EVERY CLOUD HAS A SILVER LINING: AN INVESTIGATION OF CANCER PATIENTS' SOCIAL SUPPORT, COPING STRATEGIES, AND POSTTRAUMATIC GROWTH

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ABSTRACT

This dissertation investigated social support, coping strategies, and posttraumatic growth among cancer patients in China. Study 1 examined sources of social support to explore helpful social support and unhelpful social support from different sources. Optimal matching theory (Cutrona & Russell, 1990) and Goldsmith's (2004) social support theory served as the theoretical framework for Study 1. Twenty cancer patients in a cancer hospital were recruited to participate in phone interviews. An analysis of the detailed notes of the interviews revealed the major sources of patients' social support came from family members and nurses. Patients described much more helpful support than unhelpful social support. Several other issues were discussed that were not covered by the research questions but were salient in the interviews were also discussed, such as nondisclosure practices in China and the use of euphemism when disclosing a cancer diagnosis in East Asian countries. The purpose of Study 2 was to test a model of the relationships between social support, uncontrollability appraisal, adaptive coping strategies, and posttraumatic growth. Two rounds of data collection were conducted among 201 cancer patients in a cancer hospital in China. The results of the hierarchical multiple regression indicated that, controlling for demographic factors such as age and education, social support and adaptive coping were positively correlated with posttraumatic growth. Uncontrollability, however, was not significantly correlated with posttraumatic growth. The results of the structural equation model indicated that higher levels of social support predicted higher levels of adaptive coping, higher levels of uncontrollability appraisal predicted lower levels of adaptive coping, and higher levels of adaptive coping predicted higher levels of posttraumatic growth. Moreover, adaptive coping was a mediator between social support and growth, as well as a mediator between uncontrollability and posttraumatic growth. The implications of the findings and the contributions of the dissertation are discussed.

To my beloved husband, Ping Zhang.

To my parents, Shaoping Zhang and Keyin Cao.

To my parents-in-law, Yufang Xia and Keqin Zhang.

This dissertation is a result of their continuous love and support.

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CHAPTER 1

INTRODUCTION

Cancer and Social Support

One of the leading causes of death worldwide is cancer (World Health Organization, n.d.). In 2017, it is estimated that about 1,688,780 new cases of cancer will occur in the U.S. and 600,920 deaths will be due to cancer in the U.S. (American Cancer Society, n.d.). For the majority of people who experience it, cancer (e.g., cancer diagnosis, treatments) is a major life stressor (Massie & Holland, 1990). Social support contributes to cancer patients' health in relieving the stress due to the disease (Dunkel-Schetter, 1984), in facilitating patients' adherence to medical treatments (Dimatteo, 2004), in affecting patients' coping strategies (Yoo et al., 2014), in influencing patients' appraisals of stressful situations and leading them to interpret stressful situations less negatively (Cohen & McKay, 1984), and in promoting patients' self-esteem (Lakey & Cassady, 1990). Social support is also considered a significant factor leading to posttraumatic growth (Joseph & Linley, 2006; Tedeschi & Calhoun, 2004).

Cancer and Posttraumatic Growth

Cancer-related posttraumatic stress disorder (PTSD) and cancer-related posttraumatic growth are two of the major areas of study about cancer patients' psychological response to the disease. The study of PTSD has focused on anxiety, depression, and PTSD symptoms after a cancer diagnosis; the focus of this research has been to understand how to relieve patients' fear, anxiety, and depression. The study of posttraumatic growth has focused on finding the benefits and personal gain, after the diagnosis and during the time of suffering. This line of research come out of positive psychology and has gained attention for two reasons. First, focusing only on negative changes leads to a biased understanding of posttraumatic experience, and second, there is a pressing need to know more about what can influence posttraumatic growth (Linley & Joseph, 2004). Many important variables remain unexplored about posttraumatic growth. For instance, uncontrollability appraisal has not yet been tested as a predictor of posttraumatic growth. Second, the mechanisms by which social support contributes to posttraumatic growth among cancer patients are not clear, and the factors that moderate or mediate this relationship have not been fully explored. Third, the research on posttraumatic growth has largely been done in Western countries. Compared to individuals in Western countries, individuals in East Asian countries are more likely to be influenced by cancer fatalism and are less likely to cope in the same way as people in the West, which may result in no growth (Splevins et al., 2010).

Better understanding of posttraumatic growth can provide improved practical strategies for cancer patients to maintain hope and overcome the challenges of experiencing cancer (Calhoun & Tedeschi, 1999). In their review of positive change following trauma and adversity, Linley and Joseph (2004) identified variables significantly associated with posttraumatic growth. Those variables represent various aspects that influence a person’s well being, such as cognitive appraisal, sociodemographic factors, personality, coping, religion, social support, cognitive processing, affect, and psychological distress. Studies of the predictors of posttraumatic growth among cancer patients have shown that age, cognitive processing of cancer, perceived social support, social constraint, disruption in social activities, and coping strategies were all significant predictors of posttraumatic growth among cancer patients (Jim & Jacobsen, 2008). A review of posttraumatic growth in breast cancer patients found that posttraumatic growth was significantly related to demographic factors, such as age, and to coping strategies, such as active adaptive coping and positive reappraisal (Koutrouli, Anagnostopoulos, & Potaminos, 2012). However, the review has found several inconsistent results. For instance, social support was found to be a significant predictor of growth in some studies but not in other studies examining posttraumatic growth among breast cancer patients (Koutrouli et al., 2012).

The mechanisms by which social support contributes to posttraumatic growth among cancer patients are not clear, and the factors that moderate and mediate this relationship have not been fully explored. Previous studies have theorized about which features of supportive communication tend to be helpful, but how those features are linked to psychological health outcomes is unclear (Goldsmith & Albrecht, 2011). Moreover, questionnaires measuring the frequency of support have “assumed that any form of support from anybody at any time could be equally effective for any problem”

(Goldsmith, 2004, p. 80). Using questionnaires as the only approach to explore social support ignores the specific contexts under which the support is given as well as the rhetorical features of the supportive communication provided (Goldsmith, 2004).

The research on posttraumatic growth has largely been done in Western countries. And how posttraumatic growth is improved has been largely understood in the West but not in other countries, such as China. Therefore, cancer patients in China deserve more attention. To the best of my knowledge, no studies have investigated Chinese cancer patient's social support and posttraumatic growth. Two reasons explain why more research on social support and posttraumatic growth among cancer patients in China is needed. First, the composition of social support in China is somewhat different from social support in Western countries. For instance, in China, a family may consider the non-disclosure of a cancer diagnosis as an appropriate strategy and as a form of social support in the name of protecting the patients from possible emotional distress due to the cancer diagnosis (Tse, 2003). Because there are so few studies of cancer patients' social support in China, it is unknown whether or not the social support with Chinese characteristics is perceived as helpful by cancer patients and whether or not the social support is a significant predictor of posttraumatic growth among cancer patients in China.

A second reason more research on social support and posttraumatic growth is needed is that, compared to individuals in Western countries, individuals in East Asian countries are more likely to be influenced by fatalistic beliefs or beliefs that this disease is their destiny, so they may be more likely to accept a cancer diagnosis without relying on cognitive processing and coping, which again may result in no growth (Splevins, Cohen, Bowley, & Joseph, 2010). Therefore, the posttraumatic growth in cancer patients in China deserves more attention.

Purpose of the Dissertation

There are several reasons why this research needs to be conducted. First, social support is important to cancer patients, because it contributes to their ability to cope with their disease. Second, types of social support provided to cancer patients in China, and whether that social support is helpful or not has remained unexplored. Third, investigating the predictors of posttraumatic growth can serve to develop clinical strategies to help cancer patients remain hopeful and improve their psychological well-being. Fourth, uncontrollability appraisal has not been tested as a predictor of posttraumatic growth so far. Previous studies have tested the relationships between appraisals and posttraumatic growth. For instance, one study examined the important aspects of appraisals, such as negative appraisals of the length of the illness and consequences of illness (Lewellyn et al., 2007). But according to self-regulation theory (Leventhal et al., 1980; Leventhal et al., 1984), uncontrollability is an important aspect of appraisals. Therefore, uncontrollability deserves more attention. Fifth, there are conflicting empirical results on whether or not social support contributes to posttraumatic growth. Sixth, if social support is a significant predictor of posttraumatic growth, the mechanism of how social support contributes to posttraumatic growth is not clear. Seventh, no structural equation model has been used to explain the complex phenomena that contribute to posttraumatic growth. Eighth, few studies have investigated social support and posttraumatic growth among cancer patients in China.

Based on these reasons, the goals of the dissertation are the following: (1) to examine Chinese cancer patients' perceived helpful and unhelpful support from different sources of social support, (2) to investigate the predictors of posttraumatic growth among cancer patients in China, and (3) to explain the mechanisms of how social support contributes to posttraumatic growth, if social support is related to posttraumatic growth.

Organization of the Dissertation

Chapter 2 describes the theoretical framework used to develop Study 1 (with the purposes of exploring areas of stress and unhelpful social support from different sources). First, the literature on optimal matching theory (Cutrona & Russell, 1990) and Goldsmith's (2004) social support theory are reviewed. Second, the rationale for Study 1 is presented. Last, research questions for Study 1 on areas of stress and on sources and types of helpful and unhelpful social support are proposed. Chapter 2 then describes the methods, results, and discussion of Study 1. The methods section includes the eligibility criteria of survey participation, and procedures of conducting interviews with cancer patients. Results of the major themes of the interview are presented. In the discussion section, the research questions are addressed. In addition, several issues (e.g., non-disclosure strategy) that were not asked but emerged from the interview are discussed.

Chapter 3 describes the theoretical framework used to develop Study 2. Theories of social support, appraisal, coping, and posttraumatic growth are reviewed. Moreover, theoretical determinants of posttraumatic growth and empirical predictors of posttraumatic growth were reviewed. The rationale, research questions, and hypotheses for Study 2 are proposed at the end of the chapter.

Chapter 4 describes the methods used to answer the questions and hypotheses posed in Study 2. Specifically, survey data collection, survey participants, measures of key variables (such as social support, uncontrollability appraisal, coping strategies, and posttraumatic growth), and the data analysis plan and specific procedures are described.

Chapter 5 provides the results of Study 2. Participants' characteristics are described. Hierarchical multiple regression was conducted to test the predictors of posttraumatic growth among cancer patients in China. SEM was conducted to build a model to explain the relationships among the variables: social support, uncontrollability appraisal, adaptive coping, and posttraumatic growth. Results and the model are provided.

Chapter 6 discusses the results of Study 2 and provides the conclusions of the dissertation. In this chapter, research questions and hypotheses of Study 2 are addressed and explanations of the results are provided. The results of Study 2 are compared with other studies on posttraumatic growth. Theoretical and practical implications of the results are proposed. The limitations of Study 2 are discussed and directions for future study are described. Contributions of the dissertation are summarized.

CHAPTER 2

CANCER PATIENTS' SOCIAL SUPPORT: STUDY 1

Theoretical Framework

Three theoretical perspectives are often used to explain social support related to health: the stress and coping perspective, the social constructionist perspective, and the relationship perspective (Lakey & Cohen, 2000). The stress and coping perspective holds that social support is a buffer for stress in that social support is a moderator of stress and health outcomes. That is, when the levels of social support are higher, stress has less influence on health outcomes. These studies mainly focus on different functions of social support. The social constructionist perspective emphasizes that perceived support promotes self-esteem, which enhances health outcomes. These studies focus on how social support help enhance personal values. The relationship perspective argues that relationship qualities (e.g., companionship, intimacy, and conflict) influence health outcomes (Lakey & Cohen, 2000). This dissertation uses the stress and coping perspective, because, first, one of the goals of this dissertation is to investigate how social support, along with appraisals and coping, contributes to posttraumatic growth among cancer patients; and second, this perspective emphasizes the important roles of social support and coping whereas the other perspectives do not.

Optimal matching theory. The stress and coping perspective suggests that effective social support will be useful in increasing active coping and in reducing stress

(Cohen & Wills, 1985). Cutrona and Russell’s (1990) optimal matching theory provided some explanations for the criterion of effective social support. Cutrona and Russell (1990) derived five basic support dimensions: emotional support (i.e., “the ability to turn others for comfort and security during times of stress, leading the person to feel that he or she is cared for by others”), social interaction or network support (i.e., “a person’s feeling part of a group whose members have common interests and concerns”), esteem support (i.e., “the bolstering of a person’s sense of competence or self-esteem by other people”), tangible support (i.e., “concrete instrumental assistance, in which a person in a stressful situation is given the necessary resources” such as financial support and physical assistance), and informational support (i.e., “advice or guidance concerning possible solutions to a problem”) (p. 322). These researchers have argued that a cancer patient may face a variety of stressors, such as the loss of physical capacity, inability to afford the medication and medical treatments, uncertainty about treatment choices, and fear of death. As a result, the patient may need a variety of support types, such as tangible support to help the patient move around after a surgery and to afford the medication and medical treatments, information support regarding benefits and risks of each medication and treatment, and emotional support to conquer fear. But the optimal matching theory does not take the source of support into account, and it assumes that support from anybody could be equally effective (Goldsmith, 2004). Therefore, Goldsmith’s theory of social support was also examined, because the theory puts an emphasis on the source and quality of social support.

Goldsmith's theory of social support. Goldsmith (2004) argued that providing effective social support is not as simple as matching the type of support to a situation and that a support provider "rhetorically and collaboratively constructs situations within normative constraints" (p. 81). That is to say, a support provider should consider the context and the characteristics of the support receiver, or the person who needs support, and then provide the support in a way that the receiver deems is appropriate and effective. She further argued that the most effective support is the type of assistance that facilitates adaptive coping (e.g., positive reframing, active coping), as opposed to maladaptive coping (e.g., denial, avoidance). The social support is adequately, coherently, and persuasively provided, as determined by the support received, after evaluating the patient's situation so that the patient is more likely to be promoted to engage in adaptive coping (e.g., problem-solving strategy and information seeking strategy) (Goldsmith, 2004). For instance, cancer patients need informational support when they first receive their cancer diagnosis, because in order to decide a treatment plan, they need a lot of information, such as a diagnosis, disease information, treatment plans, side effects, and pessimistic prognosis.

If a doctor impatiently and without emotion tells a cancer patient all the information in one 20-minute sitting and does not allow time for question or emotional response, then, even though the type of the support matches the stressful event, this type of support is not helpful or sufficient support. Here is what was done wrong: the doctor either did not evaluate the patient’s situation or did not care about the patient’s psychological condition by giving more information than a cancer patient can absorb at the time of cancer diagnosis, because it is quite possible that on hearing the bad news, one’s mind will go blank and will no longer receive any further information. The doctor did not care about the patient’s emotional response, such as worry of cost and fear of the treatment or of death, but focused only on giving information. The doctor did not allow two-way communication and the support was not provided and was excluded the patient’s viewpoint. It is possible that the patient did not process any information from the doctor and might think the doctor was trying to finish his or her work and did not care about patients. This inadequate way of providing social support would not be effective.

According to Goldsmith’s (2006) theory of social support, here is how it should have been done. The doctor needs to involve the patient as well as the patient’s family members (with the patient’s permission) to know who the patient is, including the patient’s physical and mental health, personal characteristics, cognitive capacity, as well as the patient’s communication preferences. Then, the doctor will provide information support, based on the patient’s needs and preferences.

Studies have emphasized the importance of the source of social support and the quality of the social support provided, which demonstrates the need to take those variables into consideration. The source of social support has been found to vary in terms of perceived helpfulness and effectiveness (Dakof & Taylor, 1990; Goldsmith, Lindholm, & Bute, 2006). A support provider can potentially give both desired support as well as undesired support (Reynolds & Perrin, 2004). One study demonstrated the negative influence of undesired social support on cancer patients. Undesired support has been associated with breast cancer patients' poor psychological adjustment (Reynolds & Perrin, 2004). Therefore, in addition to the types of social support, the source and the quality of social support should be addressed.

Social support for cancer patients. A review of research on social support for cancer patients shows that social support contributes to cancer patients' health by relieving stress that is related to the disease (Dunkel-Schetter, 1984), by facilitating patients' adherence to medical treatments (Dimatteo, 2004), in affecting patients' coping strategies (Yoo et al., 2014), in influencing patients' appraisals of stressful situations and leading them to interpret stressful situations less negatively (Cohen & McKay, 1984), and in promoting patients' self-esteem (Lakey & Cassady, 1990). However, only a few studies have concentrated on inappropriate, unhelpful, or undesired support. For instance, using interviews comprised of open-ended questions, Dakof and Taylor (1990) examined helpful as well as unhelpful social support offered by different support providers (e.g., spouses, other family members, friends, and physicians and nurses) to cancer patients. Patients' perceptions of unhelpful actions included the following: being critical of patients' response to cancer, expressing too much worry or pessimism, providing technically incompetent medical care, or providing insufficient information (Dakof & Taylor, 1990). Dakof and Taylor's (1990) study is useful in that it listed common sources of social support and explored patients' perceived unhelpful support, which can serve as a framework of unhelpful social support for Study 1 of this dissertation.

Reynolds and Perrin (2004) demonstrated the negative consequences of received but unwanted social support. Their study on social support was conducted among 79 women who had experienced breast cancer treatment. They found that received but unwanted support was significantly related to the support receivers' poor psychosocial adjustment (Reynolds & Perrin, 2004). After investigating 101 rheumatoid arthritis patients, Revenson and her colleagues (Revenson, Schiaffino, Majerovitz, & Gibofsky, 1991) concluded that social support can be a double-edged sword in that received helpful support from close friends and family was related to lower depression, whereas received unhelpful or problematic support was related to increased depression.

Research on the social support received by cancer patients in China has provided some limited insight. Most studies (e.g., Li & Sun, 2011; Zhang & Li, 2007) conducted among Chinese cancer patients used the social support scale designed by Xiao (1994) to measure cancer patients' social support. This scale has three dimensions: objective support (i.e., material and emotional support provided by family, friends, and social groups), subjective support (i.e., the subjective experience of the social support receiver, such as the degree of satisfaction towards social support received), and the degree of social support used (Xiao, 1994). This scale is used to measure social support by calculating a social support score, with higher scores indicating more social support received. The social support scores do not provide much in-depth information. For instance, from a single score, it is not possible to know who provided what type of helpful support and who provided what type of unhelpful support. Thus, the results found in China do not provide insight into how social support is used or its effectiveness, so more research is needed to explore cancer patients' social support in China.

Among the few studies conducted about Chinese cancer patients' social support, one study found that esophageal cancer patients received social support from various sources, including spouses, sons and daughters, friends, healthcare professionals, and some organizations (Li, Li, & Wang, 2004). About 36% of social support came from spouses, 31% from sons and daughters, and 13% from healthcare professionals (Li, Li, & Wang, 2004). However, no studies in China have examined the content of each specific source of social support or explored unhelpful social support from each source. People in China would interpret social support differently due to cultural differences. Therefore, to fill the gaps identified in the social support literature and research in China about social support, this dissertation explores cancer patients' stressors, who has provided the social support to cancer patients to alleviate stress level, and whether the support provided from each source is considered helpful or unhelpful. The follow research questions are proposed:

RQ1: In China, what are the major areas of stress for cancer patients? What specific stressors do cancer patients experience during the initial cancer diagnosis phase?

RQ2: In China, what is perceived as helpful support from which sources, and what is perceived as unhelpful support from which sources?

Method of Study 1

The purpose of Study 1 was to investigate helpful and unhelpful social support from different support providers. A total of 20 participants were recruited to participate in individual phone interviews. Before data collection, the study protocol was reviewed and approved by Temple University Institutional Review Board (IRB) and by the hospital where the data would be collected.

Participants

Despite the severity of the diagnosis, cancer patients in China usually stay in the hospital during their treatment. A patient can be required to stay in a hospital for as many as three years. The sample for Study 1 was cancer patients in a cancer hospital in China. Because participants were cancer patients, the help of nurses and nurse managers was needed during the interviews to identify patients who were physically and psychologically sound enough to participate in the interview. Moreover, special attention from nurses was given to the participants, because cancer patients can be extremely weak or very depressed. Nurses were also not far away (usually outside of the conference room) from the patients being interviewed, so if patients were in need of help, nurses were available to respond as soon as possible.

The eligibility criteria for participants were that patients had to have received a cancer diagnosis in the target cancer hospital, had to be at least 18 years old, and had to be mentally as well as physically capable of participating in an interview. The eligibility criteria for participants of the study were based on a careful review of the literature and a discussion with the nurses. In all, 20 patients took part in the study, 15 females and 5 males. The participants were between 34 to 70 years in age (*M* = 49; median = 51).

Procedures

Interviews. Potential participants were identified by nurse managers and were approached by the nurses to ask them to participate in an interview. The patients who agreed to be interviewed received an informed consent form. I conducted the interviews by phone. During the interviews, a nurse manager was outside of the meeting room, so the nurse could not hear what the interviewees said during the interview, but the nurse could be reached by patients if needed. Phone calls were considered appropriate for the interviews, because (1) video or audio recording was not allowed by the hospital, and (2) the participants would not see the interviewer nor be seen or recorded, and thus would hopefully feel less anxious and more willing to share their thoughts with the interviewer. Detailed notes were taken during the interviews. The interviews were all conducted in Chinese.

The interviews began with rapport building questions, such as, “what did you eat for breakfast,” along with demographic questions, such as gender, age, income, and current health status. Please note that this Chinese opener can seem odd to most Americans. To Americans, this question, if asked by a stranger, can be a question of invasion of privacy. However, most Chinese love to talk about what they eat and this topic can help them feel closer to the interviewer. Next, participants were asked questions about their social support and their stress (see Appendix A for the interview protocol). During the interview, participants were not interrupted and were encouraged to share whatever they would like to say. The length of time for the interviews ranged from 11 to 45 minutes (M_{length} = 28 minutes), depending on patients’ willingness to talk and their physical conditions. One interview lasted only 11 minutes because of the patient’s discomfort and her mild depression. A lot of probing questions were raised but she only responded with limited words. Analyses were generated from the notes taken during the interviews. The number of the participants was set at 20 at the beginning of the study. If content saturation was not reached, more participants would be recruited. However, starting from the 16th participants, no new themes emerged and saturation was reached. Thus, the final sample size of this study was 20.

Due to either the prevalence of protective medicine or the paternalistic approach to medicine in China, family members along with doctors may make decisions on behalf of the patient. Many patients, especially senior citizens (usually 65 years or above) in

China were not aware of their disease. It is quite common that doctors and nurses in China are required by some family members not to disclose the diagnosis to the patient. For instance, if a patient had stomach cancer, the family may tell him or her that the disease is stomach inflammation rather than stomach cancer. Due to the important influence of the Chinese family on the decision-making processes related to individuals, doctors and hospitals respect the family's decision. The medical staff will have full communication with the family about disclosure decisions, and they will respect the family's preferences about disclosure, before communicating with the patients. Tse (2003, p. 340) classified the role of the family in China in an individual's decision making process into three levels: "The family takes part in decision making with the patient," "the patient asks the family to decide," or "the family decides alone despite the patient's wish to participate." The latter two types of decision making can be observed especially when the individual is a senior citizen or a child. Given this situation, one of the most important eligibility criteria of participants was that patients had already been given full and true disclosure. As a result, social support information from patients who had not yet been told their diagnosis was left unstudied.

As the interviewer, I was afraid that I might hurt the participants unintentionally by directly asking patients questions regarding cancer type and cancer stage, because I thought that in East Asian culture the norm is that serious diseases, such as cancer, should not be discussed. Death, dying, end-of-life care, and serious diseases are some examples of conversational taboos in Chinese society. So, with the patients' permission, I asked the nurse managers for information on the cancer type and cancer stage before the interview. The nurse managers mentioned that some patients did not know the exact type and the stage of the disease, so acquiring the information beforehand from the nurse was a good decision.

During the phone interviews, I tried my best to use a warm and clear voice, to avoid technical terms, and to sound friendly and natural. The warm-up questions (e.g., "what did you eat for breakfast today?") made the participants as well as the interviewer less anxious. The word "cancer" was rarely mentioned during the interviews. If it seemed necessary, "the disease" was used as a euphemism to refer to cancer.

Some (about 9-10) patients were very friendly, open to questions, and talkative, so it was easier to gain a lot of information from them. Not many probe questions were needed for those participants. Also, in these cases, the interviewer was less worried about hurting the patients unintentionally, because the patients provided a lot of information. For those participants who gave very succinct answers to the questions, for instance, yes or no, a few words without further explanations, more probe questions were necessary. Sometimes the probe questions were useful to get at more information, but occasionally they were not effective when patients were unwilling to share their experience. Perhaps it would have been easier if face-to-face interviews were carried out, so the interviewer could have observed the non-verbal messages of the participants, such as facial expressions, gestures, physical conditions, and emotional conditions. For instance, if an interview is conducted face to face, a participant, with tears in her eyes and facial expressions showing her state of being, describing how her husband took care of her with his whole heart, might be interpreted by the interviewer as showing more gratitude and satisfaction toward her spouse's support, compared to a participant describing the same situation but without showing those facial emotions. Therefore, in the phone interviews, social support was evaluated only based on only verbal expressions of the patients and, except for paralinguistic cues, the contribution of non-verbal communication in conveying social support was left unassessed.

During the interview, about half of the participants sounded energetic and talkative. However, one participant asked, at the end of the interview, "Is there any way to go (to die) without pain?" I was a bit shocked and did not know how to respond. After a short pause, the participant said: "Never mind. I was just kidding." I wanted to say something to comfort the patient, but I did not know what to say. After the interview, I asked the attending nurse to give more attention to the patient.

Toward the end of the interviews, when the patients were asked if they had any questions, it seemed that a few participants assumed that I had a medical background, because they asked very technical questions regarding treatment options and decisions. A couple of participants asked about cancer medicines available in the United States and assumed that medicines in the U.S. would be more effective and would cost less compared to the medicines produced in China. A few participants complained about the high cost of cancer treatment and medicines. I was also asked to follow up with a participant about the latest treatment of a certain type of cancer in America. Those were the questions that I found very hard to respond to given that my background is in health communication rather than oncology. Qualitative content analysis was used to analyze the data. I read the notes and identify the major themes and frameworks guided by the research questions. Then I sorted the data into frameworks and identify recurrent themes.

Results of Study 1

Patients' Stress

The various sources of stress the cancer patients mentioned most were stress due to physical conditions, stress due to psychological conditions, or both. The participants mentioned frequently concerns about the following: inability to accept the diagnosis at the beginning, fear of death, the unbearable physical pain due to cancer, a sense of inferiority, depression throughout the stages of cancer, fear of being a burden to family members, or knowing that other family members were also depressed.

The most frequently mentioned time of stress was during the cancer disclosure stage when patients first received their diagnosis. Informant No. 10 (male, 61 years old, lung cancer) mentioned,

> At the beginning, I felt that they [family] knew something, but I, somehow, sensed that they would not let me know. After a while, in the hospital, I discovered by myself that I had the disease [lung cancer], because everyone here in the room received the same diagnosis. It was very hard

> for me to accept the truth at the beginning. All of a sudden, I felt I was not far away from death.

Pain was another source of stress frequently reported by the informants. Informant No. 13 (female, 46 years old, liver cancer) asked towards the end of the interview, "Is there any way to go without pain? Oh well, never mind, I was just kidding."

Informants living in rural areas tended to report feeling more isolated and depressed, because they felt that their diagnosis would make other people, especially their neighbors in the village, stay away from them. Informant No. 8 (male, 61, throat cancer) expressed the following:

> After my diagnosis, I felt that, that, people stayed away from me intentionally. They seemed to not look directly into my eyes. Depressed, I felt depressed. All of a sudden, I could talk to no one like before any more. So I said to myself, never mind, I will just stay at home then.

Other informants felt anxious and sad, because they sensed their family members had been depressed after their diagnosis. They said their family members tried hard to hide sad faces, expressed a lot of encouragement, and only mentioned positive things in front of the patients. However, patients still sensed their family members' depression. For instance, informant No. 13 said,

> My family members cried a lot when they were not with me. I just knew it. I knew it. They won't cry in front of me. They have good control. But I knew that they would cry when they are not with me, especially when they are with someone else they can talk to about my disease.

Several informants feared that they became a burden to the family. To some, it was a big shift in roles, from a care provider of the family to the one staying in bed depending on others. On the one hand, they enjoyed and needed the family member's care; on the other hand, they blamed themselves for being a burden, because they could not help with anything. As informant No. 12 (female, 60, lung cancer) expressed,

> My daughter, she often comforts me: "See, your son and your daughter are adults now and have started their own families. Remember when we were young, how you took care of us? Now it's time for us to take care of you. That's what we should do. Don't worry about the cost, Mom."

Several other informants attributed the source of their stress to external conditions, such as the high cost of the medical care, the infrastructure of the hospital, and the problems of commuting between hospital and home. Informant No. 2 (female, 34, stomach cancer) said,

> The conditions of the hospital are too bad, too bad. There is paint peeling on the wall everywhere in the hospital. In summer, a lot of mosquitoes are biting. And no air conditioning. Can you imagine that, especially during summer time?

Informant No. 3(female, 38, ovarian cancer) said, "What I cannot stand is that there is no restroom in the room [in the hospital]. This is really inconvenient for us."

nother informant (No. 9, male, 50, colon cancer) expressed the following concerns:

> You see that our traditional spring festival is coming, and a lot of people [working all year round far away from their hometown] would travel home to spend the best time together. Thus, it's so hard to buy train tickets for me to go home [because train tickets are sold out quickly during this time of year].

However, some cancer patients indicated that they do not have any stress. They seemed to be very happy and content about their condition, and some were even optimistic. For example, informant No. 20 (male, 66, lung cancer) said in a happy voice:

> To me, lung cancer is just like tuberculosis. You know, in the past, TB

> was incurable. Now, it is nothing, right? So I believe one day, lung cancer is also curable in the near future. Yeah, I look forward to that day. I should have faith in medical breakthroughs.

Social Support

Cancer patients in China, despite being in the hospital, are often taken care of by their family members, not by professional care providers. One reason is because China has a family-centered tradition. Another reason is because professional care providers are often considered unreliable in China. News in China has reported too many cases in which professional caregivers only care about money. For cancer patients, their sources of social support are from their family members, their nurses and doctors, their friends and their colleagues, and in some rare cases, from the unknown people, such as social workers.

Most of the patients interviewed were taken care of by their spouses. Patients who had adult children understood that their grown children were busy at work or taking care of their own children. They were satisfied with the care their spouses provided. They felt grateful. Informant No. 10 said,

> The way my wife takes care of me is just like an adult taking care of a child. She is responsible for everything, preparing for meals, helping me eat meals and drinking water, assisting me to go to the restroom, and things like that. She will buy me whatever I want. She has no complaints. She is the best.

Some cancer patients felt so satisfied with their spouses and so lucky, yet, at the same time, they feared that the love they had might disappear at anytime. They also felt that their loved ones deserved a better life and should not suffer with them. The internal conflict of the patient would often result in the patient saying something that hurt their spouses' feelings, even they did not mean to. This is not uncommon when people are physically ill or have a severe condition. Informant No.4 said,

> The other day, I was joking to my husband, who is here [in the hospital] day and night taking care of me, "You [the husband], go away. Don't stay here with me. I do not need your care. Let's get divorced so you don't have to stay here and endure the bitter life with me together. Go and find someone who is younger and much heathier than me. You deserve a much better life."

Nurses and doctors were another major source of social support to the patients. Many patients understood when to get what type of support from which source. They also understood that doctors were busy and could not meet them as often as nurses did. But if needed, doctors were often accessible. The participants overall had established good relationships with the nurses and doctors. Informant No. 10 mentioned,

> Doctors and nurses here are so nice, so nice that I consider them as my family members now. Especially the nurses; they speak so soft and they are very patient to me. I see nurses very often. I also see my doctor, like once a day. About 5-10 minutes per day. The doctor came to the room to see every patient and talk to them and answer questions. If I have extra questions, I can go and visit his office at any time.

Social network sites, such as WeChat, have helped to increase doctor accessibility and have strengthened the doctor-patient relationship, especially for cancer patients, who need a lot of information and personalized care from doctors. Informant No. 11 (female, 60, lung cancer) said,

> I added my doctor and my nurses to the network of my Wechat. Whenever I have any questions, I will send instant messages to my doctor, and often I get prompt feedback from him. Very convenient. So in addition to meeting with my doctor every morning, I get the chance to ask more

> information through Wechat. He has access to my page on Wechat so he gets to know me, my everyday life, how I am doing, etc.

She also mentioned that

> When I came back to the hospital, I learned that I owed the hospital some money [the fees for the previous treatments], and my doctor paid it for me, and he knows that when next time I come back to the hospital for treatment, I will give the money back to him. I was so moved. Doctors can be like that? Indeed.

Although the patients did not see their friends and acquaintances very often, they often received their messages of encouragement to fight the disease via WeChat. Their friends also share articles of healthy eating and healthy ways of living with the patients through WeChat, which the patients felt were useful and through which they felt emotionally supported and encouraged. The patients said their friends tried to avoid mentioning the disease in front of them and just focused on positive things.

Types of Social Support

Patients received both emotional support and tangible support mostly from their close family members, such as from their spouses, their children, or their siblings. Their friends and colleagues also provided emotional support and tangible support. Some family members and friends who were unable to go to the hospital to see the patients would use other channels of communication, e.g., WeChat, to send best wishes and words of encouragement, which the patients found helpful to relieve their distress and to encourage their fighting spirit. Doctors and nurses provided most informational support. However, because patients understood that their doctors and nurses were often busy, they did not seek emotional support from them. They restricted the content of their interactions with doctors to information about the disease and discussions about treatment and medication, although doctors would provide some emotional support to patients when they had time and made time. Moreover, patients never solicited emotional support from nurses either. But from the interviews, it could be inferred that nurses were active emotional support providers. For instance, in addition to greeting patients warmly and talking to them gently, nurses would express encouragement to the patients, try to shift their attention when they were anxious, and help them focus on positive things, such as "You finished all your meals today. They must be delicious. Good job!"

One type of source for social support was rarely mentioned by cancer patients in China: social workers in China. Social workers are often junior medical students organized by hospitals. Not every hospital has a social worker organization. Social workers usually work for comprehensive hospitals that have medical schools. When available, hospitals will send social workers to those patients who are of very low economic status and live in rural areas, sometimes could not afford treatment. Social workers bring free pain management medication to the patients' home once a week, usually on Saturdays or Sundays. They stayed with the patients at home for half a day or a full day, doing some simple diagnoses, helping relieve the patients' emotional distress and anxiety, talking with the patients, playing chess with the patients, doing some light house keeping, and even helping patients realize their wishes. Informant No. 8 said,

> I was a soldier when I was young. I was assigned to be in Qingdao City at that time. I was there for a long time. Now I don't have any other wishes. I

> just hope I could go there again. But, now, with my situation, impossible, never. The girl [social worker] is great. She asked one of her classmates who would visit Qingdao to take pictures of the city, and she brought the pictures back to me. Looking at those pictures, I…, I…, my wish, completed. That's enough for me. I don't desire anything else.

Cancer patients in China did not say much about unhelpful social support. But one type of unhelpful support frequently mentioned by the patients was that their family members (especially their spouses and children) criticized their eating behavior (e.g., eating too little, unhealthy diet). Another type of unhelpful support from family members was that the patients thought their family members and friends were not empathetic. For instance, informant No. 2 (female, 34, stomach cancer) mentioned,

> They [family and friends] always ask me to eat this and eat that, eat in a healthy way, eat more and eat more. But, but the fact is, I do not have the desire to eat at all, you know, I have a problem. I just don't want to eat. There is no way I can eat like a healthy person does. I wanted to, but I can't.

Some cancer patients complained that their family members or colleagues did not know their needs, and their offers were unhelpful. For instance, informant No. 10 mentioned,

> Every time, when some of my family members and my colleagues see me, they would say to me, "No worries, you got covered by us; we will pay for your medical expenses." We did not see them often. Every time we start to talk, they would mention money, just money, nothing else. And I don't think I need them to pay for my medical bills.

Some patients said that they were not allowed by their family members to do this or to do that. However, the patients did not consider it unhelpful support or a question of their physical inability. Rather, they seemed to be extremely tolerant and positive. Sometimes, the patients considered it a way for their family members to show affection and concern. Informant No. 14 (male, 70, lung cancer) mentioned,

> For me, there is no unhelpful support. My love, my kids, all good, perfect. I am very satisfied with them. I know they have good intentions. As long as their intentions are good, that's it. I don't think too much.
>
> Another informant (No. 18, male, 64, bladder cancer) said,
>
> The other day, after wiping my body, my wife touched something abnormal in my body and said to me in a loud voice, 'What's this? It looks like there is another big mass here.' I was not unhappy, because she is my wife, and she is quite straightforward. But my son was quite sensitive after hearing the words and started to confront his mother about her lack of sensitivity toward cancer patients.

Although it was not quite common in cities, patients in rural areas found that, once they were diagnosed with cancer, some of their neighbors in the village stayed away from them. Their social interaction with neighbors was greatly reduced. Especially the neighbors who believed that cancer was an infectious disease stayed away from the patients. This unhelpful behavior hurt those patients, and they felt depressed about this avoidance behavior.

Perceptions of the Disease

There was a lot of variability in patients' attitudes towards cancer (e.g., fatalism), their understanding of the causes of cancer and its controllability, their knowledge about cancer, and their cancer information seeking behaviors. For instance, some patients held strong fatalistic beliefs about cancer, whereas other patients were quite optimistic. One example was informant No.13, who did not want to cope any more, compared to informant No. 10, who was very optimistic about the curability of cancer. When asked about their perceptions of the disease, some patients thought this question was complicated and hard to answer.

It seemed that older patients took a more passive role in decision making and treatment, and they relied mostly on their doctors. Some older patients were not interested in learning more cancer-related information because they considered it a burden. The majority of the patients did not have much knowledge about cancer, except for patients who were doctors and had much medical knowledge. When it came to information seeking about cancer, patients with more medical knowledge, with higher educational background, with access to the Internet, and with information seeking self-efficacy sought more cancer information online. If patients are actively involved in cancer information seeking, they are more likely to work with their doctors and participate in the decision making process.

Some patients attributed the cause of their cancer to internal factors, such as unhealthy eating, unhealthy lifestyle, and poor immunity. Informant No. 10 (lung cancer) mentioned,

> I think, the cause, uh, when I was young, I smoked a lot and drank a lot. Unhealthy. And poor health.

But some other lung cancer patients thought external factors, such as the polluted air in China, were the causes of their lung cancer. They mentioned how bad the air quality had become in the last 20 years in China. They also noted that during the past several years, more and more people were diagnosed with cancer.

Discussion

Research Question 1 asked about the major areas of stress for cancer patients in China, specifically, stress due to physical conditions (e.g., pain) and stress due to psychological conditions (e.g., depression, fear of death, fear to be the burden of the family). Patients at different stages of cancer may face different types of stress. Being unable to accept the diagnosis at the beginning of diagnosis and unbearable physical pain due to late stage cancer were types of stress related to the disease stage. Family environment was also a factor related to patients' stress. For patients with warm and caring family members, who tried hard to hide their negative feelings in front of the patients but did so in vain, it was very difficult for the patients, knowing the family members were also depressed. For patients with family members who showed little empathy and care towards the patients, or cared more about money than treatment and the patients' health, those patients were also distressed. Patients in rural areas of China were separated from their neighbors, which created a feeling of inferiority among other cancer patients. Other external sources of stress included the poor conditions of the hospital and that the society was not considerate to individuals with disabilities, so no priority was provided for the disabled. The results provided some evidence to support Cutrona and Russell's (1990) argument, in their social support theory, that cancer patients face a variety of stressors. To help patients better face those stressors and cope with the disease, different types of social support are needed.

Research Question 2 asked about the sources and types of helpful social support as well as unhelpful social support received by cancer patients in China. Many patients received helpful tangible support and emotional support from their close family members and friends. They also received helpful emotional support (e.g., words of encouragement) from other family members and friends through WeChat. Cancer patients did not intentionally seek emotional support from doctors or nurses, but patients reported being provided with enough informational support from those sources and sometimes emotional support from their health care professionals when they had enough time to interact with the patients. Patients reported that unhelpful social support from family and friends included not showing empathy towards the cancer patients, criticizing their eating and health behaviors, and offering monetary support without understanding what patients really wanted.

The results demonstrated the importance of types of social support as indicated in Cutrona and Russell's (1990) theory, such as information support and emotional support. For cancer patients, it also pointed out the importance of examining the source and the quality of cancer patients' social support, as indicated by Goldsmith (2004). The study also pointed out the importance of examining unhelpful social support received by cancer patients.

It seemed that cancer patients in China were less likely than Americans to report unhelpful social support from support providers, compared to Dakof and Taylor's (1990) study, in which 42% of the interviewees mentioned that their spouses had offered unhelpful actions and 40% of the interviewees indicated that their physicians had offered unhelpful actions. This lack of reporting does not mean that there was no unhelpful support received by cancer patients in China. But instead, patients in China were unlikely to regard those actions as unhelpful, possibly due to the emphasis in Chinese culture on harmony and the tendency toward conflict avoidance. In Leung's (1988) study, it was found that Chinese participants "were less likely to pursue a conflict with an in-group disputant and more likely to pursue a conflict with an out-group disputant, than were Americans" (p. 125). This result can be explained by the harmony of Chinese society in which establishing a harmonious relationship or maintaining the appearance of conflict-free interaction is important (Chen, 2002). In this case, participants were all cancer patients who were dependent on their family members, doctors, and nurses (in-group members) for all types of support. Therefore, the patients may be more reluctant to report that any help offered by those in-group members was unhelpful.

From the interviews, several issues became salient and deserve discussion, although they were not questions asked by the interviewer. Those issues include the strategies used to disclose cancer, the technology used to facilitate personalized doctor-patient communication and healthcare, and the facilitation of social support from other sources, the role of social workers in China, the lack of professional psychological care for cancer patients, and the growth that occurred.

Personalized Disclosure Strategy

Goldsmith (2004) pointed out that social support should be provided in a way that the support receiver considers the support as effective, but more importantly, appropriate. How to properly provide informational and emotional support, especially, should be considered by the support giver. Disclosing a cancer diagnosis can be a specific context, and what information to provide to the patients and how to comfort the patients should be examined. Delivering the bad news of a cancer diagnosis is an important communication process during which doctors or family members disclose the diagnoses, help the patients know the diseases and the stages, discuss treatment plans, and answer questions (Cao, Qi, Yao, Han, & Feng, 2016). Bad news signals the beginning of stress for patients (Ptacek & Eberhardt, 1996). Patients' stress levels are likely to be influenced by the ineffective delivery of the bad news about the cancer diagnosis (Fallowfield, 1993; Morita et al., 2004; Schofield et al., 2003; Takayama, Yamazaki, & Katsumata, 2001) or by different disclosure strategies (Fujimori et al., 2007). Disclosure strategies influence the patients' role in decision making, as well as their physical and psychological well-being (Fallowfield & Jenkins, 2004; Ptacek & Eberhardt, 1996; Sastre, Sorum, & Mullet, 2011). Results indicated that some patients were given ineffective disclosure of their cancer diagnosis. Some patients were not told by their family members of the true diagnosis, even when they were willing to know. Some patients who were not told were able to find the truth later by themselves.

The tradition and culture in China indicate that disclosing cancer diagnosis to patients is cruel, so many families are opposed to full disclosure (Tse, 2003). Although many doctors and families have changed their beliefs about disclosing diagnoses and try to find best ways to disclose this information, there are still many families in China that withhold the diagnosis from the patients until the patients discovered the information for themselves. This nondisclosure strategy might be effective for those who are unwilling to know their diagnosis, but it is ineffective for those who want to know what's happening to them. The nondisclosure strategy may lead to a decrease in the patients' trust in family members and in their doctors, which can then lead to poorer communication among them and can influence the social support the patients receive. Moreover, studies indicated that patients who found out about the diagnosis for themselves had higher anxiety and stress. Thus, whether or not to disclose, as well as how and who should disclose, and when to disclose, should be evaluated based on patients and family input (Zhou & Zeng, 2009). Caution should be exercised about using a non-disclosure strategy, because for some patients who are willing to know the true diagnosis, once they discover the true diagnosis by themselves, rather than receive it from a doctor or a family, they may not trust these sources any more.

Moreover, when deciding how and what to disclose, doctors or family members should pay attention to the disclosure rate and amount. According to Fielding, Wong, and Ko (1998), disclosure has two dimensions: rate of disclosure and amount of disclosure.

For the rate dimension, the information can be fully released during one meeting or released step by step across different sittings (Fielding et al., 1998). For the amount dimension, the information can be fully and frankly disclosed or hinted or released partially (Fielding et al., 1998). One concern of the gradual release or partial release is that it can potentially create greater uncertainty and produce more stress if patients prefer quick and complete disclosure (Fielding et al., 1998). Thus patient-centered communication disclosure is encouraged.

Patient-centered communication, the recommended communication approach for breaking bad news (Mast, Kindlimann, & Langewitz, 2005), is characterized by encouraging patients to speak and for doctors and family members to attentively listen to and follow patients' requirements and needs (Mast et al., 2005; Ong, de Haes, Hoos, & Lammes, 1995; Wanzer, Booth-Butterfield, & Gruber, 2004). A patient-centered communication strategy "has the most positive outcome for recipients of bad news on a cognitive, evaluative, and emotional level" (Mast et al., 2005, p. 244). Physicians' use of patient-centered communication strategies has been positively correlated with patients' satisfaction with care and satisfaction with communication (Wanzer et al., 2004). The results of Hillen and his colleagues' (2011) study indicated that patient-centered communication strategies increase patients' levels of trust in doctors.

Euphemisms

Goldsmith's (2004) social support theory suggests that social support givers should pay attention to the specific contexts and rhetoric strategies when providing support. Each culture has norms about the use of euphemisms and specific contexts for when to use those euphemisms. Scholars from different cultures have held inconsistent attitudes towards the use of euphemisms when communicating bad news. Some scholars (e.g., Minichiello, Ling, & Ucci, 2007; Ptacek & Eberhardt, 1996; Randall, 2005) prefer avoiding euphemisms when delivering bad news. However, Farber and his colleagues (2002) proposed that, in Japan, patients prefer that doctors avoid repeatedly mentioning *cancer* after honest disclosure is given. In this study, some patients avoided mentioning *cancer* during the interviews. They replaced the word with *the illness*. Moreover, death was rarely mentioned. When necessary, patients would use the words *leave* or *go*. It can be inferred from the use of these replacement words among the patients that euphemisms are still the practice in the context of talking about cancer in China. In future studies, when scholars need to interview or survey cancer patients in China, euphemisms are encouraged once the purpose of the interview is clearly articulated.

Smartphone and Social Network Sites

Patients reported that they had established better relationships with their doctors through WeChat: They received more attention and more information from the doctors and obtained more personalized health care. In a study conducted among doctors and future doctors in the U.S., the majority of the survey participants who were either physicians or physicians-in-training found it ethically unacceptable to visit patients' social network sites profile and thought it was unacceptable to interact with patients on social network sites. About half of American doctors surveyed did not think using social networks sites to interact with patients would improve doctor-patient communication (Bosslet, Torke, Hickman, Terry, & Helft, 2011). No studies have been conducted among doctors in China to measure their attitudes on using social network sites to facilitate doctor-patient relationship. But patients reported social network sites to be helpful for facilitating patient-doctor relationships. Future studies can explore the possibility of both doctors' and patients' attitudes about using smart phones and social network sites to interact with patients.

Social workers are considered by those patients living in rural areas and those who cannot afford the expenses of medical treatment or medication. Thus, hospitals with medical schools should recruit more medical student volunteers to work as social workers to help cancer patients and to bring them various types of social support, including tangible support (e.g., bringing pain medication, doing housekeeping), informational support (e.g., providing some medical information), and emotional support (e.g., listening to their fear and worries). The student social workers will also learn through more interaction with cancer patients so they can start to think from the patients' perspectives.

It seems that the patients interviewed who reported much more social support also experienced more posttraumatic growth. It seemed that patients with more and better social support felt less stress and less depressed. Patients who had better family support and better doctor-patient relationships sounded more positive and less stressed in their responses. They enjoyed the interactions with their family members and their doctors and nurses. They cherished life and found people around them to be very helpful. They seemed more willing to relate to others compared to other cancer patients who had not experienced the growth.

Limitations and Future Studies

There are several limitations to this first study. First, phone interviews were used rather than face-to-face interviews. Therefore, some useful information was missing. For instance, no facial expressions and other non-verbal behaviors were observed. Second, all the cancer patients interviewed had reported receiving some type of social support. It is possible that there are cancer patients who do not have any type of social support and, because they are not connected with others, they were not selected to participate in this study. Those cancer patients were not studied, so their sources of stress are unknown. Third, due to the participants' physical conditions, some of the interviews were relatively short and not many of the follow-up questions asked were fully answered. But the conditions of the patients prevented some in depth pursuit of answers. Fourth, gender imbalance was observed and there were substantially more female participants than male participants. The reason was that potential male participants were more likely to reject the interview than were females. Some male patients did not want to tell us about their social support experience, because some of them hold the belief that men should not be talkative or expressive, especially in interpersonal situations. This might limit the understanding of social support of male patients. In order to address this limitation, self-administered survey with open-ended questions or participant participant observation can be used in the future to collect data. Therefore, these limitations should be avoided or at least addressed in future interview studies. Moreover, future studies can investigate the relationship between social support and posttraumatic growth and help patients find positive growth during adversity.

Summary

This chapter examined cancer patients' perceived social support, especially different types of support, and their perceived helpful support and unhelpful support from different sources. Optimal matching theory (Cutrona & Russell, 1990) and Goldsmith's (2004) social support theory served as the theoretical framework of the study. A total of 20 cancer patients in a cancer hospital in China were recruited to participate in phone interviews. An analysis of the detailed notes of the interviews revealed the major sources of patients' social support coming from family members, doctors, and nurses. Patients described much more helpful support than unhelpful social support. Several other issues not covered by the research questions but salient in the interviews were also discussed, such as non-disclosure practices in China and the use of euphemisms when disclosing cancer diagnosis.

CHAPTER 3

THEORETICAL FRAMEWORK AND RESEARCH QUESTIONS OF STUDY 2

The purpose of Study 2 is to investigate the predictors of posttraumatic growth, the mechanism by which social support contributes to posttraumatic growth, and if social support is a significant predictor of posttraumatic growth. Theories of social support (Cutrona & Russell, 1990; Goldsmith, 2004) and coping theory (Lazarus & Folkman, 1984), which were reviewed for Study 1, informed Study 2. Moreover, Study 2 was guided by Tedeschi and Calhoun's (2004) posttraumatic growth theory.

Posttraumatic Growth

There are several reasons why this study focuses on posttraumatic growth. First, in Study 1, it was found that some cancer patients experienced growth. A total of 20 cancer patients were interviewed by phone to talk about their social support experience after their cancer diagnoses in Study 1. Although there are studies that have examined variables predicting posttraumatic growth among cancer patients, no studies have proposed and tested a model to explain the mechanisms of posttraumatic growth. Second, existing studies have focused on psychological outcomes, such as depression and anxiety. This study provides a new perspective by focusing on positive psychology. Third, through cultivating posttraumatic growth and other positive aspects of the disease experience, strategies can be provided on how to help patients live a hopeful and better life.

“Growth following adversity” (Joseph & Linley, 2006, p. 1041) or “posttraumatic growth” (Tedeschi & Calhoun, 2004, p.1) or simple *growth* are terms used in positive psychology that refer to positive changes in human beings after they have endured traumatic events or adversity (for a review of all the terms used to describe the changes, see Joseph & Linley, 2005). Although several theories on psychological growth have been developed (Joseph & Linley, 2004), Tedeschi and Calhoun’s (2004) posttraumatic growth theory was used in this study for several reasons. First, compared with other growth theories, this theory is more comprehensive in that it includes several important variables to explain posttraumatic growth, which will be explained below. Second, the theory identifies the importance roles of social support and cognitive appraisals in growth. Moreover, it has been tested many times, and a line of research using the theory and supporting empirical evidence has been established. The researchers who proposed the theory developed a questionnaire (i.e., the posttraumatic growth inventory) that corresponds to the dimensions of growth defined by the theory. Therefore, the conceptualization and operationalization have been established, making it useful to adopt both the theory and the questionnaire in this study. The questionnaire was reported to have good validity and reliability (Tedeschi & Calhoun, 1993).

The process of posttraumatic growth. According to Tedeschi and Calhoun (2004), individuals who already have developed sets of beliefs, views, values, and assumptions about the world tend to use those beliefs and assumptions to guide their living. When an individual faces a trauma or adversity, that person may find that his or her previously established assumptions and worldviews have been severely challenged or demolished by the adversity. Thus, cognitive processing and rebuilding is needed after the traumatic experience. A new set of assumptions, worldviews, and views of reality are established by incorporating the beliefs and values learned during and after the trauma and adversity. This new set of assumptions can be more resistant to future trauma and adversity. The experience of such changes is referred to as growth. Thus growth is viewed as an outcome or an ongoing process, not a coping mechanism.

An individual diagnosed with cancer experiences adversity. The disease is an event that can be challenging enough to demolish patients' old assumptions and form new views of reality, and several empirical studies have provided the evidence of this shift. Patients are often profoundly affected by cancer diagnoses in terms of their psychological functioning, because a diagnosis and the effect of the disease can last for several years (Schroevers, Helgeson, Sanderman, & Ranchor, 2010; Scrignaro, Bami, & Magrin, 2011). After a cancer diagnosis, one's views about life and death, the meaning of life, the controllability of the world and of oneself, and about relationships with people may be challenged and threatened. Therefore, a person starts the cognitive reconstruction process by thinking, reflecting, incorporating, and assimilating new assumptions about life and death. Gradually, a new schema is formed. Cancer patients who have experienced growth may cherish every day more than before, may enjoy the time spent with their loved ones more, or may totally change their understanding of life and start something they did not previously have the courage to try.

Dimensions of posttraumatic growth. Individuals living through adversity tend to change in several ways. For instance, they may find changes in themselves (e.g., become more confident and stronger); they may find changes in relationships with others (e.g., become cognizant of how precious their children are); or they may find changes in their philosophy of life (e.g., not take life for granted) (Tedeschi & Calhoun, 1996). To examine these changes, Tedeschi and Calhoun proposed five dimensions to evaluate posttraumatic growth: relating to others, new possibilities, personal strength, spiritual change, and appreciation of life (Tedeschi & Calhoun, 1996). One study showed that appreciation of life was the most salient dimension for cancer survivors (Morris, Shakespeare-Finch, & Scott, 2012). This study used Tedeschi and Calhoun's (1996) instrument, which includes the five dimensions to measure posttraumatic growth.

Predictors of growth. Several groups of variables predict growth in an individual facing trauma: age, the degree to which an individual finds the trauma to be challenging, emotions, cognitive processing, and social support (Tedeschi & Calhoun, 2004). Younger adults may experience more growth than older adults, because the former tend to be more open and adaptive to new things (Tedeschi & Calhoun, 2004). If a trauma is not challenging enough for an individual, and he or she can cope with it without much effort, then no schemas will be changed because no cognitive reprocessing is needed and no new experience has learned. In such a case, no growth happens (Tedeschi & Calhoun, 2004). Individuals who are more likely to experience positive emotions are more likely to experience growth (Tedeschi & Calhoun, 2004). But if social support is not available or effective for cancer patients — for instance, if no one is willing to share their emotions and feelings — then cancer patients' cognitive processing may be inhibited, and little growth will occur (Tedeschi & Calhoun, 2004).

Social support and growth. Due to differences in how social support and posttraumatic growth have been conceptualized and operationalized, results of previous studies have not been always consistent (Schroevers, Helgeson, Sanderman, & Ranchor, 2010). Theoretically and empirically, social support has been identified as an important predictor of posttraumatic growth. For instance, among breast cancer survivors, breast cancer specific social support was found to be positively correlated with posttraumatic growth (McDonough, Sabiston, & Wrosch, 2014). However, the result of another study indicated there was no significant relationship between perceived emotional support and posttraumatic growth one year after the primary medical treatment completion (Sears, Stanton, Danoff-Burg, 2003). Moreover, to the best of my knowledge, no study has investigated the predictors of posttraumatic growth among cancer patients in China. Therefore, the following research question is proposed:

Research question 1: For Chinese cancer patients, what are the predictors of posttraumatic growth?

Coping

According to Lazarus and Folkman (1984, p. 141), coping refers to “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person.” In other words, if a person is facing a situation and estimates that he or she lacks the resources or the ability to solve the problem, coping means that the person will start to think of strategies and will make an effort to change the situation.

Dispositional coping and situation-specific coping. Many studies on coping do not distinguish between dispositional coping and situation-specific coping strategies. Dispositional coping and situation-specific coping are sometimes used interchangeably within previous studies. However, the two terms should be differentiated. Dispositional coping refers to a person’s personality traits that lead to global, macroanalytic, and habitual tendencies to face a problem (Livneh, 2000; Zhu, Jiang, Zhu, & Zhao, 2000). In other words, dispositional coping is influenced by a person’s personality characteristics: optimism versus pessimism, repression or blunting versus sensitization or monitoring, approach versus avoidance, or positive coping versus negative coping (Livneh, 2000).

Situation-specific coping strategies are specific approaches and microanalytic responses determined by specific situations (Livneh, 2000; Zhu, Jiang, Zhu, & Zhao, 2000). Problem-focused coping, information seeking, positive reinterpretation, expression of feelings, avoidance coping, resolution, and use of humor are types of situation-specific coping strategies (Livneh, 2000).

Both dispositional and situation-specific coping strategies have been found to be used by cancer patients. Thus, it is important to distinguish between dispositional coping and situation-specific coping, because, first, being diagnosed with cancer can be a very stressful event for an individual and patients affected by cancer may use very different coping strategies from the coping strategies they usually use in less stressful events in their daily life. Second, compared with dispositional coping strategies, situation-specific coping strategies can be more specific in terms of coping behaviors and can change from time to time in a stressful event (Folkman & Lazarus, 1985). In this study, situation-specific coping is examined because the focus of the study is on patients with cancer, and the focus of the dissertation is on how people after cancer diagnosis cope within this specific context, rather than how people's dispositional coping which is influenced by personal characteristics, predicts posttraumatic growth.

Coping strategies. A variety of situation-specific coping strategies used by cancer patients have been examined. Kvillemo and Branstrom (2014) reviewed the literature on how patients cope with breast cancer and compiled a comprehensive list of coping strategies. They categorized situation-specific coping strategies into three broad categories. First, engagement coping or adaptive coping is "an orientation towards stress, and actively changing, managing or adjusting to a situation or associated emotions"

(Kvillemo & Branstrom, 2014, p. 5). Planning and acceptance are examples of engagement coping strategies. Second, disengagement coping or maladaptive coping is “an orientation towards drawing attention away from stress, and making an effort to distance oneself from the stressor or related feelings” (Kvillemo & Branstrom, 2014, p. 5) Examples of disengagement coping or maladaptive coping include avoidance and drug disengagement. And third, miscellaneous coping strategies include other types of behaviors to cope, such as venting and self-blame. Given that there are so many different coping strategies in the existing literature, Kvillemo and Branstrom’s (2014) work can be useful to categorize those situation-specific strategies into categories.

Studies investigating Chinese cancer patients have listed coping strategies employed by the cancer patients; however, the depth and the implications of the studies are limited in that those studies are exploratory and not inferential. That is, those studies explored the coping strategies used and examined the frequency of each strategy, but they did not show how coping strategies influence or are influenced by other variables. A study of 240 Chinese cancer patients undergoing radiotherapy treatment after their first surgery found that the most frequently used coping strategy by this group of patients was confrontation and the least employed strategies were fatalism and avoidance (Li & Sun, 2011). Another study of 300 Chinese cancer patients undergoing chemotherapy found that these patients used a combination of different coping strategies: Confrontation was the most frequently employed coping strategy whereas emotion-focused coping, fatalism, and avoidance were the least employed strategies (Zhang & Li, 2007). Although the results are similar, they are limited in that these researchers only examined the frequencies of coping strategies employed and did not link situation-specific coping to other variables, such as received social support and appraisals. The limitation of those studies is that they only examined one variable, situation-specific coping strategies, and ignored other variables that are important for understanding how coping influences growth. For instance, how social support influences the coping strategies used or how appraisals of the disease influence how cancer patients cope remains unclear. Therefore, there is need to investigate predictors of situation-specific coping and how this coping is related to growth among cancer patients in China.

Social support and coping. Previous studies found that social support and coping strategies are related. In one study, satisfaction with the social support provided by family members, with social support from friends, and with social support from doctors was positively associated with the use of engagement coping strategies: the more support, the more active the patients were. Satisfaction with social support from family members was negatively associated with disengagement strategy (Zhu, Jiang, Zhu, & Zhao, 2000), so the more support from a family member a patient receives, the less likely he or she was to disengage. Social support is positively correlated with engagement coping strategies (Li & Sun, 2011). And social support is negatively correlated with using avoidance strategies and fatalism (Li & Sun, 2011). Therefore, based on the findings of these studies, it may be possible that higher levels of social support predict higher levels of adaptive coping strategies (e.g., planning, active coping, positive reframing).

H1: Among cancer patients in China, higher levels of social support predict higher levels of adaptive coping.

Appraisals

According to Leventhal's self-regulation theory (Leventhal, Myer, & Nerenz, 1980; Leventhal, Nerenz, & Steele, 1984), "People make sense out of a health threat by developing their own cognitive representations about the illness and its treatment, on the basis of information (from health care professionals, family/friends, and media) and previous experiences with the illness" (Hopman & Rijken, 2015, p. 11). The theory posits that there are seven dimensions to people's illness perceptions: identity (what the disease is and what its symptoms are), cause (perceptions of what causes the disease), timeline (whether the disease is acute or chronic), control (the degree of the disease's controllability by self or by health care professionals), consequences (how one's life will be influenced), coherence (patients' knowledge of the disease), and emotional representations (the degree of anxiety or depression experiences) (Hopman & Rijken, 2015). So the theory is about one's appraisal or evaluation of a life event, or in this study, a cancer diagnosis.

Appraisals and coping. In theory, coping strategies are influenced by perceptions about the illness, and several empirical studies have provided evidence of this relationship (Hopman & Rijken, 2015; Jensen et al., 2014). Hagger and Orbell (2003) conducted a meta-analysis of illness representations and concluded that the way people evaluate their illness affects how they cope with the illness. A study guided by the self-regulation model investigated how 50 head and neck cancer patients evaluated their illness. It found significant positive associations between baseline evaluation of the consequence (i.e., influences on one's life) of the illness and active planning strategy, as well as the positive association between emotional representation (i.e., the degree of anxiety or depression) and active coping (Lewellyn & McGurk, & Weinman, 2007). Hopman and Rijken (2015) conducted a study on the relationship between illness evaluation and coping strategies among 325 cancer patients in the Netherlands. They found that more passive ways of coping were more often used by patients who evaluated their illness as "long-lasting, more emotionally burdening, and having more negative consequences" (Hopman & Rijken, 2015, p. 11). Thus, many aspects of illness representations have been examined in terms of their relationship with coping strategies. However, uncontrollability appraisal, which is the mental evaluation of how uncontrollable the situation is by himself or herself and by others such as healthcare professionals, an important aspect illness representations according to Leventhal's self-regulation theory (Leventhal et al., 1980; Leventhal et al., 1984), to the best of my knowledge, has not been examined. Thus, one of the goals of the study is to examine the role of uncontrollability appraisal in coping and posttraumatic growth. Therefore, the following hypothesis is proposed:

> H2: Among cancer patients in China, lower levels of uncontrollability appraisal predict higher levels of adaptive coping.

Coping and psychological well-being. Several studies have investigated the relationship between patients' coping strategies and their physical and psychological health. For instance, a meta-analysis was conducted about the coping strategies that breast cancer patients have used; this analysis included 78 studies across 11,948 participants. The results of the analysis indicated that acceptance coping strategy and positive thinking coping strategy were both associated with improved psychological and physical health, whereas disengagement and avoidance coping strategies were associated with worse psychological and physical health (Jensen et al., 2014; Kvillemo & Branstrom, 2014). Following this line of research on coping strategies and psychological well-being, this study will investigate the relationship between coping strategies and posttraumatic growth among cancer patients.

Adaptive coping strategies and psychological outcomes. Previous studies have examined the relationship between adaptive coping strategies and psychological outcomes. Adaptive coping strategies include, but are not limited to, active acceptance, adaptive coping, information seeking, confrontation, and using humor. Active acceptance at the stage of cancer diagnosis of breast cancer predicted patients' more positive adjustment over time (Stanton, Danoff-Burg, & Huggins, 2002). Adaptive coping has been positively associated with lower levels of anxiety and depression (Mishel & Sorenson, 1993). The coping strategy of information seeking has been associated with better self-reported psychosocial adaptation among breast cancer survivors (Lavery & Clarke, 1996). Fighting spirit and confrontation strategy was found to be a factor leading to longer survival among cancer patients and to be negatively associated with cancer patients' anxiety, depression, and emotional distress (Livneh, 2000). But expressing feelings was found to be associated with higher levels of depression and greater psychological distress (Livneh, 2000). Among 59 patients diagnosed with early-stage breast cancer, humor was associated with lower distress (Carver et al., 1993). Thus, it could be generalized that the more use of adaptive coping strategies predicts better psychological health.

Adaptive coping and posttraumatic growth. Researchers have found that adaptive coping is one of the predictors of posttraumatic growth. In a study investigating posttraumatic growth in breast cancer survivors, marital status, employment, age, type of cancer, perceived intensity of the disease, and adaptive coping significantly predicted posttraumatic growth in relationships with others. These same variables predicted growth in new possibilities in life. And employment, age, perceived intensity of disease, and adaptive coping significantly predicted growth in the appreciation of life (Bellizzi & Blank, 2006). Other studies found positive relationships between some other coping strategies and posttraumatic growth. For instance, positive reframing and using religious coping strategies were significant predictors of posttraumatic growth among cancer survivors (Schmidt, Blank, Bellizzi, & Park, 2011); acceptance coping strategies were significant predictors of posttraumatic growth among adolescent cancer survivors (Turner-Sack, Menna, & Setchell, 2012). These studies indicated that adaptive coping strategies, such as acceptance, active coping, positive reframing, and planning, were needed for patients to experience posttraumatic growth. Therefore, the following hypothesis is proposed:

> H3: Among cancer patients in China, higher levels of adaptive coping predict higher levels of posttraumatic growth.

Uncontrollability. Based on Tedeschi and Calhoun's (2004) posttraumatic theory, one's cognitive processing or appraisal plays a critical role in the process of posttraumatic growth. Based on existing research, it is not clear how uncontrollability appraisal influences posttraumatic growth or whether there are mediators between the uncontrollability appraisal and growth. For instance, given the previously established relationship between appraisal and coping, it is quite possible that an uncontrollability appraisal influences coping strategies, which in turn influence posttraumatic growth. In other words, there may be an indirect effect of uncontrollability appraisal on posttraumatic growth. Further, given the relationship between social support and coping, there may be an indirect effect of social support on posttraumatic growth, with coping as the mediator.

H4a: Engagement coping is the mediator between social support and posttraumatic growth (PTG), with a significant indirect effect of social support on PTG through adaptive coping.

H4b: Engagement coping is the mediator between uncontrollability appraisal and posttraumatic growth (PTG), with a significant indirect effect of uncontrollability appraisal on PTG through adaptive coping.

Although some studies have examined the effect of social support and coping on posttraumatic growth, and there are even studies on the combined contribution of social support and coping strategies on posttraumatic growth (e.g., Scrignaro, Bami, & Magrin, 2011), multiple regression has been mostly used by studies to test the relationships; no specific model has been proposed and tested to further explicate the relationship among the variables. One study tested the moderating role of different sources of perceived social support (i.e., global, family, friends, and private person) on the relationship between dispositional optimism and posttraumatic growth (Bozo, Gundogdu, & Buyukasik-Colak, 2009), but the factors included in each moderation test were limited, and coping was not included in the models. Structural equation modeling has rarely been used to model the relationships between social support, coping, and appraisals. One study (Morris & Shakespear-Finch, 2011) used SEM to model rumination (intrusive rumination, deliberate rumination of benefits, and life purpose rumination), trauma severity, distress, social support coping, and posttraumatic growth, treated social support and coping as one variable (i.e., social support coping). Therefore, the relationships between social support, coping, and growth remain unclear. To address these relationships, the following are the hypotheses that have been proposed, and the theoretical model is presented in Figure 1.

H1: Among cancer patients in China, higher levels of social support predict higher levels of adaptive coping.

H2: Among cancer patients in China, lower levels of uncontrollability appraisal predict higher levels of adaptive coping.

H3: Among cancer patients in China, higher levels of adaptive coping predict higher levels of posttraumatic growth.

H4a: Engagement coping is the mediator between social support and posttraumatic growth (PTG), with a significant indirect effect of social support on PTG through adaptive coping.

H4b: Engagement coping is the mediator between uncontrollability appraisal and posttraumatic growth (PTG), with a significant indirect effect of uncontrollability appraisal on PTG through adaptive coping.

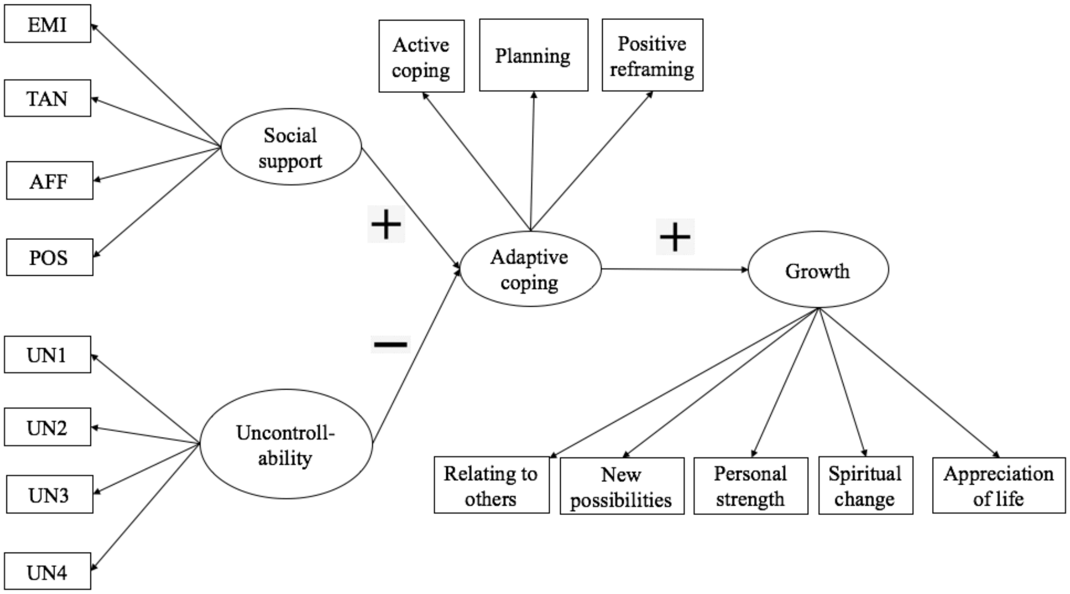

Figure 1. A model of posttraumatic growth. (EMI=emotional/informational support; TAN=tangible support; AFF=affection support; POS=positive interaction.)

Summary

This chapter has explained the theoretical framework of Study 2. The purposes of Study 2 are to explore predictors of posttraumatic growth and to build up a model to explain the relationship among social support, uncontrollability appraisal, adaptive coping strategies, and posttraumatic growth. In describing the theoretical framework, dispositional coping and situation-specific coping were distinguished, and situation-specific coping strategies were discussed. Social support, appraisals, and their relationships with posttraumatic growth were reviewed. Next, theories of growth and determinants of growth were described. Finally, research questions and hypotheses, along with a theoretical model to explain the relationship between the variables, were presented.

CHAPTER 4

METHOD OF STUDY 2

Data Collection and Participants

This study was approved by the Temple University Institutional Review Board (IRB) and approval for data collection was granted by the hospital prior to the study. The data collection was conducted through face-to-face interactions in a cancer hospital in China. All interactions were in Chinese (Mandarin). Three trained researchers and nurses were responsible for recruiting participants. Because the participants were cancer patients, nurses were needed to evaluate the physical and psychological condition of each patient to decide whether the patient could be recruited as a participant. Nurses were considered the most appropriate people to perform patients evaluation because, compared to doctors, nurses have more interaction with patients in hospitals, and nurses were more accessible to patients. If patients had questions about the questionnaires, they could ask the nurses. Hard copies of the questionnaire along with pens were provided to each of the participants.

A total of 350 potential participants were approached in the target hospital during the two rounds of data collection. During the first round, between November 19, 2015 and December 23, 2015, 182 completed questionnaires were collected. During the second round, between January 5, 2016 and January 20, 2016, another 38 completed questionnaires were collected. Due to the participants’ perceived physical or mental condition or both, the response rate was relatively low, compared to the possible 350 patients who could have participated. Although the study involved a self-administered questionnaire, if needed the survey administrator read the questions to the participants. If a participant completed 70% of a questionnaire, it was included in the study. Therefore, for Study 2, a total of 220 completed questionnaires were collected. A table reporting the demographics of the participants is provided in Chapter 4.

Participants were cancer patients in a cancer hospital in China. The eligibility criteria for participation were that patients had received a clear and true cancer diagnosis (In China, it is possible that some patients do not know their diagnosis because their family want to withhold the information and would not let the patients know their diagnosis), were18-years old or older, were deemed by their nurses to be literate enough to understand the questionnaire, and were mentally as well as physically capable of participating in the study. However, many participants approached refused to participate in the study due to perceived physical or psychological discomfort or both. They were informed of the purposes of the study, and they were assured that the participation was voluntary and they could withdraw at any time. They were also assured that the personal data collected would not be shared with anyone apart from the researcher and would be kept confidential.

Measures. Before administering the questionnaire, information about the patients was sought from the nurse managers regarding the type of cancer and stage of cancer the patient had been diagnosed with. With patients' permission, the answers to those questions could be found in patients' medical charts. The were two reasons for accessing the information from the patients' charts rather than from the patients. First, the cancer type and cancer stage both involve technical terms, and some patients were not clear about their cancer stage. Thus, accessing information from medical charts would ensure information accuracy. Second, avoiding directly asking patients' cancer type and cancer stage could help minimize the psychological discomfort that patients might feel when they were filling out the questionnaire.

The questionnaire included several sections including demographic information, social support, uncontrollability appraisal, ways of coping, and growth. Demographic information included the following: gender, age, educational level, monthly income, hospital stay, perceived physical health conditions, level of pain. The English version of the scales in the questionnaire were translated into Chinese and then were back translated into English to check for consistency and equivalency in meaning. But English versions were not used. This process was used to ensure language and conceptual equivalency. Moreover, in the questionnaire, the term *cancer* was replaced with *disease* to avoid distressing the participants, because in some East Asian countries, including China, the use of euphemisms for sickness is advocated, as was confirmed in Study 1. Then the questionnaire was proofread and revised by health care professionals in China and pre-tested among 10 cancer patients in China before being administered to the participants.

Social support. Social support was measured using a 19-item instrument, the Medical Outcomes Study (MOS) social support survey (Sherbourne & Stewart, 1991). The instrument has 5 subscales: emotional/informational support (EMI, 7 items), tangible support (TAN, 4 items), affection (AFF, 4 items), positive interaction (POS, 4 items). Participants were asked to evaluate the following: “After your diagnosis, how often is each of the following kinds of support available to you as you need it?” An example of EMI is “Someone to turn to for suggestions about how to deal with a personal problem.” An example of TAN is “Someone to help you if you were confined to bed.” An example of AFF is “Someone who shows you love and affection.” An example of POS is “Someone to get together with for relaxation.” Participants responded to items using a 5-point Likert scale (1 = *None of the time* to 5 = *All of the time*). The instrument has good validity and reliability (Sherbourne & Stewart, 1991); the overall Cronbach’s alpha for this study was .95, specifically, EMI: α = .90, TAN: α = .90, AFF: α = .89, POS: α = .93.

Uncontrollability appraisal. Appraisal of uncontrollability was measured using the uncontrollability subscale of the stress appraisal measure (Peacock & Wong, 1990). The four items of the scale were the following: “I feel totally hopeless,” “I think the outcomes are uncontrollable,” “I think it is beyond anyone’s power,” and “I think the problem is unresolvable.” The participants were asked to think about how they felt after they heard the diagnosis and then answer the questions using a 7-point Likert scale (1 =

Not at all to 7 = *A great amount*). The Cronbach's alpha for this study was .87.

Coping. There are many measures of coping including, but not limited to, the Coping Orientations to Problems Experienced Scale (COPE) (Carver, Scheier, & Weintraub, 1989) and brief COPE (Carver, 1997), Medical Coping Modes Questionnaire (MCMQ) (Feifel, Strack, & Nagy, 1987), Ways of Coping Questionnaire (WCQ) (Folkman & Lazarus, 1980), Jalowiec Coping Scales (JCS) (Jalowiee, 1984), Mental Adjustment to Cancer Questionnaire (MAC) (Watson, Greer, Young, Inayat, Burgers, & Robertson, 1988) and Mini-MAC (Hulbert-Williams, Hulbert-Williams, Morrison, Neal, & Wilkinson, 2012), Multidimensional Coping Inventory (Endler & Parker, 1990), and Coping Strategies Inventory (CSI) (Tobin, Holroyd, Reynolds, & Wigal, 1989). The majority of studies on coping have employed quantitative research and have used one or more of these scales to measure coping, although a few studies have employed qualitative means to explore coping strategies (e.g., Al-Azri, Al-Awisi, Al-Rasbi, & Al-Moundhri, 2014; Asiedu, Eustace, Eton, & Breitkopf, 2014).

COPE (Carver et al., 1989) can be used to measure both dispositional coping styles and situational coping strategies (Carver, Scheier, & Weintraub, 1989). This measure comprises five scales that measure adaptive coping (i.e., active coping, planning, suppression of competing activities, restraint coping, seeking of instrumental social support), five scales that measure emotional-focused coping (i.e., seeking emotional social support, positive reinterpretation, acceptance, denial, turning to religion), and four scales measuring venting of emotions, behavioral disengagement, mental disengagement, and drug disengagement) (Carver et al., 1989). Although it has been applied to a variety of health-relevant studies, the 60-item Cope measure is somewhat redundant, and participants, especially cancer patients, may become impatient when filling out the survey (Carver, 1997). Thus Brief COPE was designed to overcome the shortcomings of full COPE questionnaire, while still assessing the range of coping strategies. The Brief COPE uses 28 items across 14 scales, to measure active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame. Brief COPE (Carver et al., 1997) was used in the study.

There are several reasons why the Brief COPE instrument was chosen to measure coping strategies. First, Brief COPE (Carver, 1997) can be used to measure situation-specific coping, which is an essential aspect of this study. Second, compared to other coping measurements (e.g., MCMQ, MAC, mini MAC, and CSI), it is the most comprehensive measure for covering a wide range of coping strategies. Third, as its name suggests, it has only 28 items in the questionnaire, so it is relatively brief compared to other coping instruments, such as the Ways of Coping Questionnaire (Feifel et al., 1987), which has 66 items, and COPE, which has 60 items. Fourth, most other coping instruments are not specifically designed to assess coping among cancer patients, and some of their items are too specific and may not apply to cancer situations. For instance, for the subscale of avoidance-oriented coping of the MCI instrument, there are items such as “visit a friend” or “see a movie” or “take time off and get away from the situation” or “treat myself for a favorite food or snack”; these specific behaviors may not be applicable to cancer patients, especially in China. Moreover, these behaviors may not necessarily indicate the use of avoidance-orientated coping, because a specific behavior can be used for different purposes. For instance, behaviors such as “take some time off and get away from the situation” and “treat myself for a favorite food or snack” could indicate that the person needs to get some rest and re-energize in order to be more engaged in adaptive coping rather than to avoid the problem. Therefore, Brief COPE was determined to be the best instrument for use in this study to measure specific coping strategies.

Participants were asked to think about what they had done to cope with their disease and to rate each item on a 7-point Likert scale (1 = *not at all* to 7 = *a great amount*). An example of an item measuring active coping is, “I’ve been taking action to try to make the situation better.” An example of an item measuring positive reframing is, “I’ve been looking for something good in what is happening.” The Brief COPE has good psychometric properties (Carver, 1997). The Cronbach’s alpha of the Brief COPE measure for this study was .87.

Growth. Posttraumatic growth was measured using the posttraumatic growth inventory (PTGI, Tedeschi & Calhoun, 1996). The 21-item inventory includes five factors: relating to others (7 items), new possibilities (5 items), personal strength (4 items), spiritual change (2 items), and appreciation of life (3 items). An example of an item measuring relating to others is “I have a greater sense of closeness with others.” An example of an item measuring new possibilities is “I am more likely to try to change things which need changing.” An example of an item measuring personal strength is “I know better that I can handle difficulties.” An example of an item measuring spiritual change is “I have a better understanding of spiritual matters.” An example of an item measuring appreciation of life is “I can better appreciate each day.” Participants were asked to indicate the degree to which change occurred in their life as a result of the disease using a 6-point Likert scale (0 = *I did not experience this change as a result of my disease* to 5 = *I experienced this change to a very great degree as a result of my disease*). Good reliability and validity of the instrument has been reported previously (Tedeschi & Calhoun, 1996). The Cronbach’s alpha of the instrument for this study was .96.

Data Management and Data Analysis

The procedures of data management were based on Tabachnick and Fidell’s (2007) suggestions on how to manage data (e.g., checking statistical assumptions) before data analysis. Before analysis, the percentage of missing data, normality, and outliers of each variable were checked. The missing data were below 5% and the cases were deleted. Then, after the deleted cases, the sample size was reduced from 220 to 208. Descriptive statistics, such as means, medians, kurtosis, skewness, and histograms were examined to ensure that statistical assumptions were met. Multivariate normality, multivariate outliers, linearity, and collinearity were also checked before the structural equation modeling was performed. Using Mahalanobis Distance, multivariate outliers were detected and deleted. The final sample size was 201 for the SEM analysis.

Hierarchical multiple regression analyses were performed and Mplus (Muthen & Muthen, 1998-2010, version 6.11) was employed to conduct maximum likelihood structural equation modeling. Since a structural regression model with its measurement structural components was hypothesized, it was recommended that a two-step modeling should be used instead of one-step modeling (Kline, 2011). A two-step SEM was used so that first, the model was respecified as a confirmatory factor analysis measurement model and then analyzed. Second, the hypothesized structural regression model was analyzed. Bootstrapping was used when mediation was tested using Mplus, because the bias in the standard errors associated with the tests of the indirect effects needs to be addressed and bootstrapping procedure is one possible solution (Hayes, 2013).

Something Challenging About Data Collection

Although more than 350 questionnaires were distributed, the response rate was relatively low (the initial *N* = 220). Therefore, a second round of data collection was conducted to reach the target goal of 200 participants. When studies involve cancer patient, their physical and psychological conditions need to be taken into account, so much more time for data collection should be planned, compared to collecting data among non-patients. Moreover, a lot of missing data were found in the completed questionnaires. Some participants completed the first page about demographic information. However, many pages with long scales were left blank. Some participants complained that the questionnaire was too long to complete. So those questionnaires that had a lot of missing data were not used in the study. This was another reason why a second round of data collection was conducted.

One thing that needs to be improved for future work on this subject is questionnaire design. One question asked how long the patient had been in the hospital. It asked patients to indicate the time spent in hospital, but it did not specify the unit of the time, whether it was days or weeks, or months. So many patients indicated days while several others indicated weeks or months. Due to this discrepancy, estimated calculations were needed so that all the answers used the same unit, per day. Additional pilot studies could have been conducted among a diverse sample of participants so issues of questionnaire design could have been addressed.

Summary

The focus of this chapter is on the methods used in Study 2. Specific data collection procedures were described. How the participants were recruited was also described. The questionnaire comprised the demographic information, the medical outcome study social support survey, the appraisal uncontrollability scale, the Brief COPE scale, and the posttraumatic growth inventory. Why whose measures were selected among other measures were provided. The results of the study will be analyzed using hierarchical multiple regression and structural equation modeling. Some challenges met during the data collection process were also described. One of the challenges mentioned was that the questionnaire was too long for cancer patients.

CHAPTER 5

RESULTS OF STUDY 2

Sample Characteristics

The final sample size was 201 participants. The age ranges between 22 to 77 years old (*M* = 50.04, *SD* = 11.15). The majority of the participants were female (81.1%), and the majority of the participants (76.1%) were diagnosed with breast cancer. More characteristics of the sample are presented in Table 1.

Hierarchical Multiple Regression

Hospital stay and income data were not normally distributed. Therefore, hospital stay was dichotomized into two categories: “less than one year” and “more than one year,” and income was dichotomized into two categories: “below 2000 RMB” (below 290.28 USD) and “above 2000 RMB” (above 290.28 RMB). In Table 2, in all of the models, age was a significant predictor of posttraumatic growth, in the direction that when age increases, the level of posttraumatic growth decreases. Other demographic variables, such as cancer type, cancer stage, and income, had no significant relationship with posttraumatic growth. Model 4 indicates that, controlling for demographic factors such as age and education, social support and adaptive coping were positively correlated with posttraumatic growth, as indicated by the standardized coefficients in Table 2. Uncontrollability, however, was not significantly correlated with posttraumatic growth.

Table 1

*Sample Characteristics (*N*=201)*

Characteristics	N	%	Mean (Median)	*SD*
Sex				
Male	38	18.9		
Female	163	81.1		
Age (22-77)			50.04 (50.00)	11.15
Education				
Elementary and below	39	19.4		
Middle school	93	46.3		
Associate's degree	38	18.9		
Bachelor's degree	26	12.9		
Master's and above	5	2.5		
Monthly income (in RMB)				
1000 and below	73	36.3		
1001-2000	57	28.4		
2001-3000	38	18.9		
3001-4000	18	9.0		
4001-5000	8	4.0		
5001 and above	7	3.5		
Perceived health				
Very poor	10	5.0		
Poor	58	28.9		
Neither poor nor good	40	19.9		
Good	82	40.8		
Very good	10	5.0		
Level of severity of pain				
Never	23	11.4		
Little	70	34.8		
Somewhat	80	39.8		
Much	23	11.4		
A great deal	4	2.0		
Cancer type				
Breast cancer	183	76.1		

Lung cancer	48	23.9
Cancer stage		
Stage 1	40	19.9
Stage 2	94	46.8
Stage 3	41	20.4
Stage 4	26	12.9
Hospital stay		
Less than 1 year	166	82.6
More than 1 year	35	17.4

Note: 1USD = 6.89 RMB

Structural Equation Modeling

When sample sizes are small, item parcels are preferred when conducting structural equation modeling (Bagozzi & Edwards, 1998; Bagozzi & Heatherton, 1994). A parcel is “an aggregate-level indicator comprised of the sum (or average) of two or more items, responses, or behaviors” (Little, Cunningham, & Shahar, 2002, p. 152). Given that the social support instrument has 19 items (4 subscales), the active coping measure has 6 items (3 subscales), and posttraumatic growth inventory has 21 items (5 subscales), and given the small sample size (final *N* = 201) for the SEM analysis, item parceling was employed. Thus, according to the constructs or subscales of each measure, four parcels were created for the social support measure, three parcels for the adaptive coping measure, and five parcels for posttraumatic growth measure. Each parcel was comprised of the items in the subscale. For example, after item parceling, posttraumatic growth inventory has five parcels or five aggregate-level indicators, including relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. The parcel of appreciation of life comprised the average of all the items measuring appreciation of life.

Table 2

*Hierarchical Multiple Regression with Posttraumatic Growth as Dependent Variable (*N*=201)*

	Beta	p	R^2	Adjusted R^2	R^2 Change	p of R^2 change
Model 1			.07	.02		
Sex	-.11	.21				
Cancer type	.09	.30				
Cancer stage	.02	.78				
Age	-.19	.02*				
Education	-.15	.10				
Income	.10	.25				
Hospital stay	-.06	.45				
Health	.06	.49				
Pain	-.08	.31				
Model 2			.07	.02	.00	.94
Sex	-.11	.22				
Cancer type	.09	.30				
Cancer stage	.02	.79				
Age	-.19	.02*				
Education	-.15	.10				
Income	.10	.25				
Hospital stay	-.06	.45				
Health	.06	.51				
Pain	-.08	.32				
Uncontrollability	-.01	.94				
Model 3			.14	.09	.07	<.001
Sex	-.16	.06				
Cancer type	.13	.12				
Cancer stage	-.01	.94				
Age	-.17	.03*				
Education	-.19	.04*				
Income	.09	.30				
Hospital stay	-.04	.54				

Health	.02	.84				
Pain	-.04	.61				
Uncontrollability	.09	.25				
Social support	.31	<.001***				
Model 4			.16	.11	.03	<.05
Sex	-.14	.10				
Cancer type	.11	.20				
Cancer stage	-.04	.58				
Age	-.17	.03*				
Education	-.20	.03*				
Income	.10	.24				
Hospital stay	-.04	.60				
Health	-.01	.87				
Pain	-.02	.85				
Uncontrollability	.12	.12				
Social support	.25	<.01**				
Adaptive coping	.20	.02*				

Note: **p* < .05   ***p* < .01   *** *p* < 0.001

After item parceling, principal factor analyses were conducted. For the social support measure, a single factor with an eigenvalue of 3.07 was generated, and the factor loadings of the four parcels ranged from 0.80 to 0.93; the factor accounted for 76.81% of the sample variance. Cronbach's alpha of the measure was .85.

For the adaptive coping measure, a single factor with an eigenvalue of 2.59 was generated, and the factor loadings of the three parcels were all 0.93; the factor accounted for 86.19% of the sample variance. Cronbach's alpha of the measure was .92.

For the posttraumatic growth measure, a single factor with an eigenvalue of 3.88 was generated, and the factor loadings of the five parcels ranged from 0.75 to 0.95; the factor accounted for 77.58% of the sample variance. Cronbach's alpha of the measure was.89.

For the uncontrollability appraisal measure, no item parceling was conducted because the scale comprised only four items. A single factor with an eigenvalue of 2.94 was generated, and the factor loadings of the four items ranged from 0.75 to 0.90. The factor accounted for 73.38% of the sample variance. Cronbach's alpha of the measure was .88.

The fit indices of the measurement model are: $X_M^2(98) = 157.99$, $p < .01$, RMSEA = .05 (90% CI .03-.07), CFI = .98, TLI = .97, SRMR = .05. According to Hu and Bentler's (1999) recommendations of cutoff criteria for fit indexes, a combination of the fit indexes should be reported, including ML-based TLI and CFI both with a cutoff value close to .95, SRMR with a cutoff value close to .08, and RMSEA with a cutoff value close to .06. Therefore, the fit indexes were acceptable, and the data fit the measurement model. The factor loadings and error variances for the measurement model are presented in Table 3. The fit indexes of the structural regression model are also acceptable: $X_M^2(100) = 162.10$, $p < .01$, RMSEA = .05 (90% CI .03- .07), CFI = .98, TLI = .97, SRMR = .06. The proposed model with standardized coefficients is shown in Figure 2.

Active coping was significantly predicted by social support ($\beta = .34$, $p < .001$). Specifically, when social support level was high, the patients were more likely to use adaptive coping strategies. Therefore, H1, which predicted that higher levels of social support lead to higher levels of adaptive coping, was supported.

Active coping was significantly predicted by uncontrollability appraisal (β = - .27, p < .001). When the level of uncontrollability appraisal was high, the patients were less likely to use adaptive coping strategies. Therefore, H2, which predicted that lower levels of uncontrollability appraisal lead to higher levels of adaptive coping, was supported.

Posttraumatic growth was positively correlated with adaptive coping (β = .28, p < .001). Therefore, H3, which predicted that higher levels of adaptive coping lead to higher levels of growth, was supported.

Mediations. A bootstrapping procedure was used when mediation was tested using SEM (Hayes, 2013). Active coping was hypothesized as a mediator in the relationship between social support and posttraumatic growth (H4a), as well as between uncontrollability appraisal and posttraumatic growth (H4b). Results indicated that coping was a mediator between social support and posttraumatic growth (β = .10, p < .05), and coping was also a mediator between uncontrollability appraisal and posttraumatic growth (β = - .08, p < .05). Therefore, H4a, which predicted that coping was a mediator between social support and growth, and H4b, which predicted that coping was a mediator between appraisal and growth, were both supported.

Table 3

*Maximum Likelihood Estimates of Factor Loadings and Residuals (*N*=201)*

	Factor Loadings			Measurement errors		
Indicator	Unst.	SE	St.	Unst.	SE	St.
Social Support						
EMI	1.00[a]	0.00	.69	17.28	1.91	.52
TAN	0.73	0.07	.84	3.83	0.42	.30
AFF	0.60	0.05	.95	0.65	0.17	.10
POS	0.80	0.07	.85	3.88	0.51	.28
Uncontrollability						
UN1	1.00[a]	0.00	.64	0.17	0.18	.59
UN2	1.42	0.14	.89	0.64	0.11	.22
UN3	1.42	0.14	.86	0.85	0.13	.27
UN4	1.36	0.14	.83	0.96	0.13	.31
Coping						
Active coping	1.00[a]	0.00	.89	1.18	0.18	.21
Planning	0.96	0.06	.89	1.04	0.16	.20
Positive reframing	1.01	0.06	.89	1.16	0.18	.21
Growth						
Relating to others	1.00[a]	0.00	.92	11.90	1.52	.16
New possibilities	0.76	0.03	.94	4.43	0.68	.11
Personal strength	0.62	0.02	.95	2.37	0.41	.09
Spiritual change	0.25	0.02	.76	2.88	0.30	.42
Appreciation of life	0.26	0.02	.65	5.66	0.58	.58

Note. EMI=emotional/informational support; TAN=tangible support; AFF= affection support POS= positive interaction. Unst. = unstandardized; St. = standardized. Standard estimates for measurement errors are proportions of unexplained variance. [a]Not tested for statistical significance. For all other unstandardized estimates, $p < .05$.

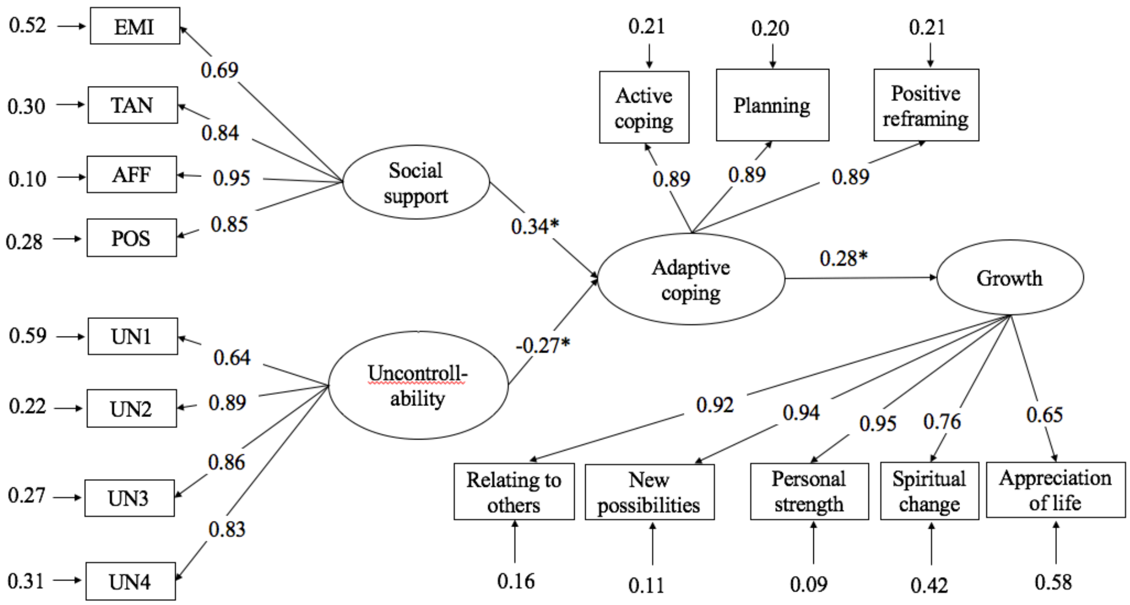

Figure 2. A model (with standardized coefficients) of posttraumatic growth

Alternative models. Alternative models were also tested. According to Tedeschi and Calhoun's (2004) theory, social support and appraisal have been theorized to influence posttraumatic growth. But they did not specify whether social support and appraisal have a direct influence or indirect influence on posttraumatic growth. Moreover, other studies (e.g., Schrovers et al., 2010) have reported a direct influence of social support on posttraumatic growth. Therefore, in the alternative model, the direct influence of social support and appraisal was tested. Two more direct paths were added to the model. However, neither path was significant, from uncontrollability to growth ($\beta = .11$, $p = .18$), or from social support to growth ($\beta = .15$, $p = .07$). Active coping did not moderate the relationship between social support and growth ($\beta = .02$, $p = .80$). Active coping did not moderate the relationship between uncontrollability and growth ($\beta = .57$, $p = .11$).

Summary

The results of the hierarchical multiple regression indicated that, controlling for demographic factors such as age and education, social support and adaptive coping were positively associated with posttraumatic growth. Uncontrollability, however, was not significantly associated with posttraumatic growth. The results of the structural equation model demonstrate that adaptive coping was a mediator between social support and growth and a mediator between uncontrollability and growth. The implications of these results are discussed in detail in the next chapter.

CHAPTER 6

DISCUSSION AND CONCLUSION

In this chapter, the results of Study 2 (including the results for the regression analysis and the SEM analysis) are discussed in detail along with the theoretical and practical implications of the results. These results are compared with previous studies. Discussions about how these results expand the theory about posttraumatic growth are presented, and practical strategies on how to facilitate cancer patients' posttraumatic growth are discussed. Finally, the conclusions examine the theoretical and practical implications of both Study 1 and Study 2.

Implications of Regression Results

Research Question 1 asked about the predictors of posttraumatic growth among cancer patients. Age, education, perceived availability of social support, and adaptive coping were all significant predictors of posttraumatic growth among cancer patients in China. Specifically, individuals who were younger experienced higher levels of posttraumatic growth. Individuals with less education also experienced higher levels of posttraumatic growth. As did patients who received more social support. And patients who used adaptive coping reported higher levels of posttraumatic growth. In summary, younger age, lower education levels, higher levels of social support, and higher levels of adaptive coping were all predictors of greater posttraumatic growth.

In this study, age was negatively correlated with posttraumatic growth in that younger patients were more likely than older patients to experience posttraumatic growth. This result supports Tedeschi and Calhoun’s (2004) posttraumatic growth theory, which predicts that, compared to much older people, younger people will report more growth, because they may be more open to learning and change. The result also agrees with a longitudinal study among 206 long-term cancer survivors (Schroevers et al., 2010) and with a study predicting posttraumatic growth in breast cancer survivors (Bellizzi & Blank, 2006), both of which found age was negatively associated with posttraumatic growth. However, another explanation is also reasonable: Compared to older people, younger people may perceive that they will live longer, and therefore, they may be more motivated to find a more positive outlook during the process of adapting to their illness (Linley & Joseph, 2004).

As predicted by the theory, social support was positively correlated with posttraumatic growth among cancer patients. In this study, the perceived availability of social support was tested, and it was found to be a predictor of growth. The result supports the findings of one study that tested the relationships among perceived social support, dispositional optimism, and posttraumatic growth (Bozo, 2009). In Bozo’s (2009) study, each specific source (i.e., family, friends, and a private person) of social support was a significant predictor of posttraumatic growth among postoperative breast cancer patients (Bozo, 2009). Another study found that breast cancer specific social support was a positive predictor of change in posttraumatic growth, but general social support was not

(McDonough et al., 2014). However, McDonough and colleagues' measure of general social support was different from the measure used in this study. In their measure of social support, the number of individuals who provide social support, social support satisfaction, and their attitudes towards obtaining social support and five types of social support (i.e., listening, task challenge, emotional, reality confirmation, and tangible assistance) were all considered. In the current study, four dimensions (i.e., emotional or informational support, tangible support, affection, and positive interaction) of the perceived availability of social support were measured. Although these different measures may have resulted in different results, nonetheless, the findings suggest that general social support, such as spending time with cancer patients or providing meals to the patients when needed, are also helpful for them to experience posttraumatic growth.

The results of the regression analysis indicated that adaptive coping was a positive predictor of posttraumatic growth among cancer patients in China. This result is consistent with the findings of Bussell and Naus's (2010) longitudinal study on coping and posttraumatic growth in breast cancer survivors. The finding also supports another longitudinal study (Scrignaro et al., 2011), which examined the combined contribution of social support and copings strategies in predicting posttraumatic growth in cancer patients, in which adaptive coping measured at time 1 was a positive predictor of posttraumatic growth measured at time 2 (i.e., 6 months later). As indicated in the regression analysis, social support and adaptive coping were predictors of posttraumatic growth among cancer patients, but the indirect relationships between those variables remain unclear. Therefore, the results of SEM provided more insights to the relationships among the variables.

Implications of SEM Results

Hypothesis 1 posited that higher levels of social support lead to higher levels of adaptive coping among cancer patients in China. The result of Study 2 found a positive relationship between social support and posttraumatic growth. The relationship between the two variables has long been examined in the social support literature but has seldom been examined in the context of posttraumatic growth. This result was in agreement with the results found in previous studies on social support. Further, these results expanded what is known about social support by indicating that effective social support is useful in facilitating adaptive coping to promote posttraumatic growth among cancer patients. It might imply that social support is a necessary condition for cancer patients to actively cope with the disease. With the information about the disease, about different treatment plans, about medications, and about diet and nutrition provided by health care professionals, family and friends, cancer patients are better equipped and are more likely to actively cope with the disease. Moreover, emotional social support from family, friends, and support group members may help them better cope with the disease emotionally.

Hypothesis 2 posited that lower levels of uncontrollability appraisal will predict higher levels of adaptive coping among cancer patients in China. This hypothesis was also supported. One study found that challenge appraisal significantly predicted planful problem solving coping, positive reappraisal coping, seeking social support coping, and confrontive coping in breast cancer patients (Bigatti, Steiner, & Miller, 2012). Another meta-analysis examining appraisals and coping among cancer survivors found that patients who appraised their illness as a threat were more likely to use adaptive coping strategies, those who appraised the illness as a harm or loss were more likely to use avoidance coping strategies, and those who viewed their illness as a challenge were more likely to employ approach coping strategies (Franks & Roesch, 2006). However, no studies so far have investigated how appraisals of controllability or uncontrollability predict coping strategies in posttraumatic growth context. This study provided evidence to support the argument that cognitive appraisals can influence people's coping strategies under specific situations and further expanded the literature by pointing out that uncontrollability appraisal and adaptive coping strategies were negatively correlated. It implies that, if patients appraise their condition as uncontrollable by themselves and others, they would be less likely to make an effort (e.g., actively working with doctors) to cope with their conditions. Those patients who hold cancer fatalism beliefs are less likely to appraise their conditions as controllable and thus less likely to actively cope with the situation.

Hypothesis 3 posited that higher levels of adaptive coping predicted higher levels of posttraumatic growth among cancer patients in China. This hypothesis was supported.

Previous studies found positive relationships between some coping strategies and posttraumatic growth. For instance, positive reframing and use of religion coping strategies were significant predictors of posttraumatic growth in cancer survivors (Schmidt, Blank, Bellizzi, & Park, 2011), and acceptance coping strategy was a significant predictor of posttraumatic growth among adolescent cancer survivors (Turner-Sack, Menna, & Setchell, 2012). These studies indicated that adaptive coping strategies, such as acceptance, active coping, positive reframing, planning, and using religion were necessary for patients to experience posttraumatic growth. These findings imply that, if cancer patients actively cope with the disease, they are more likely to experience posttraumatic growth. To help patients experience growth, family and health care professionals should find ways to facilitate cancer patients' adaptive coping.

Hypothesis 4a posited that adaptive coping is a mediator between social support and growth, and Hypothesis 4b posited that adaptive coping is a mediator between uncontrollability appraisal and growth. Both of the hypotheses were supported. Previous studies have examined the mediating role of different coping strategies within the context of growth. For instance, coping strategies, such as positive reframing and religion, were found to mediate the relationship between secure attachment and posttraumatic growth (Schmidt, Blank, Bellizzi, & Park, 2011), assimilative coping was shown to mediate between self-efficacy and growth, and accommodative coping strategies mediated between self-efficacy and acceptance of life imperfection (Luszczynska, Mohamed, &

Schwarzer, 2005). However, no studies have examined the mediating role of adaptive coping between social support and growth.

Theoretical Contributions of Study 2

Contribution 1. This study contributes to this body of research by providing a mechanism to explain why some patients experience posttraumatic growth and why some do not. According to the results of the SEM, adaptive coping positively and directly predicted by social support, and it was negatively and directly predicted by uncontrollability. Growth was positively and directly predicted by adaptive coping, but not directly by social support or uncontrollability. And adaptive coping was a mediator and the two indirect effects (from social support to growth and from uncontrollability to growth) were significant. These results showed that the model is very comprehensive, compared to the regression models used in previous studies. It further identified the relationship between social support, adaptive coping, and posttraumatic growth. Previous studies and the growth theory proposed by Tedeschi and Calhoun (2004) only pointed out that social support and coping are two predictors of posttraumatic growth, but they did not specify how social support is related to coping, which in turn is related to growth. This study specified the mechanism of how social support influences growth.

Contribution 2. These results explained that, although uncontrollability was not directly related to growth, it is still important. Uncontrollability appraisal was a required, but not sufficient, condition to predict the change in posttraumatic growth. Previous studies have found several aspects (e.g., of illness representations proposed in Leventhal's self-regulation theory (Leventhal et al., 1980; Leventhal et al., 1984) were related to coping strategies. But no study has examined the aspect of uncontrollability of illness representations. This study provided evidence that uncontrollability, that is, the self-evaluation of whether the condition is uncontrollable by self and healthcare professionals, is an important aspect of illness representations in that it might influence coping strategies and indirectly influence posttraumatic growth among cancer patients. Therefore, it is very important for health care professionals and family members to communicate with cancer patients so that the patients can have an objective evaluation of the controllability of their conditions. For instance, for some patients who hold cancer fatalism belief, they may think that they and their doctors cannot do anything to control the condition and that they will die soon. This belief keeps them being miserable for the rest of their life. But some types of cancer can be cured, and some types of cancer can have high survival rate, which patients do not know. So it is the responsibility of the doctors to communicate with their cancer patients about the controllability of the disease, as well as what they have done and what they will do to keep the situation under control, so the patient will be more confident in fighting against cancer.

Contribution 3. The current study expands the theory of posttraumatic growth by explaining the mediating role of coping in posttraumatic growth. In other words, if cancer patients do not actively cope with the disease, social support and appraisals will not have influence on growth. Problem-focused coping signifies an intrinsic motivation towards facing the challenge. Without adaptive coping, neither social support nor uncontrollability appraisal would have any influence on posttraumatic growth. It also demonstrates that posttraumatic growth is a complicated change, and implies that both internal factors (e.g., cognitive appraisal, coping) and external factors (e.g., social support) are required for growth to happen. Therefore, families, doctors, and patients should be aware of the variety of factors that can help a cancer patient grow.

Contribution 4. The study expands the growth theory and demonstrates that social support, in general, is helpful in indirectly promoting posttraumatic growth. Tedeschi and Calhoun's (2004) theory emphasized that an individual's social system can provide "new schemas relates to growth, and the empathetic acceptance of disclosures about the traumatic event and about growth-related themes" (p. 12), especially when it comes to mutual support groups. However, given how social support has been conceptualized and operationalized in this study, the result of this research implies that social support in general including tangible support, emotional support and other types of support, an external factor, acts as fertile soil to facilitate cognitive processing and trauma-related rumination. The findings imply that social support in general, not just social support in the specific form of promoting new schemas to the patients, is helpful for cancer patients to experience posttraumatic growth. Telling cancer patients how to think in a positive way can be a helpful form of social support. Helping cancer patients with daily chores and meals and spending time together with them are also helpful forms of social support in promoting posttraumatic growth. Just as Joseph and Linley's (2005) organismic valuing theory of growth through adversity indicated "when the social environment is able to meet the individual's psychological needs for autonomy, competence, and relatedness" (p. 274). This social support in the organismic valuing theory of growth is more broadly defined in that the role of social support is to sustain the psychological needs of an individual who can autonomously perform cognitive processing. Therefore, even if the support provider does not provide perspectives that can be integrated into schema change, as long as the support can sustain the individual's psychological needs for autonomy, competence, and relatedness, then the support is considered helpful for posttraumatic growth

Strategies for Facilitating Posttraumatic Growth

Many studies have focused on posttraumatic stress disorder among cancer patients and on how to relieve their stress or distress level. This study took the perspective of positive psychology to focus on how social support can promote adaptive coping, which in turn can lead to posttraumatic growth among cancer patients. In other words, the results the study showed how social support can help cancer patients find personal benefit and psychological improvement during a time that can be especially difficult. Implications of this research can be generated from the results of the study and practical strategies could be developed to promote posttraumatic growth among cancer patients.

The results of H1, and H4a implied that family members and healthcare professionals should provide tangible support, emotional support, and affection to cancer patients. Specifically, family members, such as spouses and adult children need to provide more tangible support, such as preparing meals, taking care of the patients during IV treatment. Family members also need to provide emotional support based on the patient's needs and characteristics. Expressive patients and silent patients have different emotional needs. Doctors and nurses need to know their patients first by working closely with the family and provide desired informational support. The amount of information given should be based on the patient's needs. If patients get the social support they need, they are more likely to actively cope with the disease which in turn facilitates personal growth.

The results of H1, H2, and H4b implied that healthcare providers and family members need to help the patients have a better understanding of the controllability of their condition. If a patient holds fatalism belief and evaluates their condition as terminal regardless of the stage and type of cancer, then doctors need to work on providing more information, such as treatment plans, the benefits of each treatment, things that have been improved, to the patient to help him or her objectively understand the situation. Family members can help increase patients' level of controllability by communicating the idea that they are working closely with the doctors and with the patients to help keep everything in control, so the patient will have higher confidence in controlling the situation.

The results of H3 implied that coping is very important for cancer patients to experience posttraumatic growth. For those patients who do not actively cope with cancer, doctors and family members need to find ways to encourage adaptive coping among the patients. If doctors have time, they can share with their patients some experience of adaptive coping strategies used by other patients or encourage the patients by mentioning successful stories of fighting cancer. Hospitals may organize some informational sessions for care givers to attend so they can learn those active coping strategies from healthcare professionals as well as from other care givers.

Limitations and Future Studies

The research in this dissertation has several limitations. First, this study used a cross-sectional design, so perceived social support, uncontrollability of the disease after diagnosis, and posttraumatic growth were all measured at the same time. Good theory allows some causal inferences to be made, but this approach limits causal relationships that can be established among those factors. In future studies, longitudinal studies can be designed to test posttraumatic growth at different time points after the cancer diagnosis.

Second, the sample of cancer patients, albeit insightful and unique, also has limitations. Participants were limited to those who received a cancer diagnosis and were mentally and physically capable to participate in the study. Those who were not given honest diagnoses were excluded from the study, and their posttraumatic growth was not measured. Moreover, it may be possible that, for those who were mentally and physically capable of survey participation, their posttraumatic growth pattern was different from those who were too severely ill, both mentally and physically, to participate in the study. Further, only two types of cancer were involved in the study: breast cancer and lung cancer. Although these types of cancer are common in China, other types of cancer deserve equal attention. For instance, the five-year survival rate of pancreatic cancer is very low and there is no way to know whether the relationship between uncontrollability and adaptive coping is still linear.

Another limitation is that female participants outnumbered male participants, partly because of the types of cancer the patients had. The participants all came from one cancer hospital, thus the variability of the participants might be limited, because some patients who could not afford to get the treatment in hospitals got excluded from the study. Another limitation is that, overall, the sample size was quite small, especially for SEM. So, although many coping strategies were measured, only adaptive coping was tested in the model. Therefore, in future studies, participants can be recruited from different sites to increase the sample size, the participants' diversity, and the range of cancer types experienced by the patients.

Another limitation is that the measure of social support only contains 4 dimensions, and one of the dimensions combines information support and emotional support. In future studies, the questionnaire should be adapted to measure the two types of social support separately.

Some important conceptual constructs of the theory were left untested, for instance, personal characteristics, such as optimism; the degree of engagement in cognitive processing; different types of rumination; and the degree of self-disclosure in supportive environment (Tedeschi & Calhoun, 2004). More complex theory-driven models should be developed based on a bigger and more diverse sample.

Another limitation of the study was the timing of measuring posttraumatic growth. Previous studies have used different approaches for when posttraumatic growth was measured. Most studies used cross-sectional designs, whereas others used longitudinal investigations (Koutrouli, Anagnostopoulos, & Potaminos, 2012). Among the longitudinal studies, some studies measured posttraumatic growth two years after the time-one survey, and some studies measured posttraumatic growth eight years after the diagnosis. So far, it does not seem that there is a definite explication on the approximate starting and ending points of posttraumatic growth for cancer patients. It is possible that, at the time of the survey, a participant had not yet experienced posttraumatic growth, or that the growth he or she experienced earlier was not stable or strong enough so that it disappeared before the survey. So the survey approach may not cover and catch the full range of growth, if growth is not a stable or strong experience that lasts for a while. Thus, future studies should consider using an approach that measures growth at different time points. Thought-listing techniques, measured at different time points after diagnosis, or participant observation methods can also be used in future studies.

Finally, specific sources and forms of social support need more attention. Studies have demonstrated that cancer patients need social support from family members, friends, and medical providers (Nazione, 2013). Among sources of social support, medical providers were ranked number one in importance, surpassing the support from family members and friends (Cai, 2008). However, although extensive studies on social support have examined support from family members, friends, and online social support groups, little research has examined the social support coming from medical professionals in medical settings (Cai, 2008; Goldsmith & Albrecht, 2011) or the content and rhetorical features of the supportive communication from this important source. Therefore, future studies should examine the role of specific forms and sources of social support on posttraumatic growth.

Conclusion

This dissertation focused on cancer patients' stress, appraisal, social support, coping, and posttraumatic growth. Study 1 examined cancer patients' perceived stress and social support. Study 2 examined the relationships between social support, uncontrollability appraisal, adaptive coping, and posttraumatic growth. The findings as well as their theoretical and practical implications are generalized below.

Guided by Cutrona and Russell (1990) and Goldsmith's (2004) social support theories, Study 1 identified cancer patients' the major sources of stress due to physical, psychological, or environmental conditions. Study 1 also identified helpful social support as well as unhelpful social support reported by the cancer patients in China in interviews. Moreover, several other interesting findings become salient after analyzing patients' interviews. For instance, the nondisclosure of cancer diagnosis strategy does not apply for all the cancer patients in China. Some of them prefer the use of euphemisms when talking about cancer-related issues. Patients believed that smart phones and social network sites have facilitated doctor-patient communication. Cancer patients consider social workers as a great source of social support. More importantly, Study 1 found that some cancer patients had experienced posttraumatic growth after cancer diagnoses while some had not, which was one of the reasons why Study 1 was conducted.

The findings of Study 1 showed that various types of social support are important for cancer patients. But more importantly, the quality of social support, the sources of social support, as well as how social support is provided, are essential for cancer patients. Theoretically, these results suggest that when examining social support, all those dimensions should be considered to present a full picture of the roles of social support among cancer patients. Just examining the types of social support is not enough because the type of social support may not be effective if it comes from an undesired source and is presented in the wrong way. Unhelpful or inappropriate social support can be an added burden to cancer patients.

Practically, the findings of Study 1 provide a systematic profile of helpful and unhelpful support from a variety of sources so that support providers, such as cancer patients' family and health care professionals, can know how to better help the cancer patients in China to cope with cancer. Support providers can avoid unhelpful or undesired support that can add extra psychological stress and distress to cancer patients.

Based on Study 1, what especially informative to the China context are: personalized disclosure strategy, euphemisms, and the use of WeChat to enhance doctor-patient interaction. Given the tradition of paternalistic approach of health care in China, some patients do not want to know their diagnosis and some family members do not want their patients to know their diagnosis. So doctors need to work with family members and patients to know the patients' attitudes towards disclosure and provide personalized disclosure. They also need to avoid using the words patients consider as taboos. Some tech-savvy patients enjoy using WeChat to interact with doctors, so doctors may come up with cancer education pages on WeChat for patients to access.

Study 2 tested a model to explain the posttraumatic growth experience among cancer patients. The study found that adaptive coping was positively directly predicted by social support and negatively directly predicted by uncontrollability; growth was positively directly predicted by adaptive coping, but it was not directly predicted by social support or uncontrollability; adaptive coping was a mediator between social support and growth as well as a mediator between uncontrollability and growth.

Theoretically, the findings of Study 2 expanded the theory of posttraumatic growth by shedding light on the importance of adaptive-coping in the context of posttraumatic growth: Social support and uncontrollability appraisal do not influence growth unless they are helpful in facilitating adaptive coping among cancer patients. Situation-specific coping can be affected by social support, and social support providers can provide interventions (another form of social support) to promote adaptive coping strategies and change maladaptive coping strategies and improve cancer patients' psychological well-being.

Practical implications for helping cancer patients experience growth can be generated based on the findings of both Study 1 and Study 2. The results of this research should serve as a reference for training programs offered to doctors and family members to help them improve their communication with cancer patients in China. Professional health care providers and family member care providers need to know patients' needs including physical, emotional, psychological, and social. Doctors and nurses can improve patient-centered communication by using social networking sites. Doctors should provide enough informational support to the patients and their family to facilitate adaptive coping among cancer patients. The family members of cancer patients should know the patients' sources of stress and find effective ways to relieve their stress because patients expect to get more emotional support from their families than from others. For family members and friends who can not accompany the patients, providing social support through social networking sites could also be a good form of social support. For example, WeChat was found to be a useful means for connecting with family and friends with patients who were confined to the hospital.

When it comes to cancer diagnosis disclosure, the non-disclosure strategy is not encouraged, and if used, it should be used with caution. If patients clearly state that they do not want to know the diagnosis or family members perceive that patients do not want to know the diagnosis, doctors may not provide the information to cancer patients when they are not ready. Social workers should put more effort into helping cancer patients who do not have sources of social support or do not have enough social support. Hospitals with medical schools can recruit more medical students as social workers to help those cancer patients. Moreover, if possible, doctors can share with their cancer patients some success stories of fighting cancer to facilitate active coping among cancer patients. Hospitals may design programs to help patients learn how to better cope with cancer. Doctors need to work with cancer patients' family members to have a better understanding of patients' needs and provide appropriate informational support to help patients can have an objective appraisal of their conditions.

In summary, this dissertation makes several contributions. One contribution of this dissertation is that it proposed a theory-driven model to examine the relationship among social support, appraisal, coping, and posttraumatic growth. The two studies provided a mechanism to explain posttraumatic growth. The mechanism can be used to explain why some patients experience posttraumatic growth and why some do not. A second contribution of the dissertation is that it tested the role of uncontrollability appraisal on adaptive coping and posttraumatic growth. It specified that uncontrollability appraisal was a required but not sufficient condition for posttraumatic growth. A third contribution of the dissertation is that it tested the mediating role of adaptive coping. The model made clear that neither social support nor appraisal of uncontrollability of the disease had direct influence on posttraumatic growth. However, these findings do not mean that social support and uncontrollability appraisal have no influence on posttraumatic growth. Instead, two indirect effects were demonstrated, one from social support through adaptive coping to posttraumatic growth and another from uncontrollability appraisal through adaptive coping to posttraumatic growth. A fourth contribution of the dissertation was that it expanded the theory of was helpful in indirectly promoting posttraumatic growth by providing evidence that social support in general, was helpful in indirectly promoting posttraumatic growth. A fifth contribution was that based on the results of Study 1 and Study 2, it can be used as a reference for training programs offered to doctors and family members to help them improve their communication with cancer patients in China.

It is very important and meaningful to study cancer patients' social support and posttraumatic growth in China. Healthcare providers and family members need to notice the importance of social support and should avoid providing unhelpful social support to cancer patients. Support providers need to find ways to facilitate adaptive coping among cancer patients and help them get rid of fatalistic beliefs. More research is need on cancer patients in China to help patients find new possibilities in their life and to help them become mentally stronger and more hopeful towards life.

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APPENDIX A

STUDY 1 INTERVIEW PROTOCOL

Questions to be asked in the semi-structured interview with cancer patients:

1. What does cancer mean to you? (e.g., What do you think of the disease? Why do you think people get cancer? Do you think cancer is controllable by you and your doctors? What knowledge do you have about the disease? Where do you obtain most of your knowledge about cancer?)

2. What causes you the most stress as a cancer patient? What specific stressors did you experience during the initial cancer diagnosis phase?

3. What do you think constitutes social support? What should it social support do and what things should people do that would be supportive? Which people should provide what types of social support? (e.g., Who are supposed to provide social support? What type of social support should be provided?)

4. Please tell me about your experiences with different groups of people (e.g., your spouse or partner, other family members, your friends, support group members or others you know who have or have had cancer, your physicians, nurses, and finally, acquaintances or strangers). Who has provided the most helpful support and who have provided unhelpful support? Please describe what you consider helpful support. Not helpful support?

APPENDIX B

PERMISSION LETTER FOR INCLUSION OF COPYRIGHTED MATERIAL

from: Wiley Global Permissions <permissions@wiley.com>

to: "cecilia.cao@gmail.com" <cecilia.cao@gmail.com>

date: Wed, Mar 1, 2017 at 5:22 AM

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