				Correlations				
	Women	Men	$Diff_{w-m}$						
	M (*SD*)	*M* (*SD*)	*t*	*d*	1	2	3	4	5
1. Internalizing symptoms	5.43 (3.68)	4.32 (3.30)	3.76***	0.39	**.34*** **	-.42***	-.31***	-.34***	-.35***
2. Dyadic adjustment	55.96 (7.05)	54.57 (7.60)	3.27**	0.34	-.41***	**.69*** **	.59***	.61***	.60***
3. Common DC	4.04 (0.71)	3.96 (0.66)	1.64	0.17	-.28***	.62***	**.57*** **	.67***	.61***
4. DC by Self	4.17 (0.45)	3.98 (0.46)	5.09***	0.53	-.30***	.50***	.66***	**.43*** **	.75***
5. DC by Partner	4.00 (0.55)	4.03 (0.50)	-0.77	0.08	-.40***	.63***	.71***	.75***	**.48*** **

Note. Correlations for women are presented below the diagonal, and for men above the diagonal. Correlations within couples are showed in bold on the diagonal. DC = dyadic coping.
** p < .01; *** p < .001

Mediation analyses

To identify the most parsimonious model testing the indirect effects of common DC, DC by self and DC by one's partner on the associations between internalizing symptoms and dyadic adjustment, we first constrained each pair of actor effects and partner effects, respectively, as equal for both women and men and examined the model fit. The model fit the data well: χ^2= 14.627, df = 16, p = .552; RMSEA = 0.000; SRMR = 0.044; and CFI = 1.000. Then, the pair of path coefficients were fixed to be equal across genders (for this reason, Tables 3 and 4 report values for actor and partner effects vs. for women and men separately, as this would duplicate data).

Direct effects

Table 3 shows that higher levels of internalizing symptoms were associated with lower DC (all dimensions) both within-person (actor effects) and across partners (partner effects), explaining between 10% and 17% of the DC dimension variance. Regarding the associations between DC and dyadic adjustment, we found two actor effects and one partner effect: an individual's common DC and DC by one's partner were positively associated with his/her own dyadic adjustment, and one partner's DC by his/her partner was positively associated with the other partner's dyadic adjustment. Any significant direct effect was observed for DC by self. Finally, higher levels of internalizing symptoms were associated with lower dyadic adjustment: both actor and partner significant effects were found before adjustments were made for the mediators (total effect), whereas when adjustments were made for the mediators (direct effect), only the actor effect was observed. The independent variables and mediators considered (including the covariates) accounted for a high proportion of variance in dyadic adjustment for women (52%) and men (48%), respectively.

Table 3
Mediation analyses: Direct and total effects between study variables

	Effect of internalizing symptoms on dyadic adjustment							
	Actor effect				Partner effect			
	B (SE)		*p*		*B (SE)*		*p*	
Direct effect	**-0.31 (0.09)**		**.001**		-0.08 (0.09)		.365	
Total effect	**-0.69 (0.10)**		**< .001**		**-0.39 (0.10)**		**< .001**	
Mediators	Effect of internalizing symptoms on mediators				Effect of mediators on dyadic adjustment			
	Actor effect		Partner effect		Actor effect		Partner effect	
	B (SE)	*p*	*B (SE)*	*p*	*B (SE)*	*p*	*B (SE)*	*p*
Common DC	**-0.05 (0.01)**	**< .001**	**-0.03 (0.01)**	**.004**	**2.79 (0.64)**	**< .001**	0.47 (0.60)	.434
DC by Self	**-0.03 (0.01)**	**< .001**	**-0.03 (0.01)**	**< .001**	0.96 (1.28)	.456	0.03 (1.15)	.983
DC by Partner	**-0.05 (0.01)**	**< .001**	**-0.03 (0.01)**	**< .001**	**3.17 (1.17)**	**.007**	**2.01 (1.01)**	**.048**

Note. Unstandardized maximum likelihood estimates are described. Significant estimates are in bold. *B* and *SE* are equal for men and women. R^2 dyadic adjustment: women = .52, men = .48; R^2 Common DC: women = .10, men = .10; R^2 DC by Self: women = .14, men = .13; R^2 DC by Partner: women = .17, men = .17.

Indirect effects

We found significant indirect effects of internalizing symptoms on participants' dyadic adjustment via common DC and DC by one's partner (see Table 4). This mediation occurred either completely within-person (paths $_{a,a,a}$ in Table 4) as well

as across partners (paths $_{p,a,a}$), similarly for women and men. Regarding the within-person mediation, Figure 2 shows that an individual's higher levels of internalizing symptoms were significantly associated with his/her own lower engagement in common DC and lower perception of DC by his/her partner, which, in turn, was associated with his/her lower dyadic adjustment. The across-partner mediation suggests an indirect effect of one partner's internalizing symptoms on the other partner's dyadic adjustment via his/her own common DC and DC by his/her partner. In sum, the more internalizing symptoms one person or his/her partner experiences, the less the person would engage in common DC or perceive DC efforts by his/her partner, and, in turn, the less marital adjustment the person would feel.

Table 4

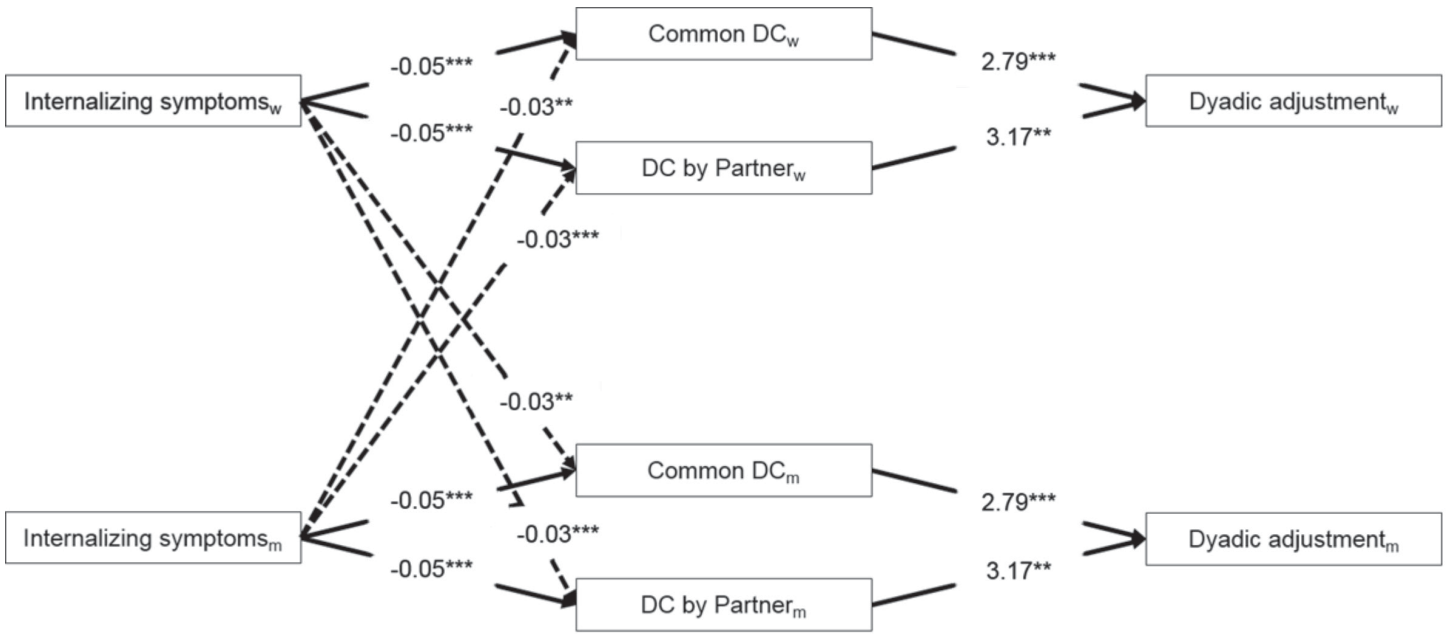
Mediation analyses: Indirect effects of dyadic coping (DC) on the associations between internalizing symptoms (IS) and dyadic adjustment (DA)

Indirect effect	**IE (*SE*)**	*p*	95% CI **(LLCI/ULCI)**
Common Dyadic Coping			
$IS_a \rightarrow$ Common $DC_a \rightarrow DA_a$	**-0.13 (0.04)**	.001	**[-0.21, -0.06]**
$IS_a \rightarrow$ Common $DC_p \rightarrow DA_a$	-0.01 (0.02)	.480	[-0.06, 0.02]
$IS_p \rightarrow$ Common $DC_a \rightarrow DA_a$	**-0.08 (0.04)**	.016	**[-0.17, -0.03]**
$IS_p \rightarrow$ Common $DC_p \rightarrow DA_a$	-0.02 (0.03)	.462	[-0.09, 0.03]
Dyadic coping by Self			
$IS_a \rightarrow$ DC by $Self_a \rightarrow DA_a$	-0.03 (0.04)	.469	[-0.12, 0.06]
$IS_a \rightarrow$ DC by $Self_p \rightarrow DA_a$	-0.00 (0.03)	.983	[-0.06, 0.06]
$IS_p \rightarrow$ DC by $Self_a \rightarrow DA_a$	-0.02 (0.03)	.472	[-0.09, 0.04]
$IS_p \rightarrow$ DC by $Self_p \rightarrow DA_a$	-0.00 (0.04)	.983	[-0.08, 0.07]
Dyadic coping by Partner			
$IS_a \rightarrow$ DC by $Partner_a \rightarrow DA_a$	**-0.15 (0.06)**	.019	**[-0.30, -0.04]**
$IS_a \rightarrow$ DC by $Partner_p \rightarrow DA_a$	-0.06 (0.03)	.082	[-0.15, -0.01]
$IS_p \rightarrow$ DC by $Partner_a \rightarrow DA_a$	**-0.09 (0.04)**	.023	**[-0.18, -0.02]**
$IS_p \rightarrow$ DC by $Partner_p \rightarrow DA_a$	-0.09 (0.05)	.060	[-0.22, -0.01]

Note. Unstandardized maximum likelihood estimates for indirect effects (IE) are displayed. Significant IE are in bold. IE are equal for men and women. CI = confidence interval; LLCI/ULCI = lower and upper CI; a = actor; p = partner.

Figure 2

Statistical diagram of the significant indirect effects of DC dimensions on the associations between internalizing symptoms and dyadic adjustment. *Note.* Paths values represent unstandardized maximum likelihood estimates. Estimates are equal for women and men. w = women; m = men. ** $p <$ .01; *** $p <$ .001.



DISCUSSION

The first transition to parenthood represents a critical event for each parent as well as for the couple as a unit (Lawrence et al., 2008) and entails significant changes at both the individual and the relationship level (Cowan & Cowan, 2000). The adjustment of first-time parents to the transition to parenthood, which is an important dyadic event (and stressor), is likely to be influenced not only by their own individual coping strategies but also by their shared efforts to cope with stressors (i.e., dyadic coping). Accordingly, beyond the analysis of the direct association between coping strategies and individual and relationship adjustment, in this study, we are the first to examine the mediating role of DC in the association between internalizing symptoms (anxiety and depression) and dyadic adjustment in couples expecting their first child. Our main findings demonstrate that higher internalizing symptoms are associated with lower common DC and DC by one's partner, which, in turn, are associated with lower dyadic adjustment. Our results also indicate that this mediation occurred either within individuals or across partners and similarly for mothers and fathers.

Based on the preliminary analyses, our results show that mothers (vs. fathers) present higher levels of internalizing symptoms. This result is not surprising and is consistent with the findings of empirical studies showing that late pregnancy and childbirth are emotionally challenging periods and are more distressing for mothers than for fathers (e.g., Figueiredo & Conde, 2011; Guedes & Canavarro 2014; Moreno-Rosset et al., 2016), as women usually experience more changes (both physical and psychological) than men. This is particularly true for first-time mothers, as the novelty of these changes may be experienced as more distressing and require more demanding reorganizations of individual and relationship roles. Our results also indicate that mothers report higher dyadic adjustment than fathers, which is not consistent with recent research showing a similar pattern of dyadic/relationship adjustment for both partners (e.g., Brandão et al., 2020; Figueiredo & Conde, 2015; Molgora et. al., 2019) or the earlier suggestion that despite women and men within the same couple experiencing the changes related to the transition to parenthood differently, they make similar appraisals of their relationships (Belsky et al., 1985). For example, the literature suggests that marital quality is stable or increases when both members of the couple are aware of their partners and their relationships (Shapiro et al., 2000). Despite being more psychologically distressing for women, it is possible that first-time mothers may feel more supported by fathers with respect to pregnancy-related demands (which may increase given the novelty of this experience), and perceiving support from one's partner (or his coping efforts when she communicates stress) may foster their relationship

satisfaction and therefore reinforce their dyadic adjustment (Don & Mickelson, 2014). This is a plausible explanation, as in our study, the strongest correlation with dyadic adjustment among mothers was indeed with the perceived DC by the partner. Regarding DC, our findings also indicate that first-time mothers report more DC by oneself than fathers do. This is supported by a recent review that revealed gender differences in the use of DC strategies among couples (Staff et al., 2017), particularly that mothers perceive themselves as communicating more stress (Molgora et al., 2019) and engaging in more DC than fathers (Alves et al., 2018; Chaves et al., 2018). Finally, as expected, for both first-time mothers and fathers, and fairly consistent with past studies conducted in the context of the transition to parenthood (e.g., Alves et al., 2018; Brandão et al., 2020; Molgora et al., 2019), higher DC was significantly associated with lower internalizing symptoms and higher dyadic adjustment.

During the transition to parenthood, couples are expected to manage the customary reorganizations of this period, including how they relate to each other as a couple, while also coping with their own and their partners' emotional distress. This is mainly relevant for parents expecting their first child, as the novelty of parenting may introduce strains into the intimate relationship. Accordingly, perceiving one's partner engagement in DC (actor effect) and being perceived by one's partner as engaging in DC (partner effect) were hypothesized to be a mechanism benefiting the couples' dyadic adjustment during this transition. Consistent with our prediction, our results show that the presence of internalizing symptoms is associated with lower engagement in DC as a couple (common DC) as well as with the perception of the partner's engagement in DC (DC by the partner) during pregnancy, which has a negative repercussion on the dyadic adjustment of couples. This indirect effect through common DC and DC by the partner occurred either within-person as well as across partners. Overall, these findings are in agreement with research documenting the negative interplay between depression and couples' impaired problem-solving skills in the general population (e.g., Coyne et al., 2002; Davila et al., 2009) and reinforce recent studies showing that DC is an important adaptive interpersonal process explaining the link between stress and relationship outcomes (e.g., Chaves et al., 2018; Gana et al., 2017; Karademas & Roussi, 2017). These results also reinforce the intrinsically interpersonal and dyadic nature of the transition to parenthood in two essential ways, which may have important implications for clinical practice with parents expecting a child (in addition to the benefits for their relationship adjustment): 1) the importance of communicating stress to one's partner during times of distress to elicit any (supportive) behavior from him/her; and 2) the ability of partners to cope with psychological distress together, rather than only supporting each other.

In addition, our findings suggest that whereas first-time mothers and fathers differ on internalizing symptoms, dyadic adjustment and engagement on DC by self, they do not differ in the mechanism explaining the association between internalizing symptoms and dyadic adjustment. Indeed, for both partners, the perceived partner's DC efforts when one communicates stress, as well as the couple-oriented efforts (i.e., their mutual efforts to cope with stress), are particularly relevant for helping both of them cope with internalizing symptoms, which have equally important and positive implications for their relationship. This is in line with the recently addressed result of a similar level of importance of partner support against postpartum distress for both mothers and fathers (Gillis et al., 2019). To some extent, this also seems to contest the traditional view of mothers as the care recipients and fathers as the support provider (Darwin et al., 2017) and highlight that both members of the couple may benefit from their joint coping strategies and, importantly, may serve as providers and recipients of support, thus reinforcing the relevance of similarity and reciprocity amid partners.

This study presents some limitations that should be noted, namely, the cross-sectional design, the convenience sample, and the data collection through self-report questionnaires. The cross-sectional design (in one particular trimester of pregnancy) prevents us from drawing conclusions about the causal relations between the study variables. Longitudinal studies in all pregnancy trimesters and extended throughout the first year postpartum would be valuable in clarifying the studied associations as well as in determining trajectories of change over time. The convenience sampling method at only one public health care setting also indicates the need for caution in the generalization of the results reported here in to other parents expecting their first child. Because of the focus only on first-time parents, future research should attempt to replicate these findings with experienced parents. Finally, regarding the questionnaires, by assessing DC only by self-report, complex dyadic processes and interactions have been more difficult to capture. Thus, the replication of this study incorporating observational approaches or interviews to assess dyadic interactions would be important, as they could offer more robust inferences about the role of interpersonal processes in individual and dyadic adjustment.

Despite its cross-sectional design, which precludes causality between our study variables, the present study has the following major advantages: collecting information from both first-time mothers and fathers (who are traditionally neglected in most empirical research during pregnancy), using the couple as the unit of analysis and using a data analysis technique that considered the interdependence between the two members of the couple (i.e., the APIMeM). In addition, by focusing on important indicators of individual and relational adjustment during the transition to parenthood and considering each member's perception of their

own and the other's DC, this study provides important insights and expands our understanding of an important interpersonal process used by couples to cope with psychological symptoms.

The results of this study have significant implications for clinical practice in health services dealing with expecting couples. First, they highlight the importance of screening both women and men for the presence of psychological symptoms (specifically, symptoms of depression and anxiety) during pregnancy. This is particularly important and indicates a need to reconsider the standard psychological care in this context, which is still mostly mother-centered. For mothers, this screening is of utmost importance, as it may contribute to offering mental health services as early as possible to offset possible progression into postpartum depression. Both partners are also relevant, as they may facilitate the early identification of couples that may benefit from psychological interventions that can prevent individual and relational maladjustment during the first-time transition to parenthood and parenting, thereby benefiting them as individuals, as couples and as parents. Second, this screening of emotional state should also be accompanied by a comprehensive assessment of both partners' coping resources, as our results indicate that DC may be compromised in both partners in the presence of increased internalizing symptoms and that this lower engagement in DC (particularly jointly and perceived by the partner) is associated with lower dyadic adjustment.

Given the similar indirect effects for mothers and fathers that we have found, these results also emphasize that both members of the couple may benefit from DC-enhancing interventions to assist them in responding sensitively to the other's psychological distress, which in turn may have a positive effect on the dyadic adjustment of both. Our specific result regarding the indirect effect through common DC suggests that first-time parents may actually benefit from a shared coping process rather than specific strategies to assist their partners in managing prenatal psychological distress. Accordingly, mental health professionals should help couples enhance ways to strengthen and maintain their engagement in joint coping efforts to handle common daily stressors across the transition to parenthood, rather than only focusing on the support provided by one partner to the other or the support provided by the nondistressed partner, as previously suggested (Bodenmann & Randall, 2013). In addition, and because the transition to parenthood is a period of increased change and reorganization, these first-time parents may also benefit from being trained on effective stress communication skills to make it easier to communicate their needs (stress) to their partners and, therefore, to feel more understood and to elicit more supportive DC behaviors from their partner.

To strengthen DC among couples, two programs grounded in cognitive-behavioral couple therapy (e.g., Baucom et al., 2008) and in the STM (Bodenmann, 1995, 2005)

are particularly relevant for first-time parents: the Couples Coping Enhancement Training (CCET; Bodenmann & Shantinath, 2004), a prevention model, and the Coping-Oriented Couple Therapy (COCT; Bodenmann, 2010; Bodenmann et al., 2008; Lau et al., 2016), a treatment model. The CCET and COCT include classical components of cognitive-behavioral therapy for couples (for example, communication and problem-solving training, enhancement of reciprocal positivity, acceptance work); however, its distinctiveness resides in the inclusion of psychoeducation about the role of daily external stress on couples' functioning and the 3-phase method, originally based upon the STM, and stress and coping empirical research in couples. The 3-phase method aims to improve dyadic stress communication and the couples' DC repertoire by helping them with the following skills: (1) enhance their ability to effectively communicate stress to the other partner (phase 1); (2) adapt their support to the specific needs of the other (phase 2); and (3) refine their ability to offer DC based on the partner's feedback (phase 3). Through this therapeutic method, the psychotherapist assumes the role of a coach that guides partners simultaneously, giving each one equal attention to better understand their own and their partner's responses to stressful events, namely, how maladaptive behaviors and personally relevant schemas or patterns of thought may be triggered by daily hassles and therefore cause stress; these insights may help partners build up a mutual understanding of emotional stress experiences for both partners and engage in adequate emotion and problem-focused support (dyadic coping), which, in turn, may strengthen their feelings of "we-ness" and fulfillment in the relationship.

These programs are supported by sound evidence of their efficacy in improving both individual and relationship outcomes (e.g., Bodenmann, 2016; Bodenmann et al., 2014; Bodenmann & Randall, 2012; Leuchtmann et al., 2018), and ongoing work by Guy Bodenmann and collaborators aims to test the efficacy of the Couples Care and Coping Program (CCC-P), an evidence-based program delivered to first-time parents, which combines the CCET with Couple CARE for Parents (CCP; Halford et al., 2010). Although the effectiveness of the CCC-P has not yet been evaluated, taken together, our results suggest that the adaptation of STM-derived interventions for expecting couples in Portugal also deserves special attention in further research.

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