

# The infertility trap: how defeat and entrapment affect depressive symptoms

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**STUDY QUESTION:** Does the perception of failure without a solution or way forward of infertile couples have a mediator role between the importance couples attribute to parenthood and depressive symptoms?

**SUMMARY ANSWER:** The perception of failure without a solution or way forward, assessed by feelings of entrapment and defeat, mediates the effect of the importance of parenthood on depressive symptoms of infertile men and women.

**WHAT IS KNOWN ALREADY:** Research has documented that the heightened importance of parenthood affects infertile couples' adjustment to infertility and medical treatments. However, it remains unclear which psychological mechanisms and perceptions may underlie the association between having parenthood as a nuclear aspect of life and presenting depressive symptoms related to difficulties in accomplishing that important life goal. Although these links have been scantily addressed in infertility, previous studies have pointed to the role that perceptions of defeat and entrapment have in several psychopathological conditions.

**STUDY DESIGN, SIZE, DURATION:** The study was cross-sectional. Couples pursuing medical treatment for their fertility problems were invited to participate by their doctors in several public and private clinics. Data collection took place between July 2009 and 2011.

**PARTICIPANTS/MATERIALS, SETTING, METHODS:** One hundred forty-seven infertile couples consented to participate in the study. Both couple members (147 women and 147 men) completed a set of self-report instruments for the assessment of depressive symptoms, perceptions of defeat and entrapment, importance of parenthood and rejection of a childfree lifestyle. Analyses were conducted through Structural Equation Modeling and followed a dyadic analysis strategy, allowing for controlling the interdependence of the data.

**MAIN RESULTS AND THE ROLE OF CHANCE:** The hypothesized tested model showed a very good fit to the data [ $\chi^2 = 68.45$ ,  $P = 0.014$ , comparative fit index = 0.98, standardized root-mean-square residual = 0.06 and root mean square error of approximation = 0.06] and explained 67 and 58% of the variability in depressive symptoms in women and men, respectively. Results revealed that the importance of parenthood does not have a direct effect on depressive symptoms of infertile men and women, but an indirect effect, by affecting the perception of having failed and not being able to solve it or move forward [women: estimate for indirect effect: 0.38 (bias corrected (BC) 95% confidence interval (CI) = 0.25; 0.56;  $P < 0.001$ ); men: estimate for indirect effect: 0.23 (BC 95% CI = 0.06; 0.40;  $P = 0.013$ )].

**LIMITATIONS, REASONS FOR CAUTION:** The study was cross-sectional, which does not allow for the establishment of causality. Another limitation is the heterogeneity of the sample, as participants were recruited at various stages of their fertility care. In addition, due to the specific nature of the variables, further studies are needed to establish exactly how the relationship between defeat and entrapment and depression operates, as the mechanism may be bidirectional.

**WIDER IMPLICATIONS OF THE FINDINGS:** This study emphasizes the role of perceptions of defeat and entrapment on the psychological adjustment to infertility and assisted reproduction. These emotional processes should be taken into consideration and targeted in psychological interventions of couples undergoing medical treatments for infertility. In fact, although parenthood may be perceived as a core purpose for many couples dealing with difficulties in conceiving, it is only when these difficulties are experienced as failures without a resolution and as inescapable, that couples are prone to develop depressive symptoms.

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## Introduction

Facing difficulties in conceiving a child tends to be experienced as highly stressful (Cousineau and Domar, 2007; Covington and Adamson, 2015). Previous studies addressing the relationship between infertility and psychopathology have produced mixed results. Reviews by Greil (1997), Eugster and Vingerhoets (1999) and more recently Biringer et al. (2015) highlighted more similarities than differences between infertile patients and comparison groups. Other studies point to a higher prevalence of psychiatric disorders, particularly mood disorders and anxiety disorders, in infertile patients (e.g. Chen et al., 2004; Volgsten et al., 2008; Galhardo et al., 2011). Despite this lack of consensus, there seems to be an agreement on the fact that some of these patients may experience depression and anxiety symptoms with clinical relevance (Moura-Ramos et al., 2010; Verhaak et al., 2010). This variability in the way people experience infertility may in part be explained by the different meaning and importance that individuals' attribute to parenting and having children in one's life.

The need for parenthood can be defined as the close identification with the role of parent with parenthood being perceived as a major goal in life. The rejection of childfree lifestyle describes a negative view of life without a child/children and future fulfillment or happiness as being dependent on having a child (Newton et al., 1999). These can be seen as important factors affecting the way people deal with infertility (Moura-Ramos et al., 2012a,b). Recent findings derived from neuroscience, and developmental and evolutionary psychology led to a revision of Maslow's hierarchy of needs theory considering that parenting is at the top of the hierarchy, substituting self-actualization (Kenrick et al., 2010). As parenthood is viewed as a major life goal, failure to achieve it may lead to perceptions of defeat, as occurs with other important goals (Gilbert, 2006).

Previous research has shown that perceptions of defeat can emerge from failure to reach important goals (Gilbert, 2006). When all possibilities to overcome a given situation are blocked and the individual is unable to escape from that difficult situation, perceptions of entrapment may arise (Gilbert and Allan, 1998; Trachsel et al., 2010). In this context, infertility and medical treatment demands can be considered as a situation that may trigger these perceptions. Couples dealing with infertility face difficulties in achieving the important life goal and may feel powerless and blocked.

Entrapment and defeat are constructs that play a central role in evolutionary accounts of depression (Price et al., 1994). The concept of entrapment originates from animal-based arrested flight models of defensive behavior (Dixon et al., 1989). According to Gilbert and Allan (1998), external entrapment relates to perception of things in the external world that induce escape motivation (e.g. relationship difficulties) whereas internal entrapment relates to thoughts and feelings that prompt escape motivation (e.g. unwanted negative emotions or thoughts). The authors proposed that feelings of being defeated and trapped in circumstances from which the individual is unable to escape can lead to depression.

Defeat and entrapment have been mostly addressed as two distinct but interacting constructs (Gilbert and Allan, 1998; Rasmussen et al., 2010), but they also have been theorized as conceptually equivalent (Johnson et al., 2008), corresponding to the perception of failure without a solution or way forward (Taylor et al., 2009). In fact, it has been postulated that defeat and entrapment may be different facets of a single underlying latent construct reflecting perceptions of being incapable, powerless or not having the ability to effectively deal with a difficult situation and move on from an overwhelming and unavoidable status or role (Johnson et al., 2008; Taylor et al., 2009; Griffiths et al., 2014). There seems to be evidence that perceptions of defeat and entrapment are closely associated with various forms of psychopathology (Taylor et al., 2011a,b; Lester, 2012) but these perceptions have been scantily addressed within the context of infertility.

Two previous studies in an infertility context address the construct of defeat. A qualitative study conducted by Peddie et al. (2005) found that defeat was mentioned in terms of decision-making of not to pursue further IVF cycles in the context of physical and emotional pressure exerted on the couples' relationship. Additionally, Podolska and Bidzan (2011) reported that couples dealing with difficulties in conceiving may feel a sense of defeat and hopelessness due to the lack of medical solutions.

We hypothesize that people for whom importance of parenthood is heightened, facing infertility (as an obstacle to an important life goal) and fertility care (a low-control treatment with low success rates) would evoke perceptions of failure without escape and feelings of defeat, which would be associated with more depressive symptoms. Infertility and its treatment have been considered as severe, chronic and low-control stressors (Benyamini et al., 2004; Schmidt and Sejbæk, 2012). For most couples, it is an unexpected diagnosis and their ability to actively do something about their condition is very limited (Verhaak et al., 2005). Furthermore, the outcomes of IVF treatments are unpredictable and perception of controllability and coping strategies have been proven to be associated with psychological stress in infertile patients (Gourounti et al., 2012). From this perspective, infertility may be perceived by couples as a threatening condition, a failure to achieve a major life goal and a situation they are trapped in.

Until recently, little attention has been given to an exploration of the role of constructs such as entrapment and defeat in infertile couples. The aim of the current study was to explore the mediator role of the perception of failure without a solution or way forward between the importance of parenting and having children in one's life and depressive symptoms. This mediator effect was explored for both men and women through a dyadic analysis.

## Materials and Methods

### Participants

The study was conducted on a sample of 147 couples with a medically established infertility diagnosis who were pursuing medical treatment in

Portuguese public and private clinics. Inclusion criteria were age 18 years or older and being married or cohabiting with a partner in a heterosexual relationship [which is a legal requirement for accessing assisted reproductive technologies (ARTs) in Portugal]. These couples were at various stages of infertility treatment.

Participants were recruited as part of a more comprehensive study on the psychological characteristics of Portuguese people facing infertility.

## Instruments

A sociodemographic and clinical form was used to collect sociodemographic data (age, years of education, length of marriage/relationship) and clinical data (infertility duration, previous treatments).

The fertility problem inventory (FPI; Newton *et al.*, 1999), Portuguese version by Moura-Ramos *et al.* (2012a), is a 46-item inventory measuring perceived infertility stress. Respondents are asked to rate fertility-related concerns or beliefs, and responses are given in a Likert-type format, ranging from 0 = *Strongly disagree* to 6 = *Strongly agree*. The FPI comprises five subscales: 'social concern', 'sexual concern', 'relationship concern', 'rejection of childfree lifestyle' and 'need for parenthood'. To assess the importance of parenthood in one's life, we followed the recommendations of Moura-Ramos *et al.* (2012a), by including the subscales 'need for parenthood' and 'rejection of childfree lifestyle' as indicators of the latent factor importance of parenthood (e.g. beliefs concerning parenthood and childlessness in one's life). In this study, Cronbach alpha values of the subscale 'need for parenthood' were 0.81 and 0.77 for women and men, respectively. Cronbach alpha values of the 'rejection of childfree lifestyle' subscale were 0.79 and 0.75 for women and men, respectively.

Entrapment scale (ES; Gilbert and Allan, 1998), Portuguese version by Carvalho *et al.* (2011a), assesses internal and external entrapment. Internal entrapment has to do with escaping motivation elicited by thoughts and feelings (e.g. 'I would like to escape from my thoughts and feelings'). External entrapment relates to the perception of external cues that induce motivation to escape (e.g. 'I can see no way out of my current situation'). Participants are asked to rate how the items demonstrate their view of themselves on a five-point scale, ranging from 0 = *Not at all like me* to 4 = *Extremely like me*. In our study, Cronbach alpha values were 0.91 and 0.88 for internal entrapment for women and men, respectively. For external entrapment, the Cronbach alpha values were 0.92 and 0.93 for women and men, respectively.

Defeat scale (DS; Gilbert and Allan, 1998), Portuguese version by Carvalho *et al.* (2011a), is a 16-item scale assessing a sense of failed struggle and losing rank (e.g. 'I feel that I have lost important battles in life'). Participants are asked to indicate how much they had felt defeated in the previous week using a five-point scale ranging from 0 = *Never* to 4 = *Always*. In this study, the DS showed a high internal consistency (Cronbach's alpha 0.93 for women and 0.89 for men).

Beck Depression Inventory (Beck *et al.*, 1961), Portuguese version by Vaz-Serra and Abreu (1973), is a widely used self-report measure of depressive symptoms composed of 21 groups of statements (e.g. 'I am so sad and unhappy that I can't stand it'). In the current sample, a Cronbach alpha of 0.90 was found for women and of 0.88 for men.

## Procedures

Couples pursuing infertility treatment were invited to participate in the study by their medical doctors (the recruitment took place in four public clinics and three private clinics) between July 2009 and July 2011. The questionnaires were taken home, and returned by mail (stationary postal envelopes were provided). Couples were given instructions to answer the questionnaires separately.

The study was approved by Ethical Committees of the university where this study took place, of the infertility public centers and by clinical directors of private centers, and was supported by the national patients association. The participants were recruited as part of larger study of psychological

characteristics of Portuguese patients seeking treatment for infertility. An information sheet explaining the aims of the study was provided and participants were assured that anonymity and confidentiality would be maintained and that they could refuse to participate or withdraw from the study at any time. Each participant signed an informed consent form.

## Data analyses

Data were analyzed using the IBM Statistical Package for the Social Sciences version 22.0 (IBM, Armonk, NY, USA) and AMOS, version 20.0 (IBM Armonk, NY, USA). To account for the non-independence of partners' scores, the database was restructured and each partner score is a different variable of each couple scores (Kenny *et al.*, 2006). Analyses of variance for repeated measures were used to test differences between couple partners. Bivariate correlations were calculated to examine associations between the study variables for both women and men.

Analyses were conducted with latent variables examining direct and indirect effects using AMOS structural modeling with the maximum likelihood estimation method. Significance of the indirect effects was calculated using bootstrap procedures with 2000 samples (Shrout and Bolger, 2002; MacKinnon *et al.*, 2004; Cheung, 2009; Hayes, 2009; MacKinnon and Fairchild, 2009). To evaluate overall model fit, the  $\chi^2$  goodness-of-fit statistic, the comparative fit index (CFI), the standardized root-mean-square residual (SRMR) and the root mean square error of approximation (RMSEA) fit indices were used, following Kline (2005) recommendations. A model is considered to have good fit when the  $\chi^2$  statistic is non-significant, the CFI > 0.95, the SRMR is below 0.06 and the RMSEA is below 0.06 (Hu and Bentler, 1999).

The empirical power tables provided by Fritz and MacKinnon (2007) for mediation models suggest that, for a power of 0.80, the study sample size is sufficient to detect small to medium mediation effects.

## Results

### Participants

Results regarding sociodemographic characteristics showed that these couples presented a mean ( $\pm$  SD) age of  $33.90 \pm 4.34$  years for women and  $35.32 \pm 5.56$  for men ( $P < 0.001$ ), a mean of years of education of  $14.93 \pm 2.95$  for women and  $13.41 \pm 3.82$  for men ( $P < 0.001$ ) and were married or cohabitating for  $6.03 \pm 3.56$  years.

Clinical information regarding infertility was provided by the participants (medical records were not consulted). The causes of the fertility problems were: 37.4% female causes (e.g. disorders of ovulation, abnormal Fallopian tubes); 25.2% male causes (e.g. abnormality of semen); 22.4% both female and male causes and 15% idiopathic causes. Couples' infertility had been diagnosed for a mean ( $\pm$  SD) of  $2.97 \pm 2.43$  years. The majority had already undergone infertility treatments (72.1%) and 27.9% were still having pretreatment tests or waiting for their first treatment cycle. Those who had previous experience of IVF treatment had already undertaken at least one treatment cycle ( $M = 1.42 \pm 1.79$ ), ranging from 1 to 11. Concerning the patients' current treatment status: 29.3% were in an IVF protocol; 25.9% in an ICSI protocol; 9.5% were undergoing ovarian stimulation as an independent procedure, not included in IVF or ICSI protocols and 4.1% were in an intrauterine insemination protocol.

### Preliminary analysis—descriptives and correlations on study variables

Descriptive statistics and association of observed variables are presented in Table 1.

**Table 1** Descriptive statistics and association (Pearson correlations) between observed variables in a study of depression and infertility.

	NP	RCL	IE	EE	Defeat	Depression	Mean $\pm$ SD (observed range)	
							Female partner, n = 147	Male partner, n = 147
Need for parenthood (NP)	-	0.52***	0.30***	0.22**	0.23**	0.36***	41.67 $\pm$ 9.31 (18–59)	37.84 $\pm$ 8.67 (16–60)
Rejection of childfree lifestyle (RCL)	0.62***	-	0.01	-0.02	0.04	0.16*	30.59 $\pm$ 7.78 (12–48)	29.90 $\pm$ 7.21 (9–46)
Internal entrapment (IE)	0.35***	0.27***	-	0.78***	0.62***	0.61***	6.03 $\pm$ 5.86 (0–24)	2.61 $\pm$ 3.83 (0–16)
External entrapment (EE)	0.30***	0.25**	0.78***	-	0.64***	0.54***	8.27 $\pm$ 8.29 (0–33)	4.44 $\pm$ 6.66 (0–39)
Defeat	0.43***	0.32***	0.71***	0.76***	-	0.59***	18.90 $\pm$ 11.05 (1–59)	12.24 $\pm$ 8.19 (0–48)
Depression	0.43***	0.27***	0.64***	0.64***	0.78***	-	11.01 $\pm$ 8.42 (0–39)	6.06 $\pm$ 6.45 (0–31)

Scores below the diagonal (white shade) refer to the female partner scores and above the diagonal (gray shade) refer to male partner scores.

\* $P \leq 0.05$ , \*\* $P \leq 0.01$ ; \*\*\* $P \leq 0.001$ .

Results showed that need for parenthood and rejection of childfree lifestyle were positively and moderately associated with entrapment and defeat for both men and women (Pearson  $r$ 's ranging from 0.22 to 0.52, with all  $P$ 's  $< 0.05$ ), with the exception of the association of rejection of childfree lifestyle and defeat and entrapment in male (all of these associations were non-significant). All variables were positively and significantly associated with depressive symptoms for men and women, and all, except one of these (men's rejection of childfree lifestyle), associations were moderate to high.

Differences between partners' scores were examined. Women reported significantly higher levels of depression (Wilks = 0.77,  $F_{1,146} = 43.67$ ,  $P < 0.001$ ,  $\eta_p^2 = 0.23$ ), higher entrapment and defeat (Wilks = 0.74,  $F_{3,144} = 16.57$ ,  $P < 0.001$ ,  $\eta_p^2 = 0.26$ ) and higher importance of parenthood (Wilks = 0.87;  $F_{2,145} = 11.05$ ,  $P < 0.001$ ,  $\eta_p^2 = 0.13$ ), although no significant differences among partners were found regarding rejection of childfree lifestyle ( $F_{2,145} = 20.57$ ,  $P = 0.30$ ,  $\eta_p^2 = 0.01$ ).

## The measurement model

The analysis followed the two-step procedures proposed by Anderson and Gerbing (1988). In the first step, a confirmatory factor analysis was tested to examine the fit of the theoretical model to the data. This step was taken to ensure that the latent constructs operationalization was adequate. In this model, each latent construct was allowed to covary with the partner's latent construct in the model. The model had a very good fit to the data, with  $\chi^2 (39) = 63.16$ ,  $P = 0.008$ ; the CFI = 0.97; RMSEA = 0.06 and the SRMR = 0.05. All the factor loadings were above 0.50 and were all significant (all  $P < 0.001$ ). The measurement model allowed the examination of the structural model.

## The structural latent model and the mediation effect

A structural equation model was built to examine the direct and indirect associations between the importance of parenthood and depressive symptoms for the female and male partners of the couples in our sample (as within-subjects of the couple unit). In this model, errors between partners' scores were allowed to covary due to the non-independence of the data. Because the latent variable 'perception of failure without escape' is composed of two subscales of the ES (internal and external entrapment) and by the DS for each couple partner, these

two observed variables were also allowed to covary between men and women.

The tested model, depicted in Fig. 1, had a very good fit to the data,  $\chi^2 = 68.45$ ,  $P = 0.014$ , the CFI = 0.98, SRMR = 0.06 and the RMSEA = 0.06. The model explained 67 and 58% of variability in depressive symptoms in women and men, respectively.

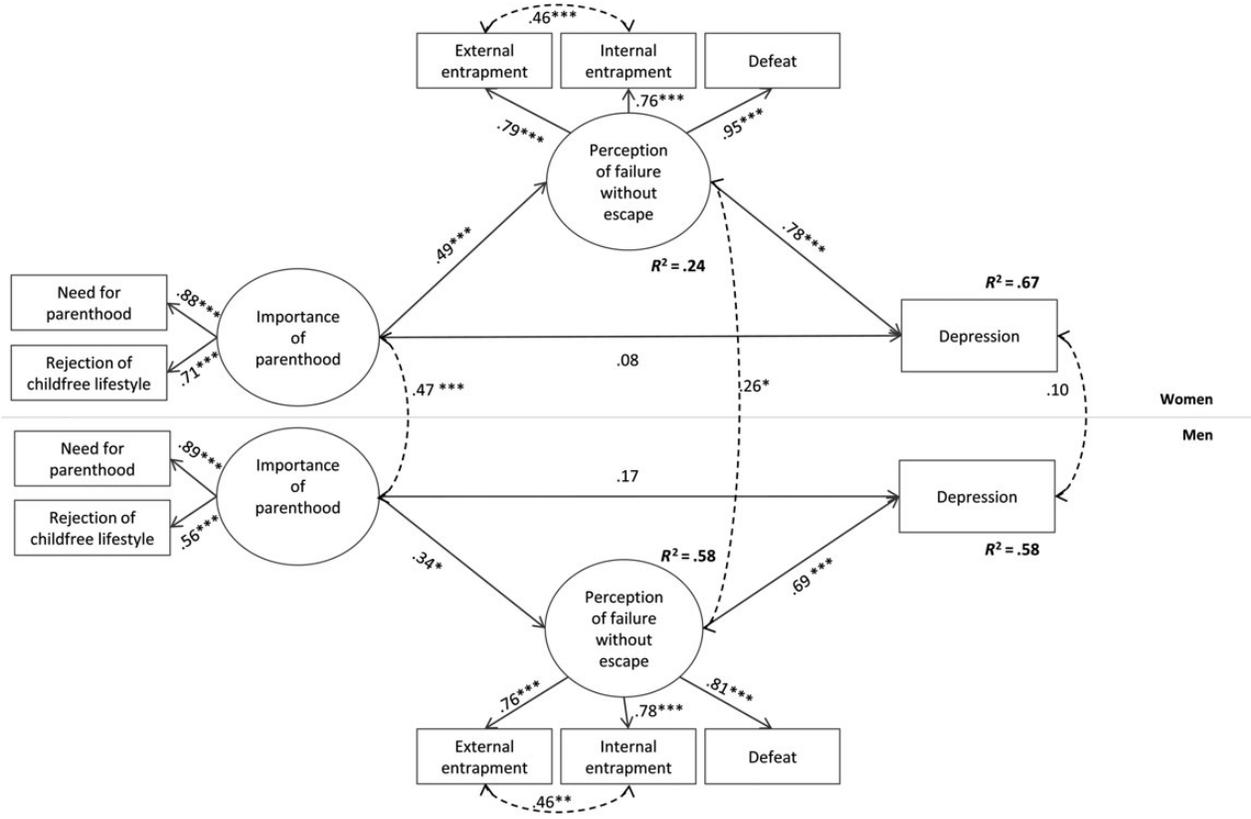
Total standardized estimates (that is, the effect of the importance of parenthood on depressive symptoms when the mediator was not included in the model) were significant [women estimate: 0.46 (bias corrected (BC) 95% confidence interval (CI) = 0.28; 0.60); men estimate: 0.40 (BC 95% CI = 0.23; 0.56)]. Direct paths from the importance of parenthood to depression when the effect of the mediator was controlled were not significant for both partners [women estimate: 0.12 (BC 95% CI = -0.13; 0.48); men estimate: 0.14 (BC 95% CI = -0.05; 0.37)]. Indirect effects were significant for both partners, with a standardized indirect effect estimate of 0.38 (BC 95% CI = 0.25; 0.56;  $P < 0.001$ ) for women and a standardized indirect effect estimate of 0.23 (BC 95% CI = 0.06; 0.40;  $P = 0.013$ ) for their partners. That is, the influence of importance of parenthood on depressive symptoms was totally explained by the perception of failure without escape.

## Discussion

The current study aimed at testing the mediating effect of the perception of failure without a resolution or way forward between the importance of parenting and having children in one's life and symptoms of depression.

Results showed that the relationship between the importance of parenthood and rejection of a childfree lifestyle and depressive symptoms was explained by the perceptions of failure and not being able to escape or move forward, for both men and women, confirming our hypothesis. Our results show that envisioning parenthood as an important life goal and having a negative view of a childfree lifestyle may have an effect in depression by exacerbating perceptions of defeat and entrapment. This result does not contradict previous findings on the effect of importance of parenthood on depression but it adds an important contribution to the literature by clarifying the mechanism by which that association may occur.

In general, perceptions of defeat and entrapment may be considered risk factors for various psychological problems and may reflect



**Figure 1** Structural Equation Model testing the direct and indirect effects of importance to parenthood on depressive symptoms, via perception of failure without escape for infertile couple partners. Variables in the upper part of the figure concern the women’s model, variables in the lower part of the figure concern the men’s model. Latent constructs are shown within circles, observed variables are shown within rectangles. Error terms of latent and observed variables were estimated but were not included in the figure, for simplicity. Reported path values are standardized regression coefficients (\*\*\* $P \leq 0.001$ ; \*\* $P \leq 0.01$ ; \* $P \leq 0.05$ ). Dotted curved lines represent correlation between error terms.

transdiagnostic processes that are common across various forms of psychological suffering (Siddaway, 2013).

According to Gilbert (2005a,b, 2007) humans compete for a social role within their affiliative networks and this non-aggressive competition may lead to defeat experiences. In this context, perceiving loss or reduction in the ability to achieve a social place, for example, feeling inferior, rejected, unable to control or somehow inadequate when compared with friends or family members regarding parenthood, may promote the arising of perceptions of defeat. Furthermore, internal self-criticism can also originate a sense of defeat (Gilbert, 2007) and previous studies have shown that infertile patients tend to show high levels of this psychological process (Galhardo et al., 2013a). Indeed, several studies have shown that infertility is felt as a low-control stressor and couples experiencing infertility may feel isolated, stigmatized or inadequate compared with their social networks (Whiteford and Gonzalez, 1995; Cousineau and Domar, 2007).

The results also showed that the mechanism by which the importance of parenthood affects depressive symptoms is similar for both members of the couple. Indeed, although gender differences on adjustment to infertility have been described, previous research has highlighted the similarity of response patterns along time (Boivin et al., 1998) and of the underlying mechanisms, although to a lesser extent in men (Moura-Ramos et al., 2012b).

### Strengths and limitations

The study has several strengths. First, this is a novel study, clarifying the mechanism by which the importance of parenthood may exacerbate depressive symptoms in infertile men and women by including concepts that have not been previously addressed in research with infertile couples. Secondly, the study explores the mediating effect for both men and women while accounting for the interdependence of the couple data, incorporating simultaneously the data from both partners in a dyadic design. This type of analysis is more robust, as it controls for the interdependence of the data and also allows for examining the different mechanisms by which the experience of infertility may affect men and women’s adjustment. Third, the study included valid and standardized measures of both generic and specific constructs related to the experience of infertility. While generic instruments are useful to compare the adjustment to infertility with the adjustment to other health conditions, instruments assessing infertility-related constructs allow for capturing the specificities of the experience of infertility.

Several limitations should also be considered. First of all, the sample was heterogeneous regarding their past and current experience of infertility and ART. Research has shown that there is great variability in the experience of infertility and this variability is highly dependent on the timing of the assessment along the infertility journey (Greil, 1997; Verhaak et al.,

2007). It is well documented that the stage of treatment may induce different emotional states (e.g. Berg et al., 1991; Yong et al., 2000), with women reporting lower positive affect and higher negative affect and state anxiety at oocyte retrieval and embryo transfer days (Mahajan et al., 2010). Second, the sample is not representative of infertile couples in general; our results do not reveal the perceptions of those couples who may decide not to pursue infertility treatment. Moreover, participants were highly educated therefore findings should be interpreted cautiously. We recommend that future studies address these inconsistencies by applying this model in homogeneous samples of infertile patients (e.g. couples undergoing ART).

Finally, the results pointed out that there is a very strong association between perceptions of defeat and depressive symptoms, which may suggest some redundancy of these two concepts. Indeed, this strong association can be expected, as defeat relies on the perception of the self as having failed in accomplishing one's own goals (Gilbert, 2005a,b) and depression results from the negative views of the self, the others and the future (Beck et al., 1979). However, we believe that this association does not imply redundancy or overlapping concepts, but probably indicates the strong link between the perceptions of failure and consequent symptoms of depression (e.g. Price et al., 1994; Lester, 2012; Griffiths et al., 2014). In addition, the cross-sectional nature of the study does not allow for the establishment of causality or directionality between variables included in the model. It has been documented that defeat and entrapment are reliable predictors of depression, but further research using a longitudinal design is required to establish exactly how the relationship between defeat and entrapment and psychopathology operates (Griffiths et al., 2014).

## Implications for research and clinical practice

The results of the current study are an important contribution for future research by highlighting the importance of considering and assessing individuals' perceptions of failure without a resolution or way forward. In addition, our study emphasizes the importance of targeting perceptions of defeat and entrapment within psychological interventions for infertile people suffering from depression, and screening individuals to identify those at risk of developing psychopathology. In fact, mediational and experimental studies have demonstrated that emotion regulation skills influence emotional responses toward experimentally induced emotions and/or components of emotions (Campbell-Sills et al., 2006) and have a mediator effect between a stressor and the development of psychopathological symptoms (Sim and Zeman, 2005). As such, the emotion regulation strategies people use to deal with negative perceptions of defeat and entrapment may enhance the probability of showing clinical levels of depression or other forms of psychopathology. Accordingly, our findings suggest that contextual cognitive-behavioral therapies that clearly address emotion regulation skills, for example, the Mindfulness-Based Program for Infertility (Galhardo et al., 2013b), Acceptance and Commitment Therapy (Hayes et al., 1999) and Compassion-Focused Therapy (Gilbert, 2010) may be suitable approaches for infertile patients. These therapeutic approaches include the assessment of perceptions of defeat and entrapment, particularly when depressive symptoms are identified, as well as the development of mindfulness, compassion and acceptance skills that may induce different ways of relating to private events such as those defeat and entrapment thoughts and feelings. By explicitly targeting emotion regulation skills these third

wave cognitive-behavioral approaches may expand the effectiveness of psychotherapeutic interventions (Berking et al., 2008).

Furthermore, the current results can also be taken into account by medical and paramedical staff when dealing with infertile patients. These professionals can detect feelings of heightened need for parenthood in their patients, normalize the experience of wanting to have a child and assure them that many other couples experience similar feelings. Moreover, they can communicate in an open and compassionate way creating a warm and caring environment where patients feel comfortable to share their painful emotions and, if appropriate, they can make a referral to a mental health professional.

In summary, for those infertile patients to whom the importance of parenthood is clearly heightened, undergoing fertility care may evoke feelings of being unable to find a way out, which can seriously affect their emotional wellbeing, in particular eliciting depressive symptoms.

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## Authors' roles

A.G. designed the study, developed the main database, collected, analyzed and interpreted the data and draft and revised the paper. M.M.-R. designed the study, analyzed and interpreted the data and draft and revised the paper. M.C. and J.P.-G. contributed to the interpretation of data and revised it critically. All authors gave final approval of the version to be published.

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## Conflict of interest

None declared.

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