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# Journal of Health Psychology

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## **Cognitive Coping, Goal Adjustment, and Depressive and Anxiety Symptoms in People Undergoing Infertility Treatment : A Prospective Study**

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# Cognitive Coping, Goal Adjustment, and Depressive and Anxiety Symptoms in People Undergoing Infertility Treatment

## A Prospective Study

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### Abstract

The relationships between cognitive coping strategies, goal adjustment, and symptoms of depression and anxiety were studied in people with fertility problems. Both cross-sectional and prospective relationships were studied in a sample of 313 patients attending an infertility clinic. Self-report questionnaires were filled out at home. Positive refocusing, rumination and catastrophizing, and goal reengagement were related to symptoms of depression and anxiety. When looking at the long-term effects, rumination and catastrophizing were also related to emotional problems nine months later. These findings suggest that intervention programs should focus on cognitive coping strategies and goal-based processes.

### Keywords

- *anxiety*
- *coping*
- *depression*
- *goals*
- *infertility*

## Introduction

INFERTILITY is defined as having no pregnancy after a year of regular sexual intercourse without the use of contraception (Rowe, Hargreave, Mellows, & Comhaire, 1993). About 5 percent to 15 percent (with an estimated overall median prevalence of 9 percent) of women aged 20–44 in married and consensual unions have fertility problems (Boivin, Bunting, Collins, & Nygren, 2007). For many people, having children is an essential part of life (van Balen & Bos, 2004). Consequently, infertility can be seen as a major life stressor (Meyers et al., 1995; van Balen, 2001). Couples may try to fulfill their wish to have a child by undergoing infertility treatment. However, infertility treatment can also be seen as a severe stressor (Oddens, den Tonkelaar, & Nieuwenhuyse, 1999). Many couples endure repeated attempts of treatment. Research shows that couples with fertility problems experience psychological distress. Mood disorders have been found to be common in both women and men undergoing infertility treatment, with depression being the most prevalent disorder (Cousineau & Domar, 2007; Verhaak, Smeenk, Kremer, Braat, & Kraaij, 2002; Volgsten, Skoog Svanberg, Ekselius, Lundkvist, & Sundström Poromaa, 2008). The literature suggests that infertility is more stressful for women than for men (Edelmann & Connolly, 1998; Jordan & Revenson, 1999; Verhaak, Smeenk, van Minnen, Kremer, & Kraaij, 2005). A review study on women's emotional adjustment showed that when IVF resulted in pregnancy, the negative emotions disappeared, indicating that treatment-induced stress is considerably related to threats of failure (Verhaak et al., 2007). A remarkable finding is that the majority of infertile couples with a psychiatric disorder were undiagnosed and untreated (Volgsten et al., 2008). Research found mixed results for the relationship between distress and conception rates (Boivin, 2003; Cousineau & Domar, 2007; de Klerk et al., 2008; Panagopoulou, Vedhara, Gaintarzi, & Tarlatzis, 2006). However, psychological distress is the most common reason that patients drop out of infertility treatment, over and above the perception of a poor diagnosis and the financial burden (Cousineau & Domar, 2007; Verberg et al., 2008). Psychological interventions appear to reduce infertility-related distress, which in turn might contribute to lower drop-out rates and possibly higher pregnancy rates (Boivin, 2003; Cousineau & Domar, 2007). There is a dearth of

research exploring the factors that might contribute to the psychological distress experienced by people with fertility problems, and on which factors are effective in psychosocial programs that aim at reducing psychological distress (Boivin, 2003). The current study focuses on how people undergoing infertility treatment adjust to their fertility problems. Our study, therefore, might help in identifying factors that may be incorporated into designing evidence-based psychosocial intervention programs.

Based on the stress-coping model of Lazarus and Folkman (1984), the most widely studied phenomenon that has been studied in patients attending a fertility clinic are their coping strategies, that is their efforts to manage a stressful situation and the emotional responses to the event. Coping strategies such as avoidance, denial, escape (Band, Edelmann, Avery, & Brinsden, 1998; Benyamini, Gozlan, & Kokia, 2004; Berghuis & Stanton, 2002; Litt, Tennen, Affleck, & Klock, 1992; Lord & Robertson, 2005; Morrow, Thoreson, & Penney, 1995; Peterson, Newton, Rosen, & Skaggs, 2006; Schmidt, Holstein, Christensen, & Boivin, 2005; Terry & Hynes, 1998), and self-blame (Benyamini et al., 2008; Lord & Robertson, 2005; Morrow et al., 1995), have been found to be related to more psychological distress in people in treatment for infertility. Approach-oriented and active coping strategies (Berghuis & Stanton, 2002; Demyttenaere et al., 1998; Dhillon, Cumming, & Cumming, 2000; Schmidt et al., 2005), and positive re-interpretation (Benyamini et al., 2008) have been found to be related to less psychological distress in this group. We will focus specifically on cognitive coping strategies in the present study, as cognitive therapy is believed to be especially suitable in the infertility context because it is effective even when brief and short-term (Hunt & Monach, 1997). Cognitive coping strategies can be understood as the cognitive way of managing the intake of emotionally arousing information (Garnefski, Kraaij, & Spinhoven, 2001). Numerous studies have been performed focusing on the relationship between life stressors, cognitive coping strategies, and emotional problems (Garnefski, Boon, & Kraaij, 2003; Garnefski & Kraaij, 2006b; Kraaij et al., 2008b; Martin & Dahlen, 2005; Nolen-Hoeksema, 1998; Nolen-Hoeksema, Parker, & Larson, 1994). A consistent finding from such research is that cognitive coping strategies such as catastrophizing and rumination have a significant positive relationship with emotional problems, while positive re-focusing (focusing on pleasant issues instead of the

life stressor) has a significant negative relationship with emotional problems. Whether these same strategies are related to depressive and anxious symptoms in people with fertility problems will be examined in the present study.

Recently, it has been suggested that the stress-coping model should be integrated into a more comprehensive framework of self-regulation (de Ridder & de Wit, 2006; Lazarus, 1993; Maes, Leventhal, & de Ridder, 1996). Self-regulation takes more explicitly into account the role of personal goals for the meaning of a stressful event and subsequent action. In the present study we will apply this self-regulation perspective to examine the psychological well-being of people undergoing infertility treatment. Self-regulation theory (Carver & Scheier, 1999, 2000) proposes that people strive for the attainment of personal goals and are constantly engaged in a process of comparing what is with what is desired. Goals can be defined as internal representations of desired outcomes (Austin & Vancouver, 1996). Goals provide the structure that define people's life and imbue life with purpose. Confronting unattainable goals may result in reduced well-being and enhanced psychological distress. Well-being and quality of life might be facilitated both by the ability to disengage from goals that are no longer attainable, as well as by the pursuit of goals that are attainable (Wrosch & Scheier, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Several studies have shown that goal disengagement and goal reengagement can be associated with high subjective well-being (Heckhausen, Wrosch, & Fleeson, 2001; Kraaij et al., 2008b; Schroevers, Kraaij, & Garnefski, 2008; Tunali & Power, 2002; Wrosch & Scheier, 2003; Wrosch et al., 2003). To our knowledge, only one study has been performed on goal adjustment for people with fertility problems, showing that when people were not able to adjust and disengage from their child-related goal after a negative treatment result, they experienced a greater increase in depressive symptoms (Salmela-Aro & Suikkari, 2008). In a study among people with definitive infertility, people's capacity to withdraw effort and commitment from the unattainable goal to have children appeared to be related to lower levels of negative affect (Kraaij, Garnefski, & Schroevers, 2009). In the present study we will focus on goal adjustment in people with fertility problems. Infertility treatment often supersedes other aspects of life, for example important career choices or lifestyle aspirations may be postponed or dismissed. Rigorous medication schedules, recovering

from procedures, and dealing with mood fluctuations may make it difficult to concentrate on various short- and long-term goals (Cousineau & Domar, 2007). In the present study we will examine whether people's capacity to disengage from goals obstructed by having fertility problems is related to well-being. In addition, we will also study the influence of one's capacity to look for new, different goals when goals are obstructed by having fertility problems.

In the present study we will examine which cognitive coping strategies and goal-related processes are related to symptoms of depression and anxiety both cross-sectionally and prospectively. Cross-sectional findings provide an initial test of correlational relationships among variables. Prospective findings further predict what characteristics are related to psychological distress in the long term (Rutter, 1994).

In conclusion, more research is needed which integrates the stress-coping model into a framework of self-regulation in the process of psychological adjustment to fertility problems. This knowledge might contribute to the development of evidence-based psychosocial intervention programs. Specifically, we will examine the relationship between cognitive coping strategies, goal adjustment, and symptoms of depression and anxiety in people with fertility problems. First, we will examine the bivariate relationships of cognitive coping strategies and goal adjustment with depression and anxiety symptoms. Next, the multivariate relationships of cognitive coping strategies and goal adjustment with depression and anxiety symptoms will be studied, controlling for the influence of sociodemographic and treatment characteristics. In the present study both the cross-sectional and prospective relationships will be studied. Cognitive coping strategies and goal adjustment measured at the initial assessment (T1) will be related to symptoms of depression and anxiety measured at T1 and follow-up (T2).

## Methods

### *Sample and procedure*

After permission was obtained from the Medical Ethics Committee at the Leiden University Medical Center (LUMC) in the Netherlands, all patients who recently (last four months) attended the infertility clinic of the LUMC were sent a letter with the invitation to participate in the study at their own home. A self-report questionnaire and a return envelope were included. A reminder letter was sent two

weeks later. Respondents were explicitly instructed to fill out the questionnaire independently from their partner in order to make the observations independent from each other. (When people confer about answers this violates the assumption of independence, see de Heus, van der Leeden, & Gazendam, 1995; Field, 2005.) The sample consisted of men and women who reported to either start treatment or who were already undergoing infertility treatment.

Of the estimated 600 people who actually received treatment and were contacted, 313 participated in the present study. The mean age of the respondents was 35 years (SD 4.7) and 78 percent were female. Almost all were either married or living together (98%). The majority (71%) had no children, 23 percent had one child, and 6 percent had two children. Half of the respondents (54%) had higher education, and the majority (95%) had either a part-time or full-time job. On average people had wanted to have a child for five years (SD 3.0), knew about the fertility problems for four years (SD 3.4), and were under treatment for the fertility problems for three years (SD 2.5). In 29 percent of the cases the respondent himself or herself had a clear physical reason for the fertility problems, in 11 percent of the cases both partners had a physical reason for the fertility problems, in 28 percent the partner had the physical reason, and in 32 percent it was unknown. In 73 percent of the cases the respondent him/herself underwent the medical treatment. The most frequently used method of treatment was in vitro fertilization (IVF; 35%), followed by intrauterine insemination/fallopian tube sperm perfusion (IUI/FSP; 30%), intracytoplasmic sperm injection (ICSI; 20%), and hormonal treatment (16%) (or combinations of these).

Respondents were asked to sign a consent form in order to give the researchers permission to contact them again in the future for a follow-up study. This consent form was signed by 216 respondents (69%). Nine months later these people received a letter with the invitation to participate in the follow-up study, a self-report questionnaire, and a return envelope. Again, a reminder letter was sent two weeks later. A total of 139 people participated in the follow-up study. The most frequently used method of treatment during this follow-up period was IVF (42%), followed by ICSI (34%), hormonal treatment (18%), and IUI/FSP (13%) (or combinations of these). Almost half (47%) had been treated successfully. A significantly higher percentage of

women participated at follow-up compared to the initial assessment (Chi-square [1] = 5.86,  $p < .05$ ). At follow-up 84 percent of the respondents were female. No significant differences were found between those who participated at follow-up and those who did not for age, level of education, number of children, time since the wish to have a child, time since awareness of the fertility problems, and time since treatment.

## Measures

### *Depressive and anxious symptoms*

Depressive and anxious symptoms were measured by the Hospital Anxiety and Depression Scale (HADS; Spinhoven et al., 1997; Zigmond & Snaith, 1983), both at T1 and T2. All 14 items have a four-point scale. High scores on the anxiety and depression subscales (made up of seven items each) reflect increased levels of anxiety and depression. The HADS is a reliable self-report instrument with sufficient internal validity (Spinhoven et al., 1997). In the present study alpha-reliabilities ranged from .77 to .84 (Table 1).

### *Cognitive coping strategies*

Cognitive coping strategies were measured by the Cognitive Emotion Regulation Questionnaire—short form (CERQ-short; Garnefski & Kraaij, 2006a). The CERQ(-short) assesses what people think at the time of or after the experience of threatening or stressful life events. The CERQ(-short) can be used to measure either a more general coping style (referring to a 'trait'), or a more specific response to a specific event (referring to a 'state'). In the present study respondents were asked which specific cognitive coping strategies they used in relation to their fertility problems. The CERQ-short consists of 18 items and nine conceptually different subscales. Each subscale consists of two items. Each of the items has a five-point Likert scale ('never' to 'always'). Subscale scores are obtained by adding up the two items, indicating the extent to which a certain cognitive coping strategy is used. The CERQ subscales used in the present study are: *rumination*, which refers to thinking about the feelings and thoughts associated with the fertility problems, *positive refocusing*, which refers to thinking about joyful and pleasant issues instead of thinking about the fertility problems, and *catastrophizing*, which refers to thoughts of explicitly emphasizing the awfulness of the fertility problems. The psychometric properties of the CERQ-short have been

Table 1. Relationships between cognitive coping strategies, goal adjustment, and depressive and anxiety symptoms at T1 and T2, reliabilities (Cronbach's alpha's), mean scores, and Pearson correlations

	Alpha	Mean	(SD)	1	2	3	4	5	6	7	8
1 Depression (T1)	.77	2.53	(2.78)	—							
2 Anxiety (T1)	.79	4.73	(3.28)	.59***	—						
3 Depression (T2)	.84	2.86	(3.31)	.55***	.51***	—					
4 Anxiety (T2)	.82	4.70	(3.62)	.49***	.65***	.78***	—				
5 Positive refocusing (T1)	.75	6.19	(1.91)	-.32***	-.32***	-.25**	-.23**	—			
6 Rumination/catastrophizing (T1)	.87	8.40	(3.56)	.38***	.47***	.37***	.40***	-.23***	—		
7 Goal disengagement (T1)	.86	12.66	(4.10)	-.16**	-.17**	-.11	-.18*	.24***	-.16**	—	
8 Goal reengagement (T1)	.86	14.92	(4.09)	-.28***	-.24***	-.18*	-.21*	.28***	-.17**	-.58***	—

Note: Due to missing data the *n* for T1 varied from 276 to 311, and the *n* for T2 varied from 128 to 139

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001

proven to be good (Garnefski & Kraaij, 2006a). Because the Pearson correlation between rumination and catastrophizing was high in the present study ( $r = .65, p < .001$ ), these two scales were combined into one scale *rumination/catastrophizing*. In the present study the alpha-reliabilities of the subscales also appeared to be good, with alphas ranging from .75 to .87 (Table 1).

**Goal adjustment** Goal disengagement and goal reengagement were measured by the Goal Obstruction Questionnaire (GOQ; V. Kraaij & N. Garnefski, internal publication). The GOQ measures what people do when important life goals (in various domains) are no longer reachable due to a stressor, in this case having fertility problems. The goal disengagement subscale measures the extent to which one considers oneself able to withdraw effort and commitment from unattainable goals, while the goal reengagement subscale measures the extent to which one considers oneself able to reengage in alternative meaningful goals, in case that preexisting goals can no longer be reached. Both subscales consist of four items asking for disengagement and reengagement on four specific domains: (1) work; (2) domestic or caring tasks; (3) social relationships; and (4) leisure activities. An example item of the goal disengagement scale is: 'When certain personally important goals in the domain of ... (e.g. work) have become unattainable due to my fertility problems, I am easily able to let go of these goals.' An example item of the goal reengagement scale is: 'When certain personally important goals in the domain of ... (e.g. work) have become unattainable due to my fertility problems, I search for alternative goals.' The items have a five-point Likert scale. Subscale scores can be obtained by adding up the four items, where higher scores indicate more goal disengagement and more reengagement, respectively. Good alpha-reliabilities have been found in former studies with cardiac patients (Garnefski et al., 2009; Garnefski, Kraaij, Schroevers, & Somsen, 2008), peripheral arterial disease patients (Garnefski, Grol, Kraaij, & Hamming, 2009), and HIV-infected men (Kraaij et al., 2008b). In the present study good alpha-reliabilities were found (Table 1).

**Infertility treatment characteristics**

Type of treatment, time since treatment, and success of treatment were measured by means of self-report.

## Statistical analyses

To study the relationship between the cognitive coping strategies and goal adjustment at T1 and depressive and anxiety symptoms at T1 and T2, first Pearson correlations were calculated. Next, four separate hierarchical regression analyses were performed: two for depression and anxiety at T1 and two for depression and anxiety at T2. In order to control for the influence of the sociodemographic and treatment characteristics, variables that had a bivariate significant relationship with depressive or anxiety symptoms were entered in the first step. In the second step the cognitive coping strategies and goal adjustment were entered. Because the Pearson correlations between depression at T1 and T2, and between anxiety at T1 and T2 were expected to be rather high, it was decided not to control for T1 values of depression and anxiety in the regression analyses at T2. These variables would take away all explained variance. This would lead to no insight in possible predictors for intervention purposes.

## Results

### Preliminary analyses

First, mean scores and standard deviations of the variables were calculated (Table 1). Prior to performing the main analysis, Pearson correlations among the independent variables were computed (Table 1). There was no evidence of multicollinearity (see Tabachnick & Fidell, 1996) among the measures of cognitive coping strategies and goal adjustment. As expected, significant correlations were found between depression and anxiety scores (both at T1 and T2). Change scores were examined for both depression and anxiety. Respondents had a small mean increase (mean = .38) for depressive symptoms from T1 to T2 (SD 2.93; range -11 to 11), and a small decrease (mean = -.41) for anxiety symptoms from T1 to T2 (SD 2.98; range -13 to 9).

At T1 gender was significantly related to anxiety ( $t = -3.40, p < .01$ ), with women reporting higher anxiety scores. No significant relationship was found between gender and depressive symptoms. The number of children was significantly correlated with anxiety symptoms ( $r = -.14, p < .05$ ), with people having children reporting fewer symptoms of anxiety. Again, this relationship was not found for depression ( $r = -.07, NS$ ). Time since treatment was negatively correlated with symptoms of depression ( $r = .15, p < .01$ ), indicating that a longer time

in treatment was related to higher levels of depression. This same relationship was not found for anxiety ( $r = -.08, NS$ ). At T2 success of treatment was significantly related to both symptoms of depression and anxiety ( $t = 2.41, p < .05$ ; and  $t = 3.22, p < .01$ , respectively), showing that people with successful treatment reported fewer symptoms of depression and anxiety. No significant relationships were found between the kind (and number) of infertility treatment and symptoms of depression and anxiety. Furthermore, gender differences were found with regard to positive refocusing and rumination/catastrophizing ( $t = -2.96, p < .01$ ; and  $t = -5.42, p < .001$ ), with women reporting higher use of these strategies. No gender differences were found in goal adjustment. Also, no significant relationships were found between having any children or not and goal adjustment processes.<sup>1</sup>

### Bivariate relationships between cognitive coping strategies, goal adjustment, and depressive and anxiety symptoms

To study the bivariate relationships between cognitive coping strategies and goal adjustment at T1 and depressive and anxiety symptoms at T1 and T2, Pearson correlations were calculated (Table 1). Rumination/catastrophizing was positively correlated with symptoms of depression and anxiety, both at T1 and T2. Positive refocusing, goal disengagement, and goal reengagement were all negatively correlated with symptoms of depression and anxiety at T1 and T2 (only the relationship between goal disengagement and depression at T2 was not significant).

### Multivariate relationships between cognitive coping strategies, goal adjustment, and depressive and anxiety symptoms

Next, hierarchical regression analyses were performed (Table 2). In the first step gender, the number of children, and time since treatment were entered, since they had a significant bivariate relationship with depressive or anxiety symptoms. In addition, at T2 success of treatment was entered in the first step. At T1, in the first step, time since treatment had a significant relationship with depression (Beta = .17;  $p < .01$ ;  $R$ -square = .03,  $F(3, 263) = 2.68; p < .05$ ), and gender and number of children had a significant relationship with anxiety (respectively, Beta = .16,  $p < .05$ , and Beta = -.15,  $p < .05$ ;  $R$ -square = .06,  $F(3, 264) = 5.09, p < .01$ ). At T2, in the



Table 2. Relationship between cognitive coping strategies, goal adjustment, and depressive and anxiety symptoms at T1 and T2, controlling for gender and infertility characteristics: hierarchical regression analyses with standardized Betas

	T1 Depression Beta	T1 Anxiety Beta	T2 Depression Beta	T2 Anxiety Beta
Successful treatment (T2)			-.20*	-.25**
Gender (T1)	-.05	.09	-.04	.02
Number of children (T1)	.02	-.03	.18	.18
Time since treatment (years) (T1)	.10	.02	.11	.13
Rumination/catastrophizing (T1)	.32***	.38***	.26*	.24*
Positive refocusing (T1)	-.20**	-.23***	-.13	-.14
Goal disengagement (T1)	.02	-.02	-.03	-.09
Goal reengagement (T1)	-.17*	-.10	-.09	-.10
R-square	.24	.31	.21	.27
F	11.92***	16.81***	3.74**	5.10***
(d.f.)	(7,259)	(7,260)	(8,113)	(8,113)

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

first step, both success of treatment and time since treatment had a significant relationship with depression (respectively,  $Beta = -.27, p < .01$ , and  $Beta = .18, p < .05$ ;  $R$ -square = .09,  $F(4, 117) = 2.98, p < .05$ ) and anxiety (respectively,  $Beta = -.31, p < .01$ , and  $Beta = .19, p < .05$ ;  $R$ -square = .13,  $F(4, 117) = 4.43, p < .01$ ). In the second step the cognitive coping strategies and goal disengagement and goal reengagement were entered.<sup>2</sup> At T1, the sociodemographic and treatment characteristics no longer had a significant relationship with depression and anxiety. Rumination/catastrophizing had a positive significant relationship with symptoms of depression and anxiety, and positive refocusing had a negative significant relationship with depressive and anxiety symptoms. Finally, goal reengagement had a negative significant relationship with depression. For depression at T1 24 percent of the variance was explained, and for anxiety at T1 31 percent of the variance was explained. At T2, success of treatment had a significant relationship with symptoms of depression and anxiety. Furthermore, rumination/catastrophizing had a positive significant relationship with symptoms of depression and anxiety. For depression at T2 21 percent of the variance was explained, and for anxiety at T2 27 percent of the variance was explained.

## Discussion

Although people undergoing infertility treatment report more emotional problems and may benefit

from intervention, only a few studies have focused on factors which could be useful in shaping intervention programs. The present study included factors from a comprehensive framework of self-regulation. The aim was to study the relationships between cognitive coping strategies, goal adjustment, and symptoms of depression and anxiety in people with fertility problems. Both cross-sectional and prospective relationships were studied in a sample of patients attending an infertility clinic.

First, the bivariate relationships of cognitive coping strategies, goal disengagement, and goal reengagement with symptoms of depression and anxiety were studied. Less use of positive refocusing, goal disengagement, and goal reengagement, and more use of rumination and catastrophizing, was related to more symptoms of depression and anxiety, both cross-sectionally as well as prospectively. This is in line with studies focusing on other life stressors (Garnefski et al., 2003; Garnefski & Kraaij, 2006b; Kraaij et al., 2008b; Martin & Dahlen, 2005; Nolen-Hoeksma, 1998; Nolen-Hoeksma et al., 1994), where these cognitive coping strategies have consistently been shown to be related to emotional problems. The findings concerning goal adjustment are in line with studies focusing on people with (definitive) fertility problems (Kraaij et al., 2009; Salmela-Aro & Suikkari, 2008), and with studies on other samples (Heckhausen et al., 2001; Kraaij et al., 2008b; Tunali & Power, 2002; Wrosch &

Scheier, 2003; Wrosch et al., 2003), suggesting that well-being might be facilitated both by the ability to disengage from goals that are no longer obtainable and the pursuit of goals that are attainable.

Next, the multivariate relationships were studied. When controlling for the influence of the sociodemographic and treatment characteristics, positive refocusing, and rumination and catastrophizing were related to symptoms of depression and anxiety. Goal reengagement was related to symptoms of depression only. Goal disengagement no longer added to the explanation of depression and anxiety symptoms. When looking at the long-term effects, rumination and catastrophizing were also related to depressive and anxiety symptoms nine months later, even after controlling for the success of the infertility treatment. It seems that thoughts of joyful and pleasant issues instead of thinking about the fertility problems is a good mechanism for coping with fertility problems. On the other hand, thinking about the feelings and thoughts associated with the fertility problems and thoughts of explicitly emphasizing the awfulness of the fertility problems seem to be poor coping strategies. Being able to reengage in alternative meaningful goals also seems to be a fruitful way to cope with fertility problems for symptoms of depression. Rumination and catastrophizing in particular seem to be of importance, since the findings suggest that use of such strategies is related to the continuation of depressive and anxiety symptoms.

Summarizing, factors from both stress-coping theory and self-regulation theory appeared to be important predictors of depressive and anxiety symptoms. These findings might suggest that the integration of the stress-coping model into a more comprehensive framework of self-regulation, indeed adds to our knowledge about the psychological well-being in people undergoing infertility treatment. Infertility treatment can be stressful and may not only trigger coping reactions, but may also interfere with various life goals. Providing people with tools to cope better and to look for new goals, might help them to regain emotional well-being.

In conclusion, the focus of psychological treatment could be the content of coping thoughts and bringing about effective cognitive change, combined with working on goal adjustment. Recently, a number of researchers have described the potential benefits of incorporating a goal-based approach into the design of treatment programs (Kraaij et al., 2008a, 2008b; Salmela-Aro & Suikkari, 2008), an idea which receives support from the present study.

To date, various studies showed the positive effects of cognitive-behavioral-oriented interventions (Antoni et al., 2005; Carrico et al., 2005; Cruess et al., 2002; Rousaud et al., 2007) and coping effectiveness training (Chesney, Chambers, Taylor, & Johnson, 2003) in improving psychological states in people with a chronic disease. Future studies should be undertaken looking at the effectiveness of evidence-based intervention programs focusing on cognitive coping strategies and goal-based processes for people undergoing infertility treatment. If such a program proves to be effective, this would not only contribute to a better patient well-being, but might also contribute to lower drop-out rates and consequently higher pregnancy rates.

In interpreting the results a number of methodological considerations have to be taken into account. A first concern is the representativeness of the group studied. Even though respondents were approached through the hospital, it is likely that people looking for emotional help might be overrepresented in the sample. We also have no information about why some participants failed to respond at the follow-up assessment. Possibly people find it emotionally demanding to participate and drop out. More men dropped out, possibly they are less willing to reflect on or reveal their feelings and thoughts. A second concern of the present study is that we did not control for prior depression and anxiety scores. Another limitation of the design was that infertility characteristics, cognitive coping strategies, goal adjustment and depressive and anxious symptoms were measured by self-report instruments. In addition, we cannot make causal inferences. It is important for future studies to collect additional data from interviews, expert judgments, or experiments. Furthermore, several aspects that could also be related to depression and anxiety, such as social support and illness perceptions, were not included in the present study. Future studies should try to include these other issues as well. Finally, it would also be interesting for future studies to focus on homosexual couples or people who want to start a one-parent family, to find out whether their experiences are similar to those of heterosexual couples.

Despite these shortcomings, the cognitive coping strategies used in response to the fertility problems and the goal adjustment processes seem to be related to the amount of depressive and anxiety symptoms reported, not only in the short term, but also in the long term. If the findings of the present

study can be confirmed, they could contribute to the focus and content of intervention programs for persons who face fertility problems.

## Notes

1. In addition, no significant relationships were found for the interaction between having any children or not and goal adjustment processes on current depression and anxiety.
2. The interaction effect between goal disengagement and goal reengagement on depression and anxiety both at T1 and T2 was also tested and appeared to be not significant.

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