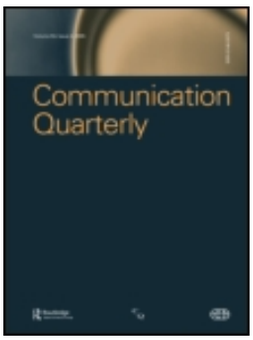

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The Effects of Communication Efficacy on Information-Seeking Following Events That Increase Uncertainty: A Cross-Lagged Panel Analysis

Su Ahn Jang & Yan Tian

This study examined how past information-seeking experience influences individuals' information-seeking decision process following an event that increases uncertainty in close relationships. To examine this issue, a two-wave, cross-lagged, panel-design study was conducted, and outcome expectancy, communication efficacy, and information-seeking were measured at each time. Analyses revealed that communication efficacy mediates the link between outcome expectancies and information-seeking under the conditions of uncertainty. The results also suggest that communication efficacy and information-seeking impact each other cyclically. The findings of this research suggest that scholars should focus on people's information-seeking experience and communication efficacy when examining information-seeking following events that increase uncertainty in close relationships.

Keywords: Close Relationships; Communication Efficacy; Information-Seeking; Uncertainty

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When people experience an event that increases their uncertainty within close relationships, their communication responses may vary (Planalp & Honeycutt, 1985; Planalp, Rutherford, & Honeycutt, 1988). Of the various ways to respond to such an event, the most frequently utilized method is information-seeking about the event (Jang, Smith, & Levine, 2002; Knobloch & Solomon, 2003). In this context, information-seeking involves directly asking the partner about an event that increases uncertainty within their relationship. In an effort to understand how people make a decision to seek information in close relationships, research on information-seeking has increased during the past 2 decades. What is identified thus far is that information-seeking decisions are influenced by a complex set of factors. Through the theory of motivated information management (TMIM), W. Afifi and his colleagues (see W. Afifi, Dillow, & Morse, 2004; W. Afifi & Weiner, 2004) argued that the decisions to seek information may hinge on two factors: people's expectations about the outcomes of an information search (i.e., outcome expectancies) and the level of self-efficacy perception regarding communication about the search (i.e., communication efficacy). These factors are not entirely new. In fact, social cognitive theory (Bandura, 1986) suggests that outcome assessment and self-efficacy are important attributes that shape human behavior. It is, however, important to acknowledge that Bandura has not specifically looked at self-efficacy concerning communication. Self-efficacy has been examined in a variety of behaviors, including exercise behaviors (Rimal, 2000) and learning behaviors (Pintrich & Schrauben, 1992); yet, research on *communication* behaviors is fairly limited.

Although both the TMIM (W. Afifi & Weiner, 2004) and social cognitive theory (Bandura, 1986) include self-efficacy and outcome judgments in their theory, they disagree on *how* these factors influence people's information-seeking. W. Afifi and Weiner (2004) suggested that individuals' outcome expectancies influence the way they evaluate communication efficacy, which affects their information-seeking. Alternatively, Bandura (1986) suggested that self-efficacy perception affects expected outcomes concerning a behavior that sequentially shapes behavior. Furthermore, social cognitive theory (Bandura, 1986; Wood & Bandura, 1989) argues that self-efficacy and behavior affect each other cyclically, suggesting that past behavior can influence self-efficacy about the behavior, and the self-efficacy consequently shapes subsequent behavior. For instance, individuals who previously sought information about an event that increased their uncertainty within their relationship may believe that they have the ability to seek information from the partner again when a similar situation occurs in the future. Scholars who examine the TMIM, however, have not yet specifically tested this claim, and exploring the issue may add to our understanding on information-seeking decisions over time.

The purpose of this study was twofold: First, we examined W. Afifi and Weiner's (2004) claim that outcome expectancies are related to communication efficacy, and that communication efficacy, in turn, is related to information-seeking under the conditions of uncertainty. Second, whereas previous research examining the TMIM (W. Afifi & Weiner, 2004) emphasized the influence of outcome and efficacy judgments on information-seeking, this study advanced the research by inquiring if

communication efficacy and information-seeking behavior impact each other cyclically. To examine these issues, longitudinal data between two separate episodes of events that produce people's uncertainty were examined, and communication efficacy, outcome expectancies, and information-seeking behavior were assessed at each episode.

Information-Seeking Following the Events That Increase Uncertainty

Research suggests that uncertainty is constructed and exists in the process of all human interaction (Bradac, 2001). In close relationships, uncertainty can stem from countless issues or events, including competing relationships, betraying confidence, sexual behavior, unexplained loss of closeness, change in personality or values, or deception (Planalp & Honeycutt, 1985). Although people do not usually expect these events to occur in their relationship, according to Planalp and Honeycutt, such experiences are relatively common in close relationships. In most cases, uncertainty causes people to doubt the honesty of their partner, and such an event can scar those involved and the future of the relationship.

One method to deal with events that produce people's uncertainty in close relationships is seeking information about the events from the partner (Planalp & Honeycutt, 1985). In fact, a number of scholars have found that engaging in direct information-seeking is the most frequent method people employ when they experience events that increase their uncertainty within close relationships (W. Afifi, 2010; Jang et al., 2002; Knobloch & Solomon, 2003; Planalp & Honeycutt, 1985; Planalp et al., 1988). Because people are generally avid information seekers (Vorauer & Ross, 1996), it seems sensible that gathering both "social and personal information is an important goal in almost every strategic communication episode" (Berger & Kellermann, 1994, p. 2). However, research suggests that there are dispositional and situational factors that influence individuals' decisions to seek information (W. Afifi et al., 2004). Dispositional factors are individual differences that affect people's motivation for information-seeking, and they include uncertainty orientation (Sorrentino, Holmes, Hanna, & Sharp, 1995), need for cognitive closure (Miller, 1987), and attachment tendency (Jang et al., 2002), to name a few. An example is helpful to understand how dispositional factors operate as individuals make a decision to seek information following events that increase uncertainty: Individuals with a secure attachment style generally deal with negative feelings constructively by seeking information from the partner about the uncertainty they are experiencing, but individuals with an anxious/ambivalent or avoidance attachment style often utilize avoidance because they fear that seeking information may jeopardize their relationship or they stop trusting the partner, respectively (Jang et al., 2002).

Whereas individual differences may influence information-seeking, some contextual factors also may shape people's decisions to seek information (Knobloch & Solomon, 2002). Knobloch and Solomon suggested that contextual factors include the level of power in the relationships, the level of intimacy, and outcome expectancies

concerning the information search. Of these contextual factors, outcome expectancies are most relevant in this study because W. Afifi and Weiner (2004) highlighted this factor in their theory. These scholars define *outcome expectancies* about information-seeking as people's expectations about the possible outcomes associated with talking about a particular issue or event with a partner. Guided by this definition, when individuals expect that searching for information could produce more positive than negative outcomes, they are likely to seek information from the partner. In contrast, individuals who expect more negative than positive outcomes from an information search they are relatively less likely to seek information.

According to W. Afifi and Weiner (2004), communication efficacy is another factor that can shape individuals' decisions to seek information under the conditions of uncertainty.[1] *Communication efficacy* is referred to as ''individuals' perceptions that they can successfully engage in the communication or observational task required to gather the sought-after information'' (W. Afifi & Weiner, 2006, p. 37). Individuals who believe that they have the ability to talk about the event that increases their uncertainty are relatively more likely to seek information from the partner than those who feel a lack of communication efficacy. The link between cognition (i.e., communication efficacy perception) and communication (i.e., information-seeking) in close relationships may be particularly important because, when compared with other dispositional or situational factors, communication efficacy not only fluctuates across situations, but it is relatively easily altered or influenced (see Bandura, 1997). Given the practical values of communication efficacy for couples in close relationships, it may be useful to further explore how communication efficacy shapes people's information-seeking decisions under the conditions of uncertainty.

Outcome Expectancies, Communication Efficacy, and Information-Seeking

Although researchers have identified some characteristics associated with uncertainty and communication within close relationships (e.g., that people generally seek information from their partner about events that increase uncertainty; Knobloch & Solomon, 2003; Planalp & Honeycutt, 1985), the explanation for the association is not yet clear. Guided by the TMIM (W. Afifi & Weiner, 2004) and social cognitive theory (Bandura, 1986), this study examined how outcome expectancies and communication efficacy influence individuals' information-seeking under the conditions of uncertainty.

An overarching theory that clarifies the link between people's attitudes and behavior is social cognitive theory (Bandura, 1986). This theory offers bi-directional influence among behavioral, personal, and environmental factors. For example, the bi-directional nature of attitudes and behavior signifies that people may reflect on their own experiences to assess their attitudes toward the behavior, and their attitudes also influence the behavior. In addition to the idea, the theory also offers the notion of self-efficacy. Bandura (1997) stated that perceived self-efficacy plays an important

role in social cognitive theory because it "supports the type of efficient analytic thinking needed to ferret out predictive knowledge from causally ambiguous environments in which many factors combine to produce effects" (p. 35). Based on these assumptions, social cognitive theory would suggest that self-efficacy concerning information-seeking (i.e., personal factors) and actual information-seeking (i.e., a behavioral factor) following events that increase uncertainty may mutually influence each other. Based on Bandura's (1986) work on self-efficacy, W. Afifi and Weiner (2004) put forward that communication efficacy plays a critical role in predicting information-seeking following events that increase uncertainty. These scholars suggest that the lack of communication efficacy that people feel is likely to discourage them from seeking information from their partner about the events.

Along with efficacy judgment, Bandura (1986) and W. Afifi and Weiner (2004) embraced the notion of outcome expectancies and suggested that when people experience uncertainty, self-perceived efficacy and outcome expectancies affect their decisions about whether to seek information from their relational partners. It is interesting to note, however, that the two theories' explanations for *how* communication efficacy and outcome expectancies influence behavior are contradictory. Social cognitive theory suggests that outcome judgments are greatly determined by efficacy perception. Bandura (1997) argued that as outcomes are linked with behaviors, perceptions about outcomes are dependent on efficacy judgments. Alternatively, W. Afifi and Weiner (2004) suggested that the two attributes are related in a way that people's perceived outcome expectancies influence their evaluation of communication efficacy, suggesting a mediating role of communication efficacy between outcome expectancies and information-seeking. Indeed, research shows that communication efficacy mediates the link between outcome expectancies and information-seeking about sexual health between couples (W. Afifi & Weiner, 2006), organ donation within the family (W. Afifi et al., 2006), and the partner's deception (Jang & Vangelisti, 2006). Because W. Afifi and Weiner (2006) specifically described communication efficacy and information-seeking under the conditions of uncertainty, which is the very context of this investigation, we examined their claims. Accordingly, the following hypothesis was posed:

> *H1: Communication efficacy will mediate the effects of outcome expectancies on information-seeking following an event that increases uncertainty in close relationships.*

The Link Between past and Subsequent Information-Seeking Decisions

Hitherto, researchers have identified that communication efficacy and outcome judgments are two important factors that influence people's information-seeking (W. Afifi & Weiner, 2004). However, questions about how past information-seeking experiences might impact people's subsequent information-seeking decisions remain largely unanswered. Because people may come across numerous events that create uncertainty over the duration of the relationship (Planalp & Honeycutt, 1985), past

communication experiences following uncertainty may have some impact on people's information-seeking when similar events occur in the future.

Of course, individual differences or dispositional factors may guide people's information-seeking (Ickes, Dugosh, Simpson, & Wilson, 2003; Jang et al., 2002; Miller, 1987; Sorrentino et al., 1995). Because people's dispositional factors are not easily changed across situations, scholars suggest that people's information-seeking may be fairly consistent over time (Ickes et al., 2003). Likewise, Eagly and Chaiken (1993) argued that because behavior is the result of people's personal and motivational attributes that are common to the events in which the behavior occurs, they generally act consistently. Ouellette and Wood (1998) similarly suggested that past behaviors can be good predictors of future behaviors. These scholars imply that people's attitudes toward a particular behavior may remain constant in various social contexts; therefore, individuals who had sought information about an event that increases their uncertainty are likely to seek information again when a similar situation occurs in the future. However, it may be over-simplifying a complex process of information-seeking decisions following uncertainty.

Under the conditions of uncertainty, people's decision to seek information may largely depend on their communication efficacy and their *past* information-seeking experiences (W. Afifi & Weiner, 2004). According to W. Afifi and Weiner, people's communication efficacy is likely to be based on their information-seeking experiences, and it may influence their information-seeking in the future—that is, a successful information-seeking experience with a partner about an issue is likely to influence people to perceive high communication efficacy when similar situations occur in the future, and high communication efficacy, in turn, is likely to affect subsequent information-seeking. Consistent with this idea is Ajzen's (2002a) argument that past behaviors may not automatically predict subsequent behaviors. Given this, so as to predict individuals' information-seeking, scholars should consider the individuals' past information-seeking experiences, as well as their current communication efficacies.

Moreover, Bandura (1997) provided an explanation for why communication efficacy may be the key factor when predicting individuals' information-seeking. He suggested that self-efficacy belief about a particular behavior fluctuates across situations, and it is greatly influenced by individuals' past experiences. Therefore, an experience of an information-seeking decision process following an event that creates uncertainty may impact individuals' communication efficacy when a similar situation occurs, and the communication efficacy would, ultimately, affect their information-seeking decision. Although efficacy perception has been examined between past and subsequent performances with regard to a number of work-related behaviors within organizational settings (Stajkovic & Luthans, 1998; Wood & Bandura, 1989), scholars have not yet empirically examined how communication efficacy and information-seeking affect each other cyclically. Accordingly, a structural equation model was proposed to examine this notion:

> *H2: Past and present communication efficacy and information-seeking experiences will mediate the effect of outcome expectancies on information-seeking decisions.*

Method

Participants and Procedure

The longitudinal sample consisted of 135 undergraduate students at a Midwestern university. Twenty-eight (21%) were men and 107 (79%) were women, aged 19 to 52 ($M = 24.60$, $SD = 6.70$). Of the total sample, 65% were single, 18.9% were engaged, 14% were married, and 2.1% were divorced. The duration of the close relationships that participants described in the study ranged from 1 month to 18 years, 3 months ($M = 30$ months, $SD = 29.21$ months).

Longitudinal surveys at Time 1 (T1) and Time 2 (T2) were introduced online with a time lag of 7 days between the waves.[2] An online, extra credit opportunity was announced during undergraduate communication classes. Potential research participants were informed that the study was a two-part survey and that they would need to complete both parts to receive extra credit for the course. Once participants had gone to the site of the study to complete the T1 survey, they read a brief introduction to the study explaining and ensuring confidentiality and a consent procedure. We explained to the participants that proceeding to subsequent Web pages indicated their agreement to partake in the study. After the consent page, the participants completed an open-ended question that asked them to recall an incident which occurred in the last 7 days that caused them to experience increased uncertainty within their current romantic relationship. They were then asked to write about the event in detail. Next, the respondents completed a series of measures including relational uncertainty, outcome expectancies, communication efficacy, and information-seeking. Demographics including age, sex, relational status, and relationship length were also assessed. Finally, participants were asked to leave their e-mail address so that the researcher could notify them about the second survey.

Seven days after the completion of the first survey, participants received an e-mail announcement to take part in a second survey. In the second survey, respondents were asked to think about the relational partner they described in the first survey. Then, they were instructed to remember a new event that increased their uncertainty, which took place after they completed the previous survey: They were specifically instructed to recall an event that was unrelated to the event they reported at T1. Study measurements at T2 were identical to the previous version respondents completed earlier. Overall, 142 individuals completed the T1 survey, and 135 individuals finished both T1 and T2 surveys.

Measurements

To check whether respondents felt uncertainty following the events they described in the surveys, we assessed their relational uncertainty (Knobloch & Solomon, 1999) at T1 and T2. A modified version of the instructions and the measure used by Theiss and Solomon (2006) were employed in this study. Respondents were instructed to read several statements and rate how certain they felt about each statement. More specifically, the modified instructions read as follows: ''We would like you to rate how certain

you were about each statement immediately *following* the event that increased your uncertainty.'' For the purpose of this study, the phrase ''in your relationship at this time'' was changed to ''immediately following the event that increased your uncertainty.'' Moreover, wordings of the measure were changed from present tense to past tense. An example item in a six-item, self-uncertainty scale was, ''How certain were you about your feelings for your partner?'' In addition to self-uncertainty, partner uncertainty was assessed by a six-item scale. An example of the statement included in this measure was, ''How certain were you about how much your partner likes you?'' To assess relationship uncertainty, participants completed an eight-item relationship uncertainty measure. This measure included a statement such as, ''How certain were you about where this relationship is going?'' All 20 relational uncertainty questions are available in the Appendix. Each item was followed by a 6-point, Likert-type scale ranging from 1 (*completely uncertain*) to 6 (*completely certain*). Confirmatory factor analyses (CFAs) were used to determine the unidimensionality of the three uncertainty scales. The resulting self-uncertainty scale included four items: at T1, $\chi^2(4, N = 135) = 0.18$, $p > .05$ (chi-square statistic that compares to the tested model and the independence model with the saturated model [CMIN]/$df = 0.09$, comparative fit index [CFI] = .99, and root mean square error of approximation [RMSEA] = .01; $M = 4.22$, $SD = 1.07$; $\alpha = .93$); and at T2, $\chi^2(4, N = 135) = 3.87$, $p > .05$ (CMIN/$df = 1.93$, CFI = .99, and RMSEA = .08; $M = 3.80$, $SD = 1.47$; $\alpha = .93$). The resulting partner uncertainty scale included five items: at T1, $\chi^2(5, N = 135) = 10.03$, $p > .05$ (CMIN/$df = 2.01$, CFI = .99, and RMSEA = .08; $M = 3.84$, $SD = 1.26$; $\alpha = .95$); and at T2, $\chi^2(5, N = 135) = 9.56$, $p > .05$ (CMIN/$df = 1.91$, CFI = .99, and RMSEA = .08; $M = 3.57$, $SD = 1.54$; $\alpha = .97$). Finally, the resulting relationship uncertainty scale included five items: at T1, $\chi^2(5, N = 135) = 7.24$, $p > .05$ (CMIN/$df = 1.45$, CFI = .99, .99, and RMSEA = .06; $M = 3.84$, $SD = 1.05$; $\alpha = .95$); and at T2, $\chi^2(5, N = 135) = 9.19$, $p > .05$ (CMIN/$df = 1.84$, CFI = .99, and RMSEA = .08; $M = 3.59$, $SD = 1.44$; $\alpha = .95$). Items were reflected and combined so that higher scores indicate greater uncertainty.[3]

To measure participants' communication efficacy at T1 and at T2, a modified version of W. Afifi and Weiner's (2006) communication efficacy scale was employed. Three items asked participants about their ability to successfully carry out information-seeking about the events that they described in the survey. For the purpose of this study, wordings of the measure were modified from present tense to past tense. Three items in the scale included the following: (a) ''I felt I could approach my romantic partner to ask about the event that increased uncertainty,'' (b) ''I didn't feel that I have the ability to ask my romantic partner what s/he thinks about the event,'' and (c) ''I felt that I have the ability to approach my romantic partner to talk about the event.'' Each item was followed by a 7-point, Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The second question was reverse-coded. Because a CFA with three items results in 0 *df* and fit indexes cannot be obtained, an exploratory factor analysis (EFA) with a maximum likelihood (ML) estimation was conducted, which yielded one eigenvalue (2.04) and explained 68.01% of the variance at T1. It also yielded one eigenvalue (2.18) and explained 72.75% of the variance at T2. The factor loadings were .93, .62, and .89 ($\alpha = .86$) at T1 and .93, .56, and .98 ($\alpha = .86$) at T2.

At T1 and at T2, participants also completed a modified version of outcome expectancies scale developed by W. Afifi and Weiner (2006). Again, wordings of the three-item measure were changed from present tense to past tense. The three items read as follows: (a) "I believed talking to my romantic partner directly about the event would produce," (b) "I believed asking my romantic partner what s/he thought about the event would produce," and (c) "I believed approaching my romantic partner to ask about the event would produce." Each item was followed by a Likert-type scale ranging from −3 (*a lot more negative than positive outcomes*), 0 (*about as many negative as positive outcomes*), to +3 (*a lot more positive than negative outcomes*). Outcome expectancies scores were recoded so −3 was recoded to 1, −2 was recoded to 2, −1 was recoded to 3, 0 was recoded to 4, 1 was recoded to 5, 2 was recoded to 6, and 3 was recoded to 7. At T1, an EFA with ML estimation yielded one eigenvalue (2.05) and explained 68.41% of the variance. At T2, it also yielded one eigenvalue (2.84) and explained 94.50% of the variance. The factor loadings were .75, .81, and .92 ($\alpha = .83$) at T1 and .96, .97, and .98 ($\alpha = .98$) at T2.

Finally, participants were asked to recall the degree to which their reaction to the event was characterized by information-seeking at T1 and at T2. Three items from W. Afifi and Weiner's (2006) communication scale were selected to measure information-seeking. Wordings of the measure were changed from present tense to past tense. Questions in the scale read as follows: (a) "I have explicitly talked with my romantic partner about the issue," (b) "I have had a direct conversation with my romantic partner about the issue," and (c) "I openly asked my romantic partner about the issue." Each item was followed by a 6-point, Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). An EFA with ML estimation was conducted to assess this three-item measure. The EFA yielded one eigenvalue (2.75) and explained 91.63% of the variance at T1, and yielded one eigenvalue (2.73) and explained 90.96% of the variance at T2. The factor loadings were .92, .99, and .95 ($\alpha = .97$) at T1 and .97, .97, and .93 ($\alpha = .96$) at T2.

Results

Preliminary Analyses

Preliminary analyses checked for possible sex differences. To assess the effects of sex differences, independent-sample *t* tests were performed on the scales employed at both waves, including relational uncertainty, communication efficacy, outcome expectancies, and information-seeking. Analyses yielded that there were no significant sex differences in these variables. Means, standard deviations, and bivariate correlations among all the study variables are available in Table 1.

Main Analyses

This study utilized a full, two-wave, cross-lagged, panel design. The hypotheses were tested by structural equation modeling. Three models were built with Amos™

Table 1 Descriptive Statistics for Key Variables

Variable	1	2	3	4	5	6	*M*	*SD*
1. T1 outcome expectancies	—						5.70	1.04
2. T1communication efficacy	.27*	—					5.86	1.55
3. T1 information-seeking	.33*	.50*	—				4.61	1.68
4. T2 outcome expectancies	.48*	.35*	.27*	—			4.75	1.87
5. T2 communication efficacy	.32*	.63*	.51*	.60*	—		5.75	1.48
6. T2 information-seeking	.12	.40*	.44*	.29*	.45*	—	4.07	1.87

Note. T1 = Time 1; T2 = Time 2.
*$p < .10$.

18 (SPSS Inc., Chicago, IL), with the first two to test *H1* and the third to test *H2*. In the first two models, outcome expectancies was the exogenous variable predicting communication efficacy, which, in turn, predicted information-seeking. Communication efficacy, therefore, was the mediator between outcome expectancies and information-seeking. Model 1 was tested with T1 data, and Model 2 was tested with T2 data. In the third model, T1 outcome expectancies and T2 outcome expectancies were the two exogenous variables, with the former predicting T1 communication efficacy and the latter predicting T2 communication efficacy. The two communication efficacy variables, in turn, predicted T1 information-seeking and T2 information-seeking, respectively. Meanwhile, T1 communication efficacy and T1 information-seeking also predicted T2 communication efficacy. Thus, the communication efficacies variables and the T1 information-seeking variables worked together as mediators, predicted by outcome expectancies variables and predicting information-seeking variables at the same time.

To control for the effects of relationship length on the variables in the models, a separate regression analysis was performed on each variable in the models. In each regression analysis, each variable in the models (e.g., T1 communication efficacy) was the dependent variable, and the relationship length variable was the predictor. The standardized residuals from each regression analysis were saved as the new measured variables. Through this serial of regression analyses, the effects of relationship length on the variables in the model were controlled for.

All the variables were operationalized as latent variables because the latent composite approach could ''account for unreliability by extracting measurement error from the latent constructs used in the structural model'' (Holbert & Stephenson, 2002, p. 534). Both direct and indirect effects of the related variables were calculated. A bootstrap was performed for each model (the number of bootstrap samples was 2,000), and 95% bias-corrected confidence intervals were used to test the significance of the direct and mediation effects. To gauge the fit of the structural equation models, an omnibus model fit was evaluated using the CFI and the RMSEA. The prior criteria we used were .90 for CFI and .08 for RMSEA. In addition, given the guidelines of

Hoyle and Panter (1995), the chi-square distributed goodness-of-fit test was also reported.

Model 1 fit the data adequately, with $\chi^2(25, N = 135) = 48.86$, $p = .003$, CMIN/$df = 1.95$, CFI = .97, and RMSEA = .08. Nine percent of the variance of communication efficacy and 20% of the variance of information-seeking were explained. The direct effect of outcome expectancies on communication efficacy ($\beta = .31$, $p < .05$) and communication efficacy on information-seeking ($\beta = .51$, $p < .001$) were both significant (see Figure 1). The indirect effect of outcome expectancies on information-seeking, mediated by communication efficacy, was also significant (standardized mediation effect = .19, $p < .001$). *H1*, therefore, was supported with T1 data.

Model 2 fit the data well, with $\chi^2(25, N = 135) = 38.42$, $p = .04$, CMIN/$df = 1.54$, CFI = .99, and RMSEA = .06. Forty-five percent of the variance of communication efficacy and 19% of the variance of information-seeking were explained. The direct effect of outcome expectancies on communication efficacy ($\beta = .67$, $p < .001$) and communication efficacy on information-seeking ($\beta = .44$, $p < .001$) were both significant (see Figure 1). The indirect effect of outcome expectancies on information-seeking, mediated by communication efficacy, was also significant (standardized mediation effect = .30, $p = .001$). Hence, *H1* was again supported by T2 data.[4]

Model 3 also fit the data well, with $\chi^2(128, N = 135) = 246.19$, $p = .00$, CMIN/$df = 1.92$, CFI = .96, and RMSEA = .08. Nine percent of the variance of T1 communication efficacy, 26% of the variance of T1 information-seeking, 56% of the variance of T2 communication efficacy, and 22% of the variance of T2

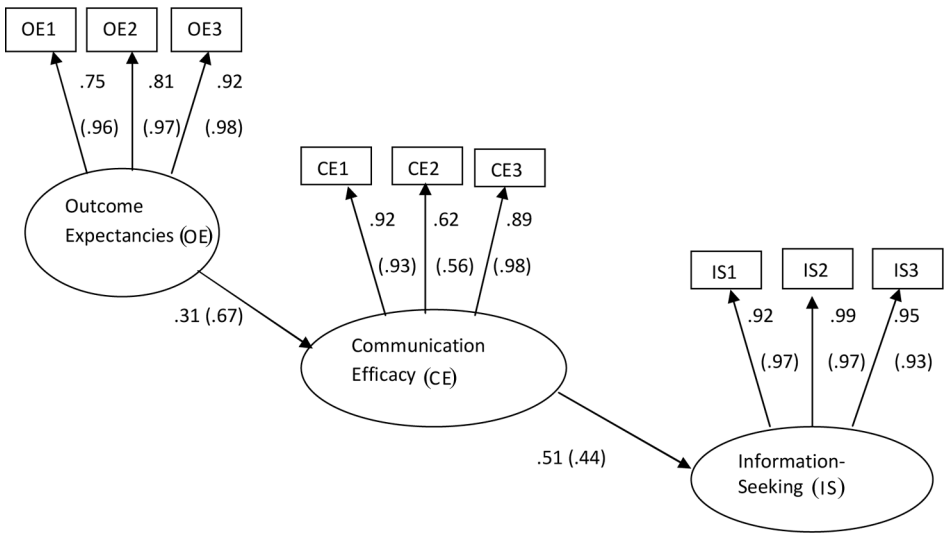

Figure 1 Model 1 and Model 2: Structural path models examining outcome expectancies, communication efficacy, and information-seeking at Time 1 and Time 2. All parameter estimates are standardized. The initial numbers on the paths are the significant path coefficients in Model 1 (all *p*s < .01), and the numbers in parentheses are the significant path coefficients in Model 2 (all *p*s < .01). All the items in the scales are available in the methods section.

information-seeking were explained. As revealed in Figure 2, the direct effect of T1 outcome expectancies on T1 communication efficacy ($\beta = .30$, $p < .05$), T1 communication efficacy on T1 information-seeking ($\beta = .51$, $p < .001$), T1 information-seeking on T2 communication efficacy ($\beta = .18$, $p < .05$), T1 information-seeking on T2 information-seeking ($\beta = .26$, $p < .05$), T1 communication efficacy on T2 communication efficacy ($\beta = .38$, $p < .001$), T2 outcome expectancies on T2 communication efficacy ($\beta = .56$, $p < .001$), and T2 communication efficacy on T2 information-seeking ($\beta = .30$, $p < .05$) were all significant. The indirect effect of T1 outcome expectancies on T1 information-seeking, mediated by T1 communication efficacy, was significant (standardized mediation effect = .15, $p < .001$). The indirect effect of T2 outcome expectancies on T2 information-seeking, mediated by T2 communication efficacy, was significant (standardized mediation effect = .17, $p = .001$). The total indirect of T1 outcome expectancies on T2 information-seeking, mediated by past and present communication efficacy variables and the T1 information-seeking variable, was also significant (standardized mediation effect = .08, $p < .05$). Thus, *H2* was supported.

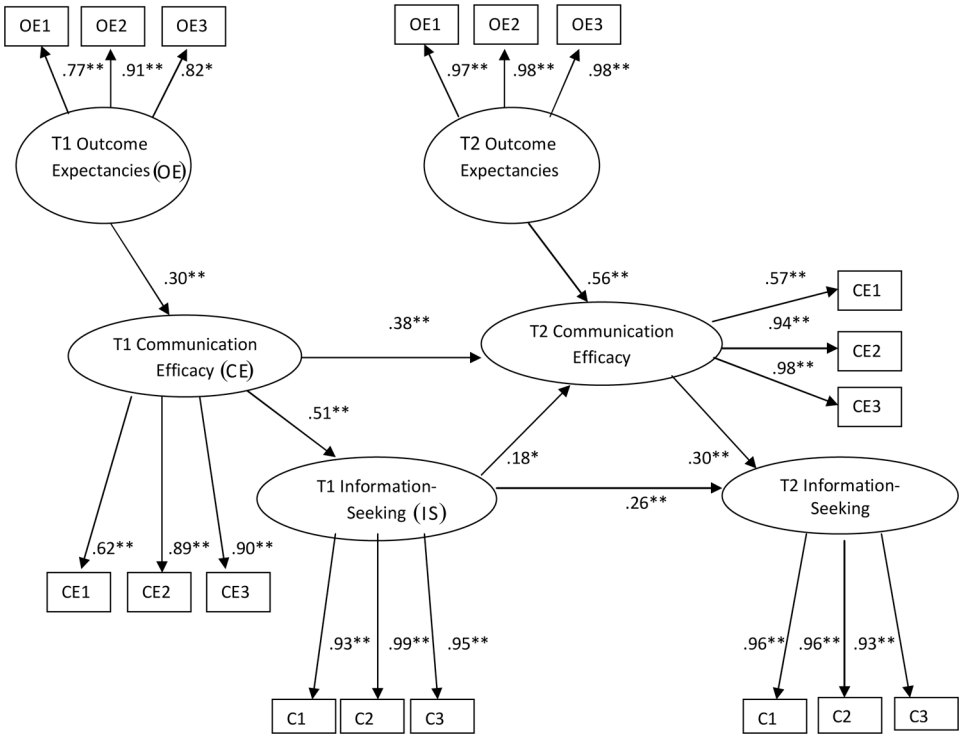

Figure 2 Model 3: A cross-lag panel analysis examining outcome expectancies, communication efficacy, and information-seeking at Time 1 (T1) and Time 2 (T2). All parameter estimates are standardized. All the items in the scales are available in the Methods section. $^{*}p < .05$. $^{**}p < .01$.

Discussion

This study was proposed to investigate people's information-seeking decisions following events that increase uncertainty in close relationships. Guided by the TMIM (W. Afifi & Weiner, 2004), we looked at communication efficacy and outcome expectancies as factors that may influence information-seeking. This investigation also examined whether communication efficacy and information-seeking influence each other cyclically. To study these issues, a two-wave, cross-lagged, panel-design study was conducted.

Following the arguments of W. Afifi and Weiner (2004) and Bandura (1986), we predicted that expected outcomes concerning information-seeking and communication efficacy would be associated with people's tendency to seek information from their partner under the conditions of uncertainty. Although the theorists propose conflicting arguments on how outcome expectancies and communication efficacy would affect information-seeking, given that social cognitive theory does not specifically explain communication efficacy and information-seeking under the conditions of uncertainty, we followed W. Afifi and Weiner's recommendations on the association.

Consistent with W. Afifi and Weiner's (2004) argument, this investigation revealed that communication efficacy emerges as a mediator between outcome expectancies and information-seeking following uncertainty. When individuals believe that discussing an event that increases their uncertainty with a partner may produce positive (or negative) outcomes, such a perception, in turn, influences their communication efficacy concerning the event. This pattern of findings is in agreement with previous research that suggests communication efficacy is a mediator between outcome expectancies and information-seeking about organ donation, the partner's deception, and the partner's sexual history (W. Afifi et al., 2006; W. Afifi & Weiner, 2006; Jang & Vangelisti, 2006).

It is important to acknowledge that additional analyses have revealed that our data also agree with Bandura's (1986) alternative proposal, which suggests that outcome judgment is influenced by efficacy perception. Although the fit of Bandura's model is relatively poorer than that of W. Afifi and Weiner's (2004) model, this finding suggests the possibility that people's communication efficacy perception may have an effect on the way they anticipate the valence of outcomes associated with information-seeking. Although social cognitive theory embraces the notion of outcome expectancies, focused on the role of self-efficacy in his research more than the role of outcome expectancies, and he suggested that because efficacy beliefs explain most of the variance in expected outcomes, efficacy perception is the main reason for the behavior (Pintrich & Schunk, 1996).

Certainly, we understand that this investigation is unable to determine the causal directions between the two attributes. W. Afifi and Weiner (2006) argued that "information-seeking and uncertainty is more complex than initially believed" (p. 48), and our results echo the difficulty in identifying the information-seeking decision process under the conditions of uncertainty. Plausibly, the two cognitive

factors may mutually reinforce each other to influence the information-seeking decision. More research is required to fully understand the associations between communication efficacy, outcome expectancies, and information-seeking under the conditions of uncertainty in close relationships.

In addition to examining the link between outcome expectancies, communication efficacy, and information-seeking under the conditions of uncertainty, this study investigated whether communication efficacy and information-seeking influence each other over time. This inquiry is important because, whereas prior research had not examined information-seeking decision processes over a period of time, we extended the theory by looking at individuals' information-seeking following two independent events that created uncertainty in close relationships. Planalp and Honeycutt (1985) suggested that people frequently experience events that increase uncertainty in close relationships. Our respondents were able to recall two events that increased their uncertainty in the relationship over an approximately 2-week period.

We proposed that past communication efficacy, information-seeking experience, and current communication efficacy are three mediators between outcome expectancies and people's information-seeking behaviors following an event that increases uncertainty in close relationships. The two-wave, cross-lagged, panel-design study identified that people's previous experience of information-seeking decision process under a condition of uncertainty is likely to influence their communication efficacy in the future, which, in turn, affects their subsequent information-seeking behaviors. The result is consistent with Bandura's (1986) claim about the features of efficacy, which suggests that past successful behavior is an antecedent of efficacy concerning the behavior, and efficacy perception, in turn, predicts behavior.

Further, the findings of this study support the TMIM's (W. Afifi & Weiner, 2004) claim of the bi-directional influences between communication efficacy and information-seeking. These results are noteworthy for at least two reasons. Perhaps most obviously, this empirical investigation found that communication efficacy and information-seeking behavior affect each other. According to W. Afifi and Weiner, communication efficacy determines whether individuals engage in information-seeking, and the chosen behavior, in turn, influences the interaction with the partner. Then, following the interaction, the individuals may reconsider their communication efficacy based on the evaluation of the interaction. However, to our knowledge, research lacks on testing this assumption. Our results suggest that people with high communication efficacy, who sought information from the partner and attained a desirable outcome, would retain high communication efficacy following the interaction. Alternatively, those who felt high communication efficacy and engaged in an information-seeking, but met with an undesirable outcome, would feel a lack of communication efficacy following the interaction.

Our findings on this matter also may shed some light on the issue of whether past behavior or present attitudes are better predictors for present behaviors. Although answering the question is beyond the scope of this research, what was identified in this investigation was that both information-seeking experience and present communication efficacy are important predictors for information-seeking at present.

In line with Ajzen's (2002b) argument that past behavior may not be a good predictor for subsequent behavior without examining attitudes within the latter context, the results of this study suggest that scholars need to consider both past information-seeking and current communication efficacy as predictors for people's information-seeking.

It is important to note that efficacy beliefs are not always stable (Bandura, 1986). Efficacy beliefs about a particular behavior fluctuate as individuals evaluate their self-efficacy differently in a variety of situations—that is, people may not continually maintain high (or low) communication efficacy in various communication contexts. For instance, people's perceptions about their ability to have an effective communication when they are relaxed may differ when compared to their ability to have the same communication when they are anxious or upset. As the degree to which individuals feel uncertainty within their relationship may vary following each episode of uncertainty, their perception about the ability to seek information about each event also may vary. This research suggests that the assessment of communication efficacy may be based on previous communication behavior. According to autobiographical memory (Conway, 1990) and recency effect (Murdock, 1962), people are more likely to recall recent memories than older ones. When people encounter an event that produces uncertainty, they may recall the most recent equivalent event and how they communicated in the situation to evaluate their communication efficacy.

Another reason why the link between communication efficacy and information-seeking is noteworthy involves people's communication following uncertainty. Compared to other types of interpersonal communication contexts, information-seeking following events that increase uncertainty within close relationships may be more complex. Indeed, scholars have voiced the difficulty of predicting people's communication behavior following events that produce uncertainty (W. Afifi & Weiner, 2006). Although previous research suggests that uncertainty is directly associated with people's behavior associated with communication (Berger & Calabrese, 1975), it may be that communication efficacy based on past experience, rather than uncertainty, is the key influence on individuals' behavior.

On a related note, it may be possible that personal or dispositional factors may play some roles as people evaluate their communication efficacy following events that increase uncertainty. Previous research documented that dispositional factors may directly affect people's information-seeking under the conditions of uncertainty (Jang et al., 2002; Miller, 1987; Sorrentino et al., 1995); however, dispositional factors may indirectly influence information-seeking through perceived communication efficacy following events that increase uncertainty. Consistent with this idea is Jang's (2008) findings that suggested communication efficacy as a mediator between individuals' attachment styles and their information-seeking following a relational partner's deception.

Given that communication efficacy is generally based on a previous experience (Bandura, 1997), it is important to further explore *how* a dispositional factor, such as uncertainty orientation, need for cognitive closure, or attachment styles, together with previous information-seeking experiences, influence the process of

information-seeking decisions following events that increase uncertainty within close relationships. Bandura (1986, 1997) suggested that efficacy perception not only fluctuates across situations, it can be changed by a number of factors, including verbal persuasion, modeling, or past successful or unsuccessful experiences. Conceivably, individuals who have several successful information-seeking experiences may have high communication efficacy, despite the fact that they have a dispositional factor that generally discourages them from seeking information (e.g., individuals with an insecure attachment style). It also may be possible that individuals who have a dispositional factor that allow them to easily seek information from the partner (e.g., individuals with a secure attachment style) may not do so if they had a number of unsuccessful information-seeking experiences. Additional research that examines multiple data points is required to examine this idea.

Of course, this study's findings have a number of limitations. One of these involves the use of retrospective reports, which leaves some ambiguity as to whether respondents accurately recollected the experiences or provided socially desirable reports of their attitudes and behaviors (Loftus & Loftus, 1980). Similarly, respondents may have reconstructed their memory of events associated with uncertainty so that the events were consistent with their current attitudes toward their partner or their relationship (Koriat, Goldsmith, & Pansky, 2000). Another limitation is that this sample has a 3:1 ratio of women to men. Although independent-sample *t* tests of the study variables revealed that none of the variables exposed sex differences, this sample bias may limit the generalizability of the results.

It is also important to acknowledge that the two events that respondents described in this study may be from 2 to 21 days apart. For the purpose of this study, we referred to T1 and T2 for the two points in time that our respondents reported having experienced increased uncertainty in the relationship. However, the event that our respondents described at T1 actually may have occurred within 7 days prior to the T1 data-gathering session. Likewise, the second event that the respondents recalled at T2 may have taken place during the 7-day period prior to the T2 data-gathering session. Because T2 was introduced 7 days after T1 and we instructed respondents to complete T2 within 7 days of receiving an e-mail notification for T2, respondents may have actually experienced two events that increased uncertainty between 2 to 21 days apart. Further, we may not have precisely measured individuals' reevaluation of their communication efficacy. Because we could not assess their communication efficacy immediately following the behavior, the lagged evaluation may not be an accurate assessment of their reevaluation of communication efficacy. Next, respondents completing an identical questionnaire at two separate times may be an issue. Conceivably, respondents may have scrutinized, for example, why they could not seek information about the uncertainty with the partner during the 7 to 14 days after completing the first survey, which may have influenced their behavior and the assessment at T2.

In addition, people's decisions to seek information with their partner about the incident may have been due to reasons other than their communication efficacy. For example, some individuals with a lack of communication efficacy may have

talked with the partner because the partner insisted on having a conversation about the event. By contrast, some people may have not communicated with the partner because they felt pressured by their partner to conceal certain information (T. Afifi, Olson, & Armstrong, 2005). In view of that, it may be constructive to assess both parties' communication efficacy when studying communication in close relationships.

In conclusion, the main purpose of this study was to examine how outcome expectancies and communication efficacy affect information-seeking and to examine the association between communication efficacies and information-seeking following two conditions of uncertainty within close relationships. A partial test of the TMIM (W. Afifi & Weiner, 2004) revealed that outcome expectancies are indirectly linked with information-seeking through communication efficacy. Moreover, the data revealed that communication efficacy and information-seeking behaviors impact each other cyclically. The findings of this research suggest that scholars should focus on past information-seeking experience and communication efficacy when examining individuals' information-seeking following events that increase uncertainty in close relationships.

Notes

[1] Specifically, the theory of motivated information management (TMIM) suggests that the three types of efficacy perceptions (i.e., communication, target, and coping efficacies) mediate the connection between outcome expectancies and communication. Although coping efficacy has received some attention as a predictor of behavior (Bandura, Reese, & Adams, 1982), according to W. Afifi et al. (2006), it consistently failed to show up as an attribute in their studies. Likewise, target efficacy, the items developed to assess a partner's ability, is also not an effective measure (W. Afifi et al., 2006). For these reasons, we focused on communication efficacy, and the other two efficacy dimensions were excluded in this study. In addition, it is important to note that this study conducted a partial test of the TMIM (W. Afifi & Weiner, 2004): This study did not examine the full model of the TMIM.

[2] The notification of the second survey was individually sent to the respondents 7 days after each respondent completed the first survey. In the announcement e-mail, we asked the respondents to complete the Time 2 (T2) survey within 7 days of receiving the e-mail, and many respondents (approximately 75%) completed their T2 survey about 2 weeks after completing the Time 1 (T1) survey. We originally selected 7 days between the two waves based on previous research. W. Afifi et al.'s (2004) findings suggest that, despite relational types and lengths, information-seeking is common in close relationships, and respondents are able to think of a behavior that had occurred within 1 week of their participation. In addition, Theiss and Solomon (2006) conducted a longitudinal Web-based survey that concerned people's direct communication under the conditions of jealousy, and they assigned 7 days between the waves. For these reasons, we felt that it was sufficient for our study to have 7 days between the T1 and T2 surveys.

[3] To examine whether the two events that our participants described in this study were, in fact, incidents that increased their uncertainty, their uncertainty was assessed using a modified version of Knobloch and Solomon's (1999) relational uncertainty scale. When compared with other research that measured relational uncertainty, our participants had slightly higher relational uncertainty scores. It is important to note that we asked our participants to remember an event that increased their uncertainty and to recall how they felt about themselves, their partner, and the relationship immediately following the event.

Previous studies, however, commonly measured the participants' general relational uncertainty, rather than following a specific incident. For instance, the participants' average self-, partner, and relationship uncertainty over 6 weeks, reported in Theiss and Solomon's (2006) study, were 2.37 ($SD = 1.16$), 2.65 ($SD = 1.37$), and 2.52 ($SD = 1.21$), respectively. Although it is unclear whether our respondents accurately remembered the experiences or provided socially desirable reports of their attitudes (Loftus & Loftus, 1980), the data revealed that our respondents felt relational uncertainty following the two events they described in this study.

[4] We tested two social cognitive theory models with Time 1 and Time 2 data, respectively. In both models, communication efficacy was the exogenous variable, predicting outcome expectancies, which, in turn, predicted information-seeking. In short, outcome expectancies was the mediator between communication efficacy and information-seeking. Model 1 did not fit the data well, with $\chi^2(25, N = 135) = 69.45$, $p = .00$ (chi-square statistic that compares the tested model and the independence model with the saturated model [CMIN]/$df = 2.78$, comparative fit index [CFI] = .96, and root mean square error of approximation [RMSEA] = .12). Model 2 fit the data better than Model 1, with $\chi^2(25, N = 135) = 51.21$, $p = .002$ (CMIN/$df = 2.05$, CFI = .98, and RMSEA = .09). Because the chi-square: *degrees of freedom* ratio was bigger than 2 for both social cognitive theory models, and the RMSEA for the first social cognitive theory model was bigger than .1, the models did not seem to fit the data as well as the theory of motivated information management models, despite that fact that all the direct and indirect paths were significant in both social cognitive theory models. Further research is needed to test if there is a reciprocal, causal relationship between communication efficacy and outcome expectancies.

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Appendix

Self-Uncertainty Items

1. Whether you want the relationship to work out in the long run?*
2. Whether you want the relationship to last?
3. How much you like your partner?*
4. How important the relationship is to you?*
5. How much you are romantically interested in your partner?*
6. Whether you are ready to commit to your partner?

Partner Uncertainty Items

1. Whether your partner is ready to commit to you?*
2. How committed your partner is to the relationship?
3. Whether your partner wants to be with you in the long run?*
4. How important the relationship is to your partner?*
5. Whether your partner wants the relationship to work out in the long run?*
6. How much your partner is attracted to you?*

Relationship Uncertainty Items

1. Whether the relationship will work in the long run?*
2. Whether you and your partner feel the same way about each other?*
3. Whether you and your partner will stay together?
4. Whether the relationship is romantic one?*
5. The boundaries for appropriate and/or inappropriate behavior in the relationship?
6. Whether your partner likes you as much as you like him or her?*
7. Whether it is a romantic or a platonic relationship?
8. How you can or cannot behave around your partner?*

*Items included in this study.