



Waiting for a baby: Navigating uncertainty in recollections of trying to conceive



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ABSTRACT

Objective: Guided by the uncertainty navigation model, this study examined experiences of uncertainty associated with trying to conceive and identified predictors of this experience using a multi-method approach.

Method: 429 American adults from Amazon's Mechanical Turk who had a child under age three completed online questionnaires regarding their experiences trying to conceive, including recollections of psychological adjustment, use of coping strategies, and individual and situational variability. Then they provided open-ended reflections of their experience trying to conceive. Participants' descriptions were analyzed for word use using LIWC, a text-analysis software program, to obtain an unobtrusive and pseudo-observational measure of coping resources.

Results: Consistent with the uncertainty navigation model, recollections of distress as individuals tried to conceive were associated with lower levels of dispositional optimism; intolerance of uncertainty; fewer social, emotional, and cognitive resources (reflected in word use); placing greater importance on conception; lower risk for infertility; and less searching for meaning in life.

Conclusions: This study revealed many novel insights regarding the experience of trying to conceive, including protective factors and vulnerabilities that may buffer or heighten the distress associated with this experience.

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Young adults consider having children a valuable part of adult life (Gerson et al., 1991), and many parents report that having children is the most positive event in their lives (Berntsen et al., 2011). In many cases, the process of becoming a parent begins with a concerted effort to conceive. Although most people who try to become pregnant eventually succeed, the average time to conception may be as long as six months (WebMD, 2000), and millions of people seek fertility treatment (CDC, 2014a). Use of assisted reproductive technology (ART) has doubled over the past decade, such that 1% of all infants born in the United States are conceived using ART (CDC, 2014b).

In light of the importance many people place on having children, it is unsurprising that people report high levels of distress in

response to struggles with infertility (Greil, 1997). Although the research literature largely focuses on women or couples seeking treatment for infertility (e.g., Greil, 1997; Verhaak et al., 2007), the months leading up to the decision to seek treatment, during which the couple is actively trying (and failing) to conceive, is likely also a stressful time. Most experts suggest that women over 35 years of age spend six months trying to conceive before seeking treatment, and women under 35 are typically counseled to try for a full year before seeing their doctor (U.S. National Library of Medicine (2014)). During these months couples face a rollercoaster of uncertainty, with efforts to conceive followed by several weeks of waiting, then pregnancy tests (or menstruation) and disappointment, then more waiting before the cycle begins again.

The present study addressed three primary questions regarding people's experiences trying to conceive: (1) How distressing is trying to conceive? (2) How do individuals manage the distress of trying to conceive? (3) Is trying to conceive harder for some people, or in some circumstances, than others?

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1. Waiting for uncertain news

Anxiety is commonly associated with uncertainty (Penrod, 2001), particularly when one is awaiting uncertain news (Sweeny and Andrews, 2014). In fact, the complex experience of waiting for an uncertain outcome may cause more anxiety than facing bad news (Boivin and Lancastle's, 2010; Sweeny & Falkenstein, in press), and anxiety is associated with poor health and diminished quality of life (e.g., Sherbourne et al., 1996). Moreover, rumination may add to the anxiety people feel when awaiting uncertain news (Sweeny and Andrews, 2014) and is itself associated with numerous harmful outcomes including depression, deficits in problem-solving, lack of motivation and initiative, and deterioration of ruminators' relationships (see Nolen-Hoeksema et al., 2008). The consequences of rumination and anxiety are a recipe for significant distress during experiences of uncertainty.

Despite their ubiquity and the distress they cause, waiting periods have received relatively little empirical attention. Recent studies examining the experiences of people waiting for their results on the bar exam have found high levels of anxiety, rumination, emotion regulation efforts, and pessimism during this waiting period (Sweeny and Andrews, 2014). Another study examined women's experiences undergoing *in vitro* fertilization, surveying these women regarding their emotions each day during the period between embryo transfer and the pregnancy test and comparing these waiting experiences to their emotions following news of a failed cycle (Boivin and Lancastle's, 2010). This investigation found high levels of anxiety during the waiting period, which increased substantially as women approached the day of the pregnancy test. Although women who received bad news reported significant levels of negative emotion, their anxiety was lower than it had been in the days prior to testing. This study provides initial insight into the experience of trying to conceive, yet little is known about couples' experiences as they try to conceive naturally, and existing findings are limited to women. Furthermore, Boivin and Lancastle's (2010) study focused only on temporal patterns of emotions and a short list of coping strategies rather than examining predictors of distress (e.g., personality, situational characteristics), as we do in the present study.

2. Variability in waiting experiences

A key goal of the present study was to examine not only

individuals' recollections of their emotional experiences when they were trying to conceive but also the strategies they recall using to cope during this experience. The uncertainty navigation model (Fig. 1) provides a theoretical basis for identifying and evaluating common strategies people use during difficult waiting periods (Sweeny and Cavanaugh, 2012). This model suggests that individual and situational variability predicts fluctuations in anxiety and rumination, which drive the use of uncertainty navigation strategies including consequence mitigation, reappraisal, direct emotion management, and information seeking.

Personal and situational characteristics can also lead to variability in the experience of trying to conceive. Previous work on waiting for uncertain news (Sweeny & Andrews, 2014) as identified individual differences that serve to heighten the unpleasantness of uncertainty, most notably pessimistic tendencies (Scheier et al., 1994) and general discomfort with uncertainty (Buhr and Dugas, 2002). The present study examined the role of these individual differences in the experience of trying to conceive and also extended earlier work by including measures of trait-like emotion regulation tendencies and well-being in light of the study's focus on emotional aspects of trying to conceive.

Finally, the uncertainty navigation model proposes features of the situation that are likely to predict waiting experiences, such as outcome importance, risk of a bad outcome, and coping resources (Sweeny and Cavanaugh, 2012). Accordingly, we included proxies of these variables in the present study. Specifically, we measured outcome importance by assessing the total number of methods people tried in their effort to become pregnant and the centrality of parenthood to their identity, and we measured risk of a bad outcome by inquiring about previous and current fertility issues (e.g., miscarriages) and length of time to conception. We measured coping resources by analyzing word use in participants' open-ended responses to operationalize the degree to which they viewed the experience of trying to conceive as shared with their partner and to assess cognitive and emotional resources (Pennebaker, 2011; Robbins et al., 2013; Rohrbaugh et al., 2008).

3. Overview and hypotheses

The current study examined individuals' experiences of uncertainty associated with trying to conceive, including their reflections on the experience and their reports of anxiety, positive and negative emotions, rumination, and use of uncertainty navigation (i.e.,

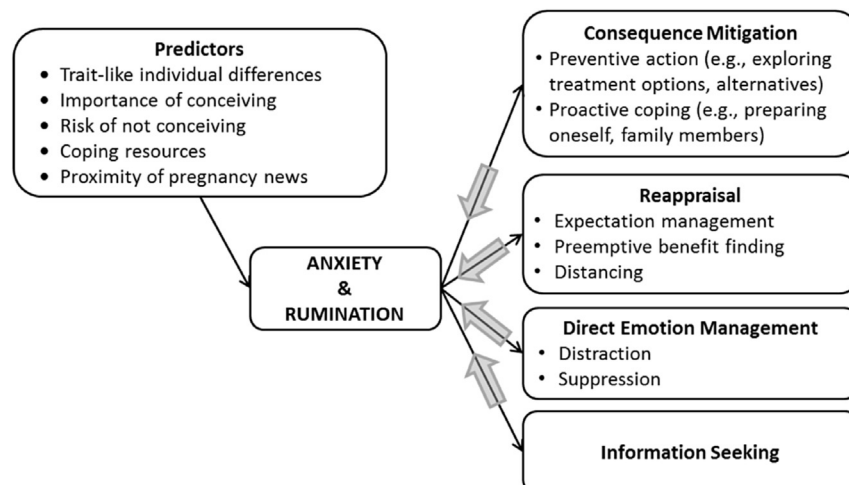


Fig. 1. The uncertainty navigation model in the context of trying to conceive.

coping) strategies throughout the process. Second, we sought to identify individual and situational variability in the experience of trying to conceive. We hypothesized that, as proposed by the uncertainty navigation model (Sweeny and Cavanaugh, 2012), people who recalled higher levels of anxiety and rumination as they tried to conceive would also report greater use of uncertainty navigation strategies throughout the experience (*Hypothesis 1*). We also identified likely predictors of anxiety, rumination, and strategy use while trying to conceive, based on and extending the theoretical moderators proposed in the uncertainty navigation model. These predictors include individual differences that mitigate or exacerbate the unpleasantness of uncertainty in general and situational characteristics. We hypothesized that people with protective traits (*Hypothesis 2a*), for whom becoming pregnant was less important (*Hypothesis 2b*), who had fewer risk factors and quicker conception (*Hypothesis 2c*), and who had greater coping resources (*Hypothesis 2d*) would report less anxiety and rumination and less use of coping strategies during their efforts to conceive than those with fewer protective characteristics.

4. Method

4.1. Participants

Participants ($N = 429$; see Table 1 for sample characteristics) recruited from Amazon's Mechanical Turk (mTurk) were paid \$2 for their participation. Studies demonstrate the reliability of mTurk samples (Buhrmester et al., 2011), and Internet sampling offers advantages over college student samples, such as greater demographic diversity (Gosling et al., 2004). All participants had a child under age three ($M_{childage} = 1.4$ years) whom they made a conscious effort to conceive (i.e., no unplanned pregnancies).

4.2. Procedure

mTurk workers had the opportunity to participate in a study about their experiences planning the pregnancy that led to the birth of their youngest child. Participants first completed an eligibility screening and a consent form before the survey. All procedures were approved by the authors' institution's IRB.

Table 1
Sample characteristics.

% female	62%
Mean age (<i>SD</i>)	31.0 (6.0)
Race/ethnicity	—
White/Caucasian	73%
Black/African-American	11%
Hispanic/Latino	6%
Asian	5%
Other/Multiple	5%
Education	—
Did not complete high school	1%
Completed high school only	35%
Completed college	47%
Graduate education	17%
Annual household income	—
Less than \$15,000	6%
\$15,000–\$50,000	37%
\$50,000–\$100,000	43%
Over \$100,000	14%
Relationship status	—
Married	74%
Cohabiting	11%
Dating	13%
Single	2%
Mean number of total children (<i>SD</i>)	1.7 (1.0)
Mean age of youngest child (<i>SD</i>)	1.4 (.9)

4.3. Measures

The measures and analyses presented in this paper are part of a larger study of individuals' experiences trying to conceive; additional measures are available in Appendix A. Measures are presented here in the order completed by all participants.

4.3.1. Trait-like individual differences

Participants first completed measures of dispositional optimism (6 items from the Life Orientation Test-Revised, filler items omitted, Scheier et al., 1994; e.g., "In uncertain times, I usually expect the best"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 3.65$, $SD = .80$, Cronbach's $\alpha = .89$), intolerance of uncertainty (12 items, short form of the Intolerance of Uncertainty Scale, Carleton et al., 2007; e.g., "Unforeseen events upset me greatly"; 1 = *not at all characteristic of me*, 5 = *entirely characteristic of me*; $M = 2.81$, $SD = .72$, $\alpha = .89$), and emotion regulation tendencies, specifically reappraisal (6 item subscale of the Emotion Regulation Questionnaire [ERQ], Gross and John, 2003; e.g., "When I want to feel more positive emotion, I change the way I'm thinking about the situation"; 1 = *strongly disagree*, 7 = *strongly agree*; $M = 5.10$, $SD = 1.02$, $\alpha = .87$) and suppression (4-item subscale of the ERQ; e.g., "I control my emotions by not expressing them"; $M = 3.53$, $SD = 1.34$, $\alpha = .81$). Note that higher values on each scale indicate greater dispositional optimism, greater intolerance of uncertainty, and greater reappraisal and suppression tendencies, respectively.

4.3.2. Well-being

Participants completed measures of life satisfaction (5 items, Satisfaction with Life Scale, Diener et al., 1985; e.g., "In most ways my life is close to my ideal"; 1 = *absolutely untrue*, 7 = *absolutely true*; $M = 5.02$, $SD = 1.29$, $\alpha = .89$) and meaning in life (10 items, Meaning in Life Questionnaire [MLQ], Steger et al., 2006). The MLQ has two subscales, one assessing the presence of meaning (5 items; e.g., "I understand my life's meaning"; $M = 5.26$, $SD = 1.21$, $\alpha = .93$) and one assessing the search for meaning (5 items; e.g., "I am always looking to find my life's purpose"; 1 = *absolutely untrue*, 7 = *absolutely true*; $M = 3.99$, $SD = 1.54$, $\alpha = .94$). Higher values on each scale indicate greater satisfaction with life, greater meaning in life, and more effort to search for life's meaning, respectively.

4.3.3. Methods tried

For the remainder of the survey, participants were instructed to think back on their experiences trying to become pregnant. Participants first indicated methods they had tried in their effort to conceive. Options included ceasing use of birth control, having sex more regularly, the calendar method, the temperature method, ovulation predictor kits, medical advice for preconception planning, medical advice for fertility issues, and medical treatment for fertility, or other methods (open-ended). Their selections were summed to create a composite indicating the total number of methods tried ($M = 2.31$, $SD = 1.28$), which served as one indicator of outcome importance. This operationalization is novel but intuitive; people who try more methods to conceive rather than simply trying the easiest or most convenient method are trying "harder," presumably because becoming pregnant is more important to them.

4.3.4. Identity centrality

We assessed the centrality of being a parent to participants' identity with a measure of contingencies of self-worth (6 items adapted from Crocker et al., 2003; e.g., "Having children was important to my sense of self-worth"; 1 = *not at all true*, 7 = *very true*; $M = 4.01$, $SD = 1.60$, $\alpha = .91$). This composite was the second indicator of outcome importance.

4.3.5. Risk factors

Participants indicated how many miscarriages they or their partner had prior to the focal pregnancy (coded as zero vs. at least one), their history of fertility problems, family history of fertility problems, any medical conditions that they thought could influence their fertility, and their partner's medical conditions that could influence fertility. We summed participants' responses, such that each of the five risk factors was coded as "1" if it was present and "0" if it was absent, for a possible range of zero to five risk factors (61% had zero, 26% had one, 8% had two, 2% had three, 2% had four, and 1% had all five). Initial inspection of this variable revealed significant positive skew, and thus we conducted a logarithmic transformation (\log^{10}) on this variable before conducting further analyses.

4.3.6. Time to conception

Participants indicated the number of months it took them to get pregnant, from the first month they began trying ($M = 5.52$, $SD = 6.87$). Initial inspection of this variable revealed significant positive skew, and thus we conducted a logarithmic transformation (\log^{10}) on this variable as well.

4.3.7. Anxiety

Participants completed 10 items assessing anxiety (adapted from Sweeny and Andrews, 2014; e.g., "During the time when I was trying to get pregnant, I felt anxious"; 1 = *not at all*, 5 = *extremely*; $M = 2.58$, $SD = .90$, $\alpha = .92$).

4.3.8. Rumination

To assess rumination about getting pregnant, we adapted items from the Rumination about an Interpersonal Offense scale to be relevant to pregnancy (6 items, Wade et al., 2008; e.g., "I had a hard time getting thoughts of pregnancy out of my head" instead of "I had a hard time getting thoughts of how I was mistreated out of my head"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.84$, $SD = .97$, $\alpha = .86$).

4.3.9. Direct emotion management

We assessed two types of direct emotion management: distraction and suppression. Distraction was assessed with a single item ("I tried to distract myself from thinking about the situation"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.67$, $SD = 1.16$), and suppression was assessed with two items ("I tried to stop myself from thinking about the situation," "I tried to hide my feelings about the situation from other people"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.69$, $SD = 1.09$, $\alpha = .78$).

4.3.10. Consequence mitigation

We assessed two types of consequence mitigation: preventive action and proactive coping. Participants first indicated whether they engaged in preventive action ("Did you do anything to try to minimize the problems that would occur if you and your partner were unable to get pregnant, e.g., looking into fertility treatments ... ?") and proactive coping ("Did you spend any time thinking about how you would cope if you and your partner were unable to get pregnant?") while trying to conceive and then indicated how much effort and time they put into those actions (1 = *very little effort/time*, 5 = *a great deal of effort/time*; preventive action: $M = 1.82$, $SD = 1.25$, proactive coping: $M = 1.75$, $SD = 1.12$). For the purpose of our analyses, we focus on continuous (rather than dichotomous) responses, which we log-transformed (\log^{10}) due to substantial positive skewness.

4.3.11. Reappraisal

We assessed three types of reappraisal: expectation management, distancing, and preemptive benefit finding.

4.3.12. Expectation management

Participants' use of bracing as an expectation management strategy was assessed with two items (e.g., "I braced for the worst while trying to get pregnant"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.43$, $SD = 1.10$, $\alpha = .76$). Participants' use of positive expectation management strategies was assessed with two items (e.g., "I tried to be optimistic about getting pregnant"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 4.39$, $SD = .62$, $\alpha = .85$).

4.3.13. Distancing

To assess distancing, participants indicated their agreement with four statements when they were trying to get pregnant (e.g., "Getting pregnant is not really important"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.07$, $SD = .88$, $\alpha = .83$).

4.3.14. Preemptive benefit finding

Participants indicated their degree of preemptive benefit finding on three items, considering whether they would have agreed with the statements when they were trying to conceive (adapted from Sweeny and Andrews, 2014; e.g., "I would grow as a person if we are unable to get pregnant"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.34$, $SD = .96$, $\alpha = .76$).

4.3.15. Information seeking

Participants indicated the extent to which they sought or avoided information from various sources (e.g., online medical websites) and on various topics (e.g., infertility) during the time they were trying to get pregnant (19 items; 1 = *often avoided*, 7 = *often sought*). Responses to these items were averaged to form a composite ($M = 4.49$, $SD = .79$, $\alpha = .87$).

4.3.16. Coping resources

Finally, participants were prompted to "expand on anything that influenced [their] experience." These responses were analyzed qualitatively by identifying common themes and quantitatively using LIWC, a software program that yields a percentage of total words that fall into various linguistic and psychological categories (Linguistic Inquiry and Word Count; Pennebaker et al., 2007). Word use has been increasingly assessed in coping research to provide insight into psychosocial processes that are difficult or impossible to self-report (Pennebaker, 2011).

Responses were analyzed if they contained a minimum of 48 words and contained a description of the participant's pregnancy experience (2 responses excluded due to irrelevant content; n for analysis = 86; $M = 79.87$ words, $SD = 41.84$). The cut-off of 48 words maximized the number of participants for this subsample, while providing a sufficient word count for LIWC analyses. Compared to participants excluded from these analyses ($n = 343$), this subsample had a younger youngest child, $t(427) = 2.87$, $p < .01$, had tried more methods in their efforts to conceive, $t(427) = 4.11$, $p < .0001$, were lower in trait-like suppression tendencies, $t(423) = 2.57$, $p = .01$, and searching for meaning, $t(416) = 2.05$, $p = .04$, and used more positive expectation management, $t(409) = 2.16$, $p = .03$. They did not significantly differ in age, length of relationship, income, other trait-like or situational measures, distress, or other uncertainty navigation strategies.

The LIWC variables of interest as measures of participants' coping resources included use of first-person singular (e.g., I, me; $M = 5.81\%$, $SD = 4.36$) and first-person plural pronouns (e.g., we, us; $M = 5.58\%$, $SD = 4.37$), which assess the relational perspective of participants' experiences trying to conceive. For example, participants exhibiting more use of "we" and less use of "I" in their descriptions may have viewed the experience trying to conceive as a shared rather than individual experience (Robbins et al., 2013;

Rohrbaugh et al., 2008). We also assessed use of positive (e.g., happy, excited; $M = 3.13\%$, $SD = 2.23$) and negative (e.g., sad, worried; $M = 2.22\%$, $SD = 1.95$) emotion words, which reflect participants' emotional climate while they were trying to conceive. Finally, cognitive mechanism words (e.g., think, because; $M = 23.14\%$, $SD = 6.08$) were assessed to capture participants' cognitive processing of their experience trying to conceive (Pennebaker, 2011).

5. Results

Because the uncertainty navigation model is a theoretical model rather than a statistical one, we did not attempt to test the entire model simultaneously (e.g., using structural equation modeling). Instead, we tested our hypotheses with a combination of bivariate correlations and simultaneous multiple regression. Because the model proposes bidirectional relationships between distress and uncertainty navigation strategies, we examined relationships among those variables using bivariate correlations. We also used correlations to examine associations between coping resources (i.e., categories of word use) and distress given the strong interdependence among word categories within a given open-ended response. To reduce the total number of tests, thus minimizing alpha inflation, we used simultaneous multiple regression for our other hypotheses. Sample size for all analyses except those including consequence mitigation items or word use (coping resources) range from 407 to 411, and missingness within that range was entirely due to participants skipping individual items in the questionnaire.

We also tested whether gender moderated the association between any of our hypothesized predictors and measures of distress. Of all hypothesized associations, gender only moderated the association between distancing and rumination ($p = .004$) and between intolerance of uncertainty and rumination ($p = .04$; all other $ps > .10$). Due to the scarcity and inconsistency of these gender differences, we do not focus on them in the current paper.

5.1. Hypothesis 1: anxiety and rumination will predict strategy use

As anticipated, anxiety and rumination were strongly correlated, $p < .0001$. Turning to the uncertainty navigation strategies, *Hypothesis 1* was largely supported: Anxiety and rumination were consistently correlated with use of direct emotion management ($ps < .0001$), consequence mitigation ($ps < .0001$), bracing for the worst ($ps < .0001$), preemptive benefit finding ($ps < .001$), and information seeking ($p < .001$). Distancing was positively related to anxiety ($p = .02$) but unrelated to rumination ($p = .35$), and positive expectation management was negatively related to anxiety ($p = .01$) but unrelated to rumination ($p = .40$). See [Tables 2, 3 and 5](#) for correlations among study variables.

5.2. Hypothesis 2: protective traits will predict less distress and strategy use

5.2.1. Predicting anxiety and rumination

To determine the unique predictive power of each trait-like predictor (dispositional optimism, intolerance of uncertainty, trait-like tendencies to reappraise and suppress, satisfaction with life, and presence of and searching for meaning in life), we conducted simultaneous multiple regressions predicting anxiety and rumination from these variables (see [Table 3](#) for regression coefficients). Consistent with *Hypothesis 2a*, participants high in intolerance of uncertainty reported greater anxiety and rumination during the time they were trying to conceive ($ps < .01$). Contrary to

Hypothesis 2a, dispositional optimism was only marginally associated with reduced anxiety ($p = .09$) and unassociated with rumination ($p = .55$). Regarding well-being, only search for meaning predicted rumination ($p < .001$), and no measure of well-being predicted anxiety ($ps > .14$). Trait-like emotion regulation tendencies predicted neither anxiety ($ps > .41$) nor rumination ($ps > .11$).

5.2.2. Predicting use of uncertainty navigation strategies

We also examined predictors of participants' use of uncertainty navigation strategies during their efforts to conceive, conducting simultaneous multiple regression analyses predicting each uncertainty navigation strategy from the set of trait-like measures (see [Table 3](#) for the list of measures and regression coefficients). Dispositional optimism was the most consistent predictor of strategy use, predicting less distraction ($p = .02$), marginally less suppression ($p = .06$), less bracing ($p < .0001$), more positive expectation management ($p = .0006$), less distancing ($p = .0003$), and less benefit finding ($p = .03$), when controlling for all other trait-like measures. Intolerance of uncertainty was also a strong predictor and was associated with more distraction ($p = .0006$), more suppression ($p < .0001$), and greater information seeking ($p = .03$).

Trait-like emotion regulation tendencies predicted use of some uncertainty navigation strategies. Controlling for all trait-like predictors, trait reappraisal predicted marginally more suppression ($p = .07$), more positive expectation management ($p < .0001$), marginally more preventive action ($p = .06$), and more proactive coping ($p = .005$), and trait suppression predicted marginally more suppression ($p = .06$), more distancing ($p = .02$), and less positive expectation management ($p = .05$).

Turning to well-being, with all trait-like predictors in the model, presence of meaning predicted more distraction ($p = .04$), more positive expectation management ($p = .05$), and more information seeking ($p = .04$), and search for meaning predicted marginally more distraction ($p = .07$), more suppression ($p = .02$), more bracing ($p < .0001$), more benefit finding ($p = .003$), and more information seeking ($p = .0002$).

5.3. Hypotheses 2b–2d: the role of situational characteristics

Guided by the uncertainty navigation model, we examined the roles of outcome importance (number of methods tried, concern over problems that would arise from a failure to conceive) and the risk of a bad outcome (past and present fertility issues, time to conception) as predictors of experiences while trying to conceive. We predicted distress and use of uncertainty navigation strategies from this set of variables in simultaneous multiple regression analyses (see [Table 4](#) for regression coefficients).

5.3.1. Hypothesis 2b: outcome importance will predict greater distress and strategy use

Consistent with *Hypothesis 2b*, both the number of methods participants tried when attempting to conceive and the identity centrality of parenthood were strongly and positively related to anxiety and rumination ($ps < .001$). These measures of outcome importance also predicted more distraction and suppression ($ps < .01$); only the number of methods tried predicted more positive expectation management ($p < .001$; for identity centrality, $p = .46$), preventive action ($p < .0001$; for identity centrality, $p = .44$), proactive coping ($p = .03$; for identity centrality, $p = .23$), and information seeking ($p < .01$), and only identity centrality predicted less distancing ($p < .01$; for methods tried, $p = .41$). Outcome importance did not predict bracing ($ps > .63$) or benefit finding ($ps > .37$).

Table 2
Bivariate correlations among waiting experiences.

	1	2	3	4	5	6	7	8	9	10	11
1. Anxiety	–										
2. Rumination	.65*	–									
	[.59, .70]										
3. Distraction	.47*	.39*	–								
	[.39, .54]	[.31, .47]									
4. Suppression	.54*	.46*	.64*	–							
	[.47, .61]	[.38, .54]	[.58, .70]								
5. Bracing	.32*	.30*	.30*	.26*	–						
	[.23, .41]	[.21, .38]	[.21, .39]	[.16, .34]							
6. Positive expectation management	–.12*	.04	–.08	–.07	–.25*	–					
	[–.22, .02]	[–.06, .14]	[–.17, .02]	[–.17, .03]	[–.34, .16]						
7. Distancing	.12*	.05	.16*	.15*	.30*	.33*	–				
	[.02, .21]	[–.05, .14]	[.06, .25]	[.05, .24]	[.21, .39]	[–.41, –.24]					
8. Benefit finding	.18*	.17*	.17*	.19*	.32*	–.20*	.57*	–			
	[.08, .27]	[.07, .26]	[.08, .26]	[.10, .28]	[.23, .41]	[–.29, .10]	[.50, .63]				
9. Preventive action	.25*	.26*	.13*	.16*	.18*	<.01	.04	.13*	–		
	[.16, .34]	[.17, .35]	[.03, .22]	[.06, .25]	[.08, .27]	[–.10, .10]	[–.06, .13]	[.03, .22]			
10. Proactive coping	.31*	.30*	.16*	.22*	.22*	.06	.04	.18*	.36*	–	
	[.23, .40]	[.21, .38]	[.06, .25]	[.12, .31]	[.12, .31]	[–.03, .16]	[–.05, .14]	[.09, .27]	[.27, .44]		
11. Information seeking	.16*	.24*	.10*	.18*	.15*	.14*	.07	.16*	.12*	.17*	–
	[.06, .25]	[.15, .33]	[.01, .20]	[.08, .27]	[.05, .24]	[.05, .24]	[–.03, .16]	[.06, .25]	[.02, .22]	[.07, .27]	

Note: 95% confidence intervals appear beneath each coefficient. * $p < .05$.

5.3.2. Hypothesis 2c: fertility risk factors will predict greater distress and strategy use

Consistent with Hypothesis 2c, participants with more risk factors (history of miscarriage, personal or family history of fertility problems, and/or personal or partner's medical condition) and who took longer to conceive recalled greater anxiety ($ps < .001$) and rumination ($ps < .01$). Participants with more risk factors and who took longer to conceive also reported engaging in more distraction and suppression ($ps < .05$), more bracing ($ps < .03$), more preventive action ($ps < .04$), and more proactive coping ($ps < .04$). Only risk factors predicted recollections of greater information seeking ($p = .03$; for time to conception, $p = .58$), and neither risk factors nor time to conception predicted

positive expectation management ($ps > .22$), distancing ($ps > .19$), or benefit finding ($ps > .30$).

5.3.3. Hypothesis 2d: coping resources will predict less distress and strategy use

Considered holistically, participants' open-ended responses revealed focus on issues related to uncertainty, including efforts to manage expectations, unexpected positive and negative experiences, whether it was the right time to conceive, efforts to plan the pregnancy and child-rearing, religious coping, and experiencing an emotional "rollercoaster" (5 responses mentioned the concept of an emotional rollercoaster).

Table 3
Standardized regression coefficients predicting waiting experiences from trait-like predictors (simultaneously).

	Dispositional optimism	Intolerance of uncertainty	Reappraisal tendencies	Suppression tendencies	Satisfaction with life	Meaning: Presence	Meaning: Searching	R^2
Outcome Measures								
Anxiety	–.11	.17*	–.01	–.04	–.05	–.09	.07	.10
	[–.23, .09]	[.06, .27]	[–.11, .09]	[–.14, .06]	[–.16, .06]	[–.21, .03]	[–.03, .03]	
Rumination	–.04	.24*	.07	–.08	.05	–.03	.17*	.11
	[–.16, .08]	[.14, .35]	[–.03, .17]	[–.18, .02]	[–.07, .16]	[–.14, .09]	[.07, .28]	
Uncertainty Navigation Strategies								
<i>Direct emotion management</i>								
Distraction	–.14*	.18*	<.01	.01	.12*	–.05	.10	.10
	[–.27, –.02]	[.08, .29]	[–.10, .10]	[–.09, .11]	[.01, .23]	[–.17, .07]	[–.01, .20]	
Suppression	–.11	.24*	.09	.09	.03	–.04	.12*	.16
	[–.23, .01]	[.14, .34]	[–.01, .18]	[–.01, .19]	[–.08, .14]	[–.15, .08]	[.02, .21]	
<i>Reappraisal</i>								
Bracing	–.30*	.04	.06	.09	.10	.11	.26*	.16
	[–.42, –.18]	[–.06, .14]	[–.04, .15]	[–.01, .18]	[–.01, .21]	[–.01, .22]	[.16, .35]	
Positive expectation management	.21*	.08	.23*	–.10*	.04	.11*	–.03	.19
	[.09, .32]	[–.02, .18]	[.13, .32]	[–.19, –.01]	[–.07, .14]	[.00, .22]	[–.13, .06]	
Distancing	–.22*	.03	–.07	.12*	.09	–.08	.09	.13
	[–.34, –.10]	[–.07, .13]	[–.17, .02]	[.02, .22]	[–.02, .21]	[–.20, .03]	[–.01, .19]	
Benefit finding	–.14*	.06	.04	.09	.07	<.01	.16*	.08
	[–.26, –.01]	[–.05, .16]	[–.06, .14]	[–.01, .19]	[–.04, .19]	[–.12, .12]	[.05, .26]	
<i>Consequence mitigation</i>								
Preventive action	–.03	.03	.10	.02	–.04	.04	<.01	.01
	[–.16, .10]	[–.08, .14]	[–.01, .20]	[–.09, .12]	[–.16, .08]	[–.09, .16]	[–.10, .10]	
Proactive coping	–.02	.06	.15*	–.08	.05	–.03	.04	.03
	[–.15, .11]	[–.05, .17]	[.04, .25]	[–.19, .02]	[–.07, .17]	[–.16, .08]	[–.07, .14]	
Information seeking	.04	.12*	.08	–.04	.06	.12*	.20*	.07
	[–.09, .16]	[.01, .22]	[–.02, .17]	[–.14, .06]	[–.05, .18]	[.01, .24]	[.09, .30]	

Note: 95% confidence intervals appear beneath each coefficient. * $p < .05$.

Table 4
Standardized regression coefficients predicting waiting experiences from situational variables (simultaneously).

	Total methods tried	Identity centrality	Risk factors	Time to conceive	R ²
Outcome variables					
Anxiety	.17* [.08, .27]	.28* [.20, .37]	.17* [.08, .26]	.15* [.06, .24]	.23
Rumination	.22* [.13, .31]	.33* [.25, .42]	.14* [.05, .23]	.13* [.04, .22]	.27
Uncertainty navigation strategies					
<i>Direct emotion management</i>					
Distraction	.15* [.06, .25]	.16* [.07, .25]	.10* [.01, .20]	.23* [.13, .33]	.16
Suppression	.17* [.07, .27]	.21* [.12, .30]	.09* [.00, .19]	.19* [.09, .28]	.17
<i>Reappraisal</i>					
Bracing	<.01 [−.10, .10]	.02 [−.07, .12]	.20* [.10, .30]	.12* [.02, .22]	.07
Positive expectation management	.19* [.09, .30]	.04 [−.06, .14]	−.05 [−.15, .06]	−.06 [−.17, .04]	.04
Distancing	−.04 [−.15, .06]	−.14* [−.24, −.05]	.07 [−.03, .17]	.06 [−.04, .17]	.03
Benefit finding	.02 [−.09, .13]	−.04 [−.15, .06]	.05 [−.05, .16]	.04 [−.07, .14]	.01
<i>Consequence mitigation</i>					
Preventive action	.27* [.17, .38]	−.04 [−.13, .06]	.13* [.04, .23]	.11 [.01, .21]	.14
Proactive coping	.23* [.13, .34]	.03 [−.06, .12]	.13* [.03, .23]	.12* [.02, .22]	.12
Information seeking	.17* [.06, .27]	.08 [−.02, .17]	.11* [.01, .21]	−.03 [−.13, .07]	.06

Note: 95% confidence intervals appear beneath each coefficient. * $p < .05$.

Table 5
Bivariate correlations between word use in open-ended responses and waiting experiences.

	Negative emotion words	Positive emotion words	1 st person plural pronouns	1 st person singular pronouns	Cognitive mechanism words
Outcome Measures					
Anxiety	.22* [.01, .42]	−.23* [−.42, −.02]	−.26* [−.45, −.05]	.08 [−.13, .29]	−.21* [−.41, −.01]
Rumination	.19 [−.02, .39]	−.12 [−.32, .09]	−.30* [−.48, −.09]	.26* [.05, .45]	−.28* [−.46, −.07]
Uncertainty Navigation Strategies					
<i>Direct emotion management</i>					
Distraction	.05 [−.16, .26]	−.12 [−.32, .09]	−.12 [−.32, .10]	.10 [−.11, .31]	−.18 [−.38, .05]
Suppression	.01 [−.20, .23]	−.09 [−.30, .12]	−.14 [−.34, .07]	.11 [−.11, .31]	−.06 [−.27, .15]
<i>Reappraisal</i>					
Bracing	.20 [−.01, .39]	−.20 [−.40, .01]	−.12 [−.33, .09]	−.04 [−.25, .18]	−.10 [−.31, .11]
Positive expectation management	−.04 [−.25, .17]	.18 [−.03, .38]	−.01 [−.22, .21]	−.01 [−.21, .21]	−.04 [−.25, .17]
Distancing	−.09 [−.29, .13]	.01 [−.21, .22]	.15 [−.07, .35]	−.07 [−.27, .15]	.01 [−.21, .22]
Benefit finding	−.04 [−.25, .18]	−.17 [−.37, .04]	.29* [.08, .47]	−.21* [−.41, −.01]	.12 [−.10, .32]
<i>Consequence mitigation</i>					
Preventive action	−.13 [−.33, .08]	−.14 [−.35, .07]	−.07 [−.28, .14]	−.11 [−.32, .10]	−.14 [−.34, .08]
Proactive coping	−.02 [−.23, .19]	−.24* [−.43, −.03]	−.07 [−.28, .14]	−.02 [−.23, .19]	.04 [−.17, .25]
Information seeking	.06 [−.15, .27]	−.01 [−.22, .20]	.02 [−.20, .23]	−.03 [−.24, .18]	−.13 [−.33, .09]

Note: 95% confidence intervals appear beneath each coefficient. * $p < .05$.

5.3.4. Word use associations with anxiety and rumination

Table 5 presents the correlations between word use in participants' open-ended responses and anxiety, rumination, and strategy use. Consistent with Hypothesis 2d, participants' use of negative emotion words in describing their experience trying to conceive was associated with more anxiety ($p = .04$) and marginally more rumination ($p = .08$). Participants' use of positive emotion words was associated only with less anxiety ($p = .03$), although the relationship with rumination was also negative (albeit not statistically significant; $p = .26$).

Turning to pronoun use, which reflects relational focus (i.e., shared vs. individual) in the context of an experience like trying to conceive, we found that use of first-person plural (shared focus) pronouns was associated with less anxiety ($p = .01$) and rumination ($p < .01$). Use of first-person singular (individual focus) pronouns was associated with more rumination ($p = .02$) but unrelated to

anxiety (although the relationship was also positive; $p = .45$). We also examined cognitive mechanism words, which reflect cognitive processing of the experience. Greater use of cognitive processing words was associated with less anxiety ($p = .05$) and rumination ($p = .01$).

5.3.5. Word use associations with uncertainty navigation strategies

Participants' use of negative emotion words was associated only with marginally greater bracing ($p = .07$). Use of positive emotion words was associated with marginally less bracing ($p = .06$), marginally more positive expectation management ($p = .10$), marginally less benefit finding ($p = .11$), and less proactive coping ($p = .02$). Use of emotion words was unrelated to distraction, suppression, distancing, preventive action, and information seeking ($ps > .26$).

Use of both first-person plural and singular pronouns was

associated only with benefit finding, such that participants who used more plural pronouns saw more benefit in an undesirable outcome ($p = .01$), and participants who used more singular pronouns saw less benefit ($p = .05$); no other strategy was related to pronoun use ($ps > .17$). Finally, use of cognitive mechanism words was marginally related to less distraction ($p = .10$) but otherwise unrelated to reports of strategy use ($ps > .24$).

6. Discussion

In this study, we used the uncertainty navigation model (Sweeny and Cavanaugh, 2012) as a guide to explore the psychosocial experience of trying to conceive. This experience entails repeated waiting periods as couples engage in conception efforts and then await pregnancy test results or other evidence of success or failure to conceive. The findings largely supported our hypotheses, although nuances in the experience of trying to conceive also emerged. We replicated past work linking anxiety and rumination to use of cognitive and emotional strategies to manage the experience of uncertainty (Sweeny and Andrews, 2014), and we extended these findings to include the strategy of information seeking, which was previously absent from the uncertainty navigation model. More importantly, we identified a set of protective factors that buffered people from the distress often associated with trying to conceive, as well as a set of vulnerabilities that exacerbated this distress.

6.1. Protective factors and vulnerabilities

We hypothesized that people with protective traits, for whom becoming pregnant was less important, and who had few risk factors and quicker conception would recall an easier experience trying to conceive than those with fewer protective characteristics. Contrary to our hypothesis, dispositional optimism was largely unrelated to recollections of anxiety and rumination, although it predicted use of uncertainty navigation strategies (particularly reappraisal strategies and distraction) more consistently. Consistent with our hypothesis and with past research on waiting periods (Sweeny and Andrews, 2014), people with a dispositionally high tolerance for uncertainty recalled less anxiety, less rumination, and less use of many uncertainty navigation strategies. Taken together, these findings point to an optimistic outlook and comfort with uncertainty as protective factors during efforts to conceive, but tolerance for certainty may be particularly important for minimizing distress. Although these findings may seem discouraging in light of the trait-like nature of optimism and tolerance for uncertainty, some research suggests that these “traits” are actually malleable and responsive to changes in circumstances and targeted interventions (e.g., Endres et al., 2015; Segerstrom, 2007). Furthermore, simply knowing that one is at risk for distress during efforts to conceive may prove useful by motivating vulnerable individuals to marshal social and emotional resources before beginning their efforts.

Although intuition would suggest that people with greater psychological well-being would experience less distress during most life events, including trying to conceive, measures of well-being inconsistently predicted this experience in our study. No well-being measure predicted anxiety after controlling for other protective traits, and only the search for meaning in life emerged as a vulnerability, predicting greater rumination and greater reliance on several uncertainty navigation strategies. In light of the clear implications of parenthood for individuals' sense of meaning in life (Nelson et al., 2014), it is surprising that we did not find a more consistent relationship between presence of meaning and recollections of experiences trying to conceive. One might expect that

people who already feel a strong sense of meaning in their lives would be less distressed over the possibility that they may not successfully conceive. However, aside from a greater tendency toward hope and optimism, our findings did not support this reasoning. Of course, due to the retrospective nature of the study, it is possible that we captured meaning that followed (or even resulted from) the birth of their youngest child rather than meaning that was present or absent as they tried to conceive. Although we cannot rule out this possibility, the fact that all participants were ultimately successful in conceiving a child suggests that variability in their reports of meaning reflects something beyond a response to becoming parents.

Turning to situation-specific protective factors and vulnerabilities, we focused our attention on the roles of outcome importance, risk, and coping resources. Outcome importance, defined as the centrality of parenthood to individuals' identity and the number of methods they tried in their efforts to conceive, was a consistent predictor of anxiety, rumination, and reliance on several uncertainty navigation strategies. These findings suggest that in general, individuals for whom becoming pregnant is more important experience greater distress as they try to conceive and thus engage greater efforts to manage their uncertainty during this experience, extending research showing significant distress among women who experience involuntary childlessness (Griel et al., 2010; McQuillan et al., 2003).

Turning to risk, we assessed a set of risk factors that might increase or indicate the difficulty of conceiving, as well as the time it took individuals to conceive. To the extent that people reported more risk factors and longer time to conception, they also recalled more anxiety, rumination, and reliance on some uncertainty navigation strategies. These findings suggest that to the extent people are (or become) aware of a personal risk of infertility, the experience of trying to conceive will likely be more stressful.

6.2. In their own words

Individuals in our study also described their experience trying to conceive in their own words. In addition to allowing us to test specific hypotheses, our qualitative analysis of individuals' descriptions was revealing. Consistent with our conceptualization of trying to conceive as a series of repetitive waiting periods, several individuals described their experience as a “rollercoaster” of emotions and uncertainty. People also spontaneously mentioned use of strategies that appear in the uncertainty navigation model, most notably efforts to regulate their emotions, manage their expectations, or downplay the importance of pregnancy or parenthood.

Turning to specific word categories of interest, positive emotion words were often found in responses that indicated the experience was rewarding or helped the couple bond. Negative emotion words often appeared in the context of concerns over what could be “wrong” and particularly in discussions of miscarriage. Consistent with our hypotheses, individuals who used more positive emotion words in their descriptions also reported less anxiety and less reliance on some coping strategies, whereas negative words were associated with more anxiety and more bracing. Interestingly, positive emotion words were associated with recollections of greater positive expectation management, suggesting that use of that strategy may not reflect an entirely distressing experience.

We also examined use of singular and plural personal pronouns in individuals' descriptions. The use of “we” (first-person plural pronouns) was typically related to descriptions of how couples planned together before they tried to conceive, whereas use of “I” (first-person singular pronouns) often arose in the context of

discussing others' successful pregnancies or a personally traumatic experience like miscarriage. Consistent with past work demonstrating that a relational rather than individual focus is more adaptive in a coping context (e.g., Robbins et al., 2013; Rohrbaugh et al., 2008), individuals who used more first-person plural pronouns in their descriptions also reported less anxiety, less rumination, and more preemptive benefit finding. Use of "I" was associated with less rumination (but not anxiety) and less preemptive benefit finding. Although the findings for anxiety and rumination were generally consistent with our hypotheses, the emergence of preemptive benefit finding as the sole correlate of pronoun use was unexpected. Our measure of benefit finding assessed efforts to see the silver lining in not becoming pregnant, namely growing as a person and learning from the experience. Although this novel finding warrants replication, it suggests that a relational focus may uniquely enable a constructive outlook on the possibility that things will not turn out as planned following a period of stressful uncertainty.

Finally, we examined individuals' use of cognitive mechanism words (e.g., "think," "because," "know"), which reveal participants' cognitive processing of events and how they connect their thoughts (Pennebaker, 2011). Consistent with writing studies showing that use of these words is associated with beneficial psychological outcomes (Pennebaker and Chung, 2007), we found that individuals who used more cognitive mechanism words when describing their experience trying to conceive also reported less anxiety and rumination. However, cognitive mechanism word use was related only marginally to distraction and unrelated to the use of any other strategy. This finding points to an element of cognitive processing that is adaptive when trying to conceive that was largely not captured in self-reported coping strategies.

In sum, we identified a set of protective factors and vulnerabilities in the context of trying to conceive. The emotional road to pregnancy is relatively smooth for people high in dispositional optimism and those who are more tolerant of uncertainty, who place relatively little importance on parenthood, with little risk of infertility, and who have relatively high social, emotional, and cognitive resources. In contrast, this road is a bumpy one for people low in dispositional optimism and those who are relatively intolerant of uncertainty, more intently searching for meaning in their lives, place greater importance on parenthood, are at risk for infertility, and have few coping resources.

6.3. Conclusions

This study took a theoretically-driven, multi-method approach to examining the often distressing experience of trying to conceive, framing the experience as a series of uncertain waiting periods. Strengths of our approach include its breadth, its novel theoretical lens, and the use of multiple methods. Employing text analysis complemented our self-report measures by providing an "observational window" into the social, cognitive, and emotional aspects of coping with the uncertainty of trying to conceive.

Our findings may also have implications for the health of people trying to conceive. Recent findings suggest that waiting for uncertain news has detrimental consequences for subjective health and sleep quality, particularly during peaks in distress (Howell and Sweeny, 2015). To the extent that people experience a rollercoaster of uncertainty as they try to conceive, they may also experience disruptions in their sleep and health, which may in turn produce medical challenges that worsen or complicate their chances of conception.

Furthermore, our findings have parallels to models of meaning-making in the experience of bereavement and coping with loss (e.g., Park, 2010). Just as people must make sense of the death of a

loved one, couples coping with infertility must make sense of their inability to conceive new life (e.g., Alderman et al., 1998; Murphy and Merrell, 2009). They may mourn not only the loss of each potential child during a failed cycle, but also the potential loss of a valued part of their identity, namely parenthood. In both cases, the loss of what might have been weighs heavily, but in the case of prolonged infertility this loss may be freshly experienced for many months or years.

6.4. Limitations and future directions

The use of retrospective reports in our study introduced the possibility of memory bias in individuals' recollections of their experience trying to conceive. Importantly, all participants in our study were ultimately successful in their efforts to conceive, so it is possible that their eventual success provided rose-colored glasses through which they recalled the period of uncertainty. Encouragingly, the average level of anxiety recalled by individuals in our study was identical to two decimal places with the average level of anxiety among two samples of law graduates awaiting their results on the California bar exam (Sweeny and Andrews, 2014; Sweeny et al., in press). The consistency between these samples may be a coincidence, but their similarity suggests that individuals in the present study were successful in putting themselves back in the mindset of uncertainty. Moreover, even if people fail to perfectly recall their thoughts and feelings, their memories of the experience of trying to conceive are likely to have significant implications for their willingness to undertake the process again, and perhaps for how they advise and support others who are undertaking the process. Nonetheless, our findings suggest that future studies that examine the experience of couples trying to conceive in "real time" will likely provide fruitful insights that can serve as the basis for interventions designed to reduce the distress associated with this experience.

Of course, the use of anonymous online participants who were paid for completing the survey (albeit paid a very small amount) leaves open the possibility that some participants lied in the initial eligibility screening, or even that some "participants" were in fact computers programmed to take surveys for money. Although we cannot definitively rule out this possibility, two elements of our findings are reassuring. First, although fewer people wrote enough to make word count analyses feasible, nearly two-thirds of the sample ($n = 272$) provided intelligible and relevant responses to the open-ended prompt about their experience trying to conceive (the rest of the sample simply skipped that question, which the wording of the question allowed). Second, fake participants of either type would likely add considerable statistical "noise" to our data, thus handicapping our ability to detect the hypothesized relationships rather than biasing the results in our favor.

A second limitation, one common to studies of waiting experiences in the "real world," is the correlational nature of our study. Although most relationships were consistent with the direction and causal order predicted by the uncertainty navigation model, we cannot rule out the possibility of reverse causality or "third variable" explanations. For example, we posited that a more relational focus, reflecting social coping resources, would lead to less distress, but it is possible that people who experience little stress while trying to conceive subsequently feel more connected to their partner. Future studies can target specific pathways to disentangle causal dynamics during stressful waiting periods, specifically in the context of trying to conceive.

A final limitation was that relatively few participants provided sufficiently lengthy open-ended descriptions of their experience to include in our analyses of coping resources. In addition to concerns over limited power to detect associations with coping

resources (i.e., word use), people who provided lengthy responses differed in several ways from people who did not. Thus, our conclusions regarding the role of coping resources when trying to conceive are biased somewhat toward people with younger children and people who try more methods to conceive, are less emotionally suppressive, are more secure in their life's meaning, and tend to strategically embrace hope and optimism. Furthermore, our sample as a whole was more educated and affluent than the general population of the United States, and thus the generalizability of our findings to less educated and less affluent individuals may be limited.

Despite these limitations, our study revealed many novel insights regarding the experience of trying to conceive, including protective factors and vulnerabilities that buffer or heighten the distress associated with this experience. These findings also offer a glimpse into the social, emotional, and cognitive processes that accompany efforts to conceive, including attempts to both brace for the worst and hope for the best, to find a silver lining in even the feared outcome of infertility, to prepare for the feared outcome both logistically and psychologically, and to mitigate uncertainty by seeking information.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2015.07.031>.

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