

Effects of Message Planning on Support Message Effectiveness, Nonverbal Behaviors,
and Supporter Stress and Anxiety

by

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ABSTRACT

Emotional support messages can benefit recipients; however, verbal and nonverbal aspects of these messages can vary in effectiveness, and the process of communicating support can be stressful to some supporters. One potential behavior that may yield more effective support messages for recipients while reducing anxiety and stress for supporters is message planning. Thus, planning theory is used to test whether planning influences message effectiveness, nonverbal delivery of messages, self-reported anxiety, and physiological stress markers. Additionally, an individual's trait-level reticence and prior support experiences are predicted to moderate the effects of message planning. One hundred laboratory participants were assigned to either a planning condition or writing distraction task and completed a series of self-report and physiological measures before, during, and after recording an emotional support message to a friend who had hypothetically been diagnosed with a serious form of cancer. Subsequently, a sample of one hundred cancer patients viewed the laboratory participants' videos to provide message effectiveness ratings and four trained coders provided data on nonverbal behaviors from these recorded messages. Findings showed planning leads to more effective messages; however, it also leads to supporters engaging in success bias and inflation bias. Planning also increased vocal fluency, but not other nonverbal behaviors. Likewise, planning attenuated heart rate reactivity, but not other physiological markers. In general, experience and reticence did not moderate these main effects. Theoretical, practical, clinical, pedagogical, and methodological implications are discussed.

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CHAPTER 1

INTRODUCTION & LITERATURE REVIEW

Social support research routinely demonstrates the potential for supportive messages to create psychological benefits (e.g., reappraisal of stressors; Burleson, 2003; Lazarus & Folkman, 1984) and physiological benefits (e.g., cardiovascular, neuroendocrine, and immune system function; Ditzen & Heinrichs, 2014; Uchino, 2006). Specifically, emotional support messages—defined as messages conveying empathy, concern, caring, and reassurance of worth (Goldsmith, 2004)—are a form of supportive communication that has received scholarly attention in many situations, including the months following diagnosis of a serious illness such as cancer. Across decades of social support research, most research has been recipient-centric (House, 1981), generating theories and models that focus on outcomes related to receiving and processing support messages (Burleson, 2009; Burleson & Goldsmith, 1998; Cutrona & Russell, 1990; Holmstrom & Burleson, 2011).

Although understanding the effects of emotional support on recipients is useful, the experience of generating and communicating emotional support is infrequently investigated. Providers' experiences are particularly important, though, considering the quality of a support message may augment or attenuate the positive outcomes associated with receiving support. Therefore, focusing on support providers and the process of generating emotional support messages can illuminate the potential stressors involved in supporting others and which behaviors supporters can engage in prior to communicating emotional support that may predict support message quality.

Communicating emotional support to those facing significant life stressors is often viewed as a necessary component to maintaining functional relationships (Stafford, 2003) and adhering to broader norms of reciprocity (Clark, 1984; Gouldner, 1960; Wentowski, 1981). One such time when support may be sought or expected from one's close relationships is in the months following a cancer diagnosis. Emotional support and other forms of social support are often needed as a person transitions into being a cancer patient and undergoes various treatments to combat the disease (Arora, Finney Rutten, Gustafson, Moser, & Hawkins, 2007). In addition to the physiological aspects of cancer as a disease, it is also imperative to consider the prevalence of mental distress experienced by cancer patients. In fact, one third to one half of cancer patients report significant emotional or psychosocial distress (Carlson & Bultz, 2003). Thus, given the prevalence of cancer and its perceived severity as an illness, the present study will specifically investigate emotional support messages in the cancer context.

Although communicating emotional support during times of need or illness may be an expected behavior in close relationships, communicating emotional support may be viewed by some supporters as a social-evaluative threat, due to the potential of failing to meet the recipient's expectations for support. Indeed, Ray and Veluscek (2017) found in some instances that cancer patients thought less of their supporters if a supportive message was perceived as insensitive. Other would-be supporters who realize the potential for negative consequences if an emotional support interaction were to go awry decide to forgo communicating support altogether (Ray, Manusov, & McLaren, in press). In addition to the potential psychological anxiety one may experience when communicating support, it may also be feasible for supporters to experience physiological

stress in response to the task of communicating support. Prior research demonstrates a consistent association between social-evaluative threats and physiological stress responses such as increased heart rate or increased production of the stress hormone cortisol (Dickerson & Kemeny, 2004; Kirschbaum, Pirke, & Hellhammer, 1993). Therefore, given that some supporters view communicating emotional support as a social-evaluative threat, and social-evaluative threats are tied to anxiety and physiological stress responses, it is worthwhile to consider the ways supporters can simultaneously increase the quality of their emotional support messages while minimizing any anxiety and stress that might be experienced when communicating emotional support.

One specific behavior that may address issues of support quality, anxiety, and stress during the provision of emotional support messages is message planning. Engaging in message planning involves “formulating an intended course of action aimed at achieving some goal...” (Hayes-Roth & Hayes-Roth, 1979, p. 1). Importantly, planning results in the creation of plans, which are cognitive representations of the steps required to achieve a goal (Berger, 1988; Schank & Abelson, 1977). Thus, planning should lead to the creation of plans that can act as a guide for supporters who are seeking to achieve the goal of communicating emotional support effectively to someone diagnosed with cancer. Furthermore, planning often involves anticipating and envisioning how interactions may occur (Allen & Honeycutt, 1997; Edwards, Honeycutt, & Zagacki, 1988; Honeycutt, 1991). Thus, the planning process, to some extent, may restore a sense of control over an upcoming interaction. In the case of communicating emotional support to someone with cancer, the benefits of feeling prepared for the interaction may minimize any experiences of anxiety and/or stress associated with communicating support.

Therefore, the goal of this study is to investigate the effects of supporters' engaging in message planning prior to communicating emotional support messages. Specifically, this study explores how planning affects the quality of the verbal content of emotional support messages, the use of nonverbal immediacy behaviors (i.e., direct gaze, pitch variety) that have previously been tied to effective support messages, the evaluations of emotional support messages by people with cancer, self-reports of anxiety, and the physiological stress response providers may have when communicating emotional support. Planning theory (Berger, 1997) is used to address these issues related to support provision, message quality, and supporter anxiety.

The forthcoming literature review begins with a brief history of social support research. Then, a review of the benefits of emotional support is provided, followed by an overview of the importance of emotional support message quality. Next, planning theory is outlined and adopted as the theoretical framework of this dissertation. Finally, other variables that may work in conjunction with planning to affect outcomes related to effective support messages are discussed and a series of predictions are offered.

Literature Review

Social Support: Perspectives and Typologies

Social support has been a topic of interest across multiple disciplines, including sociology, psychology, and communication. The sociological perspective has approached support as a matter of an individual's integration into a broader social network (Kawachi & Berkman, 2001). Thus, seminal works on support from the sociological perspective have typically focused on the variety of relationships one has, the perceived integration of an individual into communities via these relationships, and the subsequent effects on

health outcomes. For example, Berkman and Syme (1979) conducted a nine-year longitudinal study and found social connectedness to be negatively related to mortality rates (see also Kawachi & Berkman, 2001). That is, greater integration into one's community and the presence of close social ties was associated with lower likelihood to die over the nine years that occurred between an initial study and a follow-up study. Conversely, social support research in the field of psychology has primarily focused on perceived available support as a resource (Cohen & Wills, 1985; Cutrona, Suhr, & MacFarlane, 1990; Kessler, 1992), which influences the appraisal of potentially stressful events (Lazarus & Folkman, 1984) in part by creating a belief that support is available if needed (Bolger, Zuckerman, & Kessler, 2000). Perceived available support is conceptually different from received support in that the former is the belief that support is available if needed, whereas the latter is the actual receipt of support (Reinhardt, Boerner, & Horowitz, 2006). Furthermore, perceived available support differs from social connectedness in that social connectedness is a measure of how many connections one has, and not necessarily measuring these connections in terms of perceived potential supporters who could be called upon if needed.

The sociological and psychological perspectives on social support implicitly recognize communication as a part of support processes, viewing communication as a mediating variable that indirectly leads to outcomes such as social integration and well-being (MacGeorge, Feng, & Burleson, 2011). Furthermore, communication researchers view social support as primarily a communicative process—that is, communication is central to the study of social support and directly related to outcomes of interest. Therefore, communication researchers are concerned with both quantity and quality of

verbal and nonverbal support messages (High & Dillard, 2012; MacGeorge, Feng, & Thompson, 2008). With a focus on message quality and support interactions, scholars in recent years have adopted the term *supportive communication*, defined as “verbal and nonverbal behavior produced with the intention of providing assistance to others perceived as needing that aid” (MacGeorge, Feng, Burlison, 2011, p. 317).

There have also been multiple attempts to distinguish different forms of support (Barrera & Ainlay, 1983; Beets, Cardinal, & Alderman, 2010; Schwarzer & Leppin, 1991). Possibly the most commonly employed typology of social support, though, is Cutrona and Suhr’s (1992) five-category system. These categories are *informational support* (communicating facts and information), *tangible support* (material resources, including money and services), *network support* (spending time with others and/or getting people in contact with others who might offer support), *esteem support* (expressions aimed to increase confidence and self-esteem), and *emotional support* (expressions of empathy, love, and encouragement).

The present study focuses on emotional support specifically and adopts Goldsmith’s (2004) definition that emotional support messages are verbal and nonverbal “expressions of caring, concern, empathy, and reassurance of worth” (p. 13). The decision to focus on emotional support was made in part because among the five types of support in Cutrona and Suhr’s (1992) typology discussed above, it is emotional support that is typically viewed as the most welcomed and effective across contexts. For example, emotional support is often still appreciated even when other support types are desired (Cutrona, Cohen, & Igram, 1990) and when stressors vary in their controllability (Cutrona & Suhr, 1992). Moreover, those battling cancer consistently report emotional

support messages as more helpful and nurturing than informational, instrumental, or tangible support (Chesler & Barbarin, 1984; Dakof & Taylor, 1990; Dunkel-Schetter, 1984; Trobst, 2000). Taken together, it appears that emotional support, when communicated well, can be a particularly beneficial form of support. The following section will further explore the benefits of emotional support.

Benefits of Emotional Support

The benefits of receiving emotional support continue to receive scholarly attention in the social sciences. The research reviewed in this section is not specific to the cancer context, although some examples provided do concern cancer. First, the psychological benefits of receiving emotional support will be reviewed, followed by studies investigating ties between support and physiology. Then, the minimal research on the benefits of providing emotional support messages will be reviewed.

Psychological benefits of receiving emotional support. Emotional support can benefit someone psychologically by reducing how upset a person is (Kulik & Mahler, 1993; Jones & Burleson, 2003) and by facilitating the process of *cognitive reappraisal*, defined as “modifying how a particular person-environment relationship is represented and evaluated” (Burleson & Goldsmith, 1998, p. 257). In the cancer context, cognitive reappraisals may include finding good in the situation or perceiving personal growth during one’s cancer journey (Carver, Scheier, & Weintraub, 1989; Sears, Stanton, & Danoff-Burg, 2003). Importantly, reappraisal of a stressor has been repeatedly tied to changes in the emotions one experiences (see Lazarus, 1991), and the changes created through the reappraisal process typically are more stable than alternative coping strategies such as distraction or denial (Lazarus & Lazarus, 1994).

In fact, some recent theories of supportive communication recognize how emotional support messages act as catalysts in the cognitive reappraisal process, including Burleson's (2009) dual-process theory of supportive communication outcomes and Burleson and Goldsmith's (1998) theory of conversationally induced reappraisals. Interestingly, most research, in general, has focused on the recipient's processing of messages and has paid relatively little attention to the other side of the equation—the creation and communication of high quality emotional support messages.

One exception to this pattern, though, is Burleson and Goldsmith's (1998) theory of conversationally induced reappraisals. The core of this theory is that supportive efforts that focus on a distressed person's emotions will help facilitate cognitive reappraisals, particularly if the supportive messages are sensitive to face concerns and help the person describe and explore his or her emotions. Thus, the theory of conversationally induced reappraisals suggests focuses on the role of communicating support to facilitate the reappraisal process described by Lazarus and Folkman (1984). Unlike Burleson's subsequent dual-process model's focus on recipient cognitions, the theory of conversationally induced reappraisals has a broader focus and accounts for the quality of supporters' messages when considering the reappraisal process.

The months following a cancer diagnosis—a time when people are often struggling to make sense of an unexpected, consequential shift in their lives—is particularly suitable for emotional support messages. For example, Arora and colleagues (2007) measured desired levels of support at two and five months after initial diagnosis and found those reporting higher levels of helpful emotional support from friends, family, and medical providers also reported higher quality of life and self-efficacy. Additionally,

Sears et al., (2003) found positive reappraisals of the cancer experience was related to greater perceived health and positive mood at 3- and 12-month follow-up assessments.

Furthermore, simply perceiving the availability of emotional support (as opposed to receiving such support) has been tied to positive psychological outcomes for cancer patients. Multiple studies have found cancer patients perceiving more available emotional supporters have higher levels of emotional adjustment to their cancer experience (Carey, 1974; Jamison, Wellisch, & Pasnau, 1978; Zemore & Shepel, 1989) and hope for their future (Bloom & Spiegel, 1984). Interestingly though, the effects of perceived available emotional support may only be useful up to a certain threshold of physical health issues. Woods and Earp (1978) found perceived available emotional support was associated with reduced depression for women who experienced complications following a mastectomy; however, the positive effects of such support disappeared as the number of post-surgery complications increased.

In synthesis, the psychological benefits of emotional support are often achieved by facilitating the coping and reappraisal process. However, it is worth noting that the perception of available emotional support providers has also been tied to higher levels of emotional adjustment and other positive outcomes. Having overviewed the psychological benefits of receiving emotional support, it is now necessary to also consider emotional support's physiological health benefits.

Physiological health benefits of emotional support. The physiological health benefits of receiving social support and the potential underlying causal pathways continue to be explored (see Ditzen & Heinrichs, 2014; Hawkley & Cacioppo, 2003; Uchino, 2009). However, research specifically tying emotional support (as opposed to

support in general) to physiological benefits are rare. For example, some researchers have focused on direct pathways between support messages and health outcomes by positing that support provides health-relevant information (Kreps, 2003) or motivates healthy behavior (Pauley & Hesse, 2009). Alternatively, others have proposed indirect effects of support on health via a stress-buffering hypothesis (SBH: Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997) in which supportive communication makes recipients less susceptible to physiological ailment associated with stress. Again, it is worth noting that these approaches conceptualize support in general terms as opposed to distinguishing between emotional support and other forms of support.

The few studies that have investigated emotional support and physiological health outcomes have yielded promising results (Seeman, 2001), suggesting the potential for support to be an important variable in issues of physiological health. It is worth noting, however, that the ties between emotional support and physical health are less consistent across studies compared to the results from studies looking at psychological outcomes of receiving emotional support. For example, in a sample of women who had undergone mastectomies, Funch and Mettlin (1982) found no significant links between the perception of available emotional support and physical recovery. Conversely, for women with localized breast cancer, reports of receiving adequate emotional support predicted survival (Ell, Nishimoto, Mediansky, Mandell, & Hamovitch, 1992). Additionally, women with low levels of emotional support experienced faster progression of coronary artery disease (Wang, Mittleman, & Orth-Gomer, 2005), whereas receiving emotional support has been tied to lower blood pressure and better immune function (Uchino, Cacioppo, & Keicolt-Glaser, 1996).

A recent study by Priem and Solomon (2015) provided an important look at the role of emotional support on cortisol—an immune-suppressing hormone released in response to perceived stressors. Unlike prior experiments investigating links between overall support and physiological measures (Kudielka et al., 2007; Thorsteinsson & James, 1999), Priem and Solomon looked specifically at the physiological effects of receiving emotional support messages. Findings showed cortisol recovery (i.e., a return to one’s baseline cortisol levels) occurred more quickly for those who received emotional support; however, this was also dependent on whether recipients generally valued emotional support and whether they perceived the emotional support message as meeting or exceeding their expectations. Thus, receiving emotional support may positively affect the recipient’s cortisol levels; however, the association between receiving emotional support and cortisol appears to be moderated by the recipient’s values and expectations.

In summary, the research tying physiological health benefits to support has typically failed to distinguish between support types, opting instead to conceptualize support in general terms. Additionally, the research specifically investigating associations between emotional support and physiological processes has yielded mixed results that deserve further attention. To this point, the review of support benefits has focused on the recipient. Next, the research on the benefits of communicating emotional support to others is overviewed.

Benefits of providing emotional support to others. Less frequently researched are the benefits of providing emotional support messages to others; however, two studies have investigated associations between giving emotional support and a supporter’s health. One study found that elderly spouses who made their partner feel loved and cared

for had reduced mortality rates (Brown, Nesse, Vinokur, & Smith, 2003). In fact, spouses, who reported low levels of emotional support provision were twice as likely to have passed away between the initial study enrollment and the 5-year follow up. A second study found women with breast cancer who provided emotional support in an online discussion forum self-reported higher levels of quality of life; however, this was only true of women who also scored highly on a measure of emotional communication competence (Yoo et al., 2014).

Other studies have found associations between psychological and physiological outcomes and support in general (as opposed to specifically investigating emotional support). For example, Piferi and Lawler (2006) showed the tendency to provide support to others was associated with lower systolic blood pressure throughout the course of a 24-hour period. In line with these findings, Inagaki and Eisenberger (2016) found that writing support messages to friends in need led to significantly reduced systolic blood pressure and salivary alpha-amylase in comparison with a control group. Therefore, the few research efforts investigating the benefits of providing support have yielded positive and promising results.

As mentioned earlier, House (1981) noted that research on social support is frequently recipient-centric. However, the relatively minimal amount of research on the benefits of supporting others has yielded promising results. Having reviewed the various benefits of receiving and communicating support, it is now worth considering how a support message's quality may influence the extent to which these benefits occur.

Support Message Effectiveness

Although most support messages are borne out of good intentions (Ford & Ellis, 1998; Vangelisti, 2009), such as expressing empathy and caring, Krishnasamy (1996) notes that good intentions are not sufficient to create positive outcomes. Supportive messages can vary widely in quality and support quality can, in turn, affect recipient's outcome (Dakof & Taylor, 1990; High & Dillard, 2012; Porritt, 1979). Thus, it is worth considering what features of emotional supportive messages lead to such messages being perceived as effective.

Prior research shows effective emotional support messages typically focus on the recipient's emotions and less on problem solving (Burlinson, 2009). Emotional support is often appreciated across many contexts and problematic situations because not all problems are solvable (e.g., a terminal cancer diagnosis). Thus, when faced with problems that cannot be resolved, one can still attempt to help others cope with stressors via emotional support.

In addition to focusing on the recipient's emotions, effective emotional support often involves some consideration of the recipient's face. Face is a person's desired public image (Goffman, 1959, 1967). Brown and Levinson (1987) extended the concept of face by articulating two face needs: positive face (the desire for others' approval and acceptance) and negative face (the desire for autonomy and to act without imposition). Lim and Bowers (1991) further distinguished between two types of positive face: fellowship face (the desire for social inclusion) and competence face (the desire for respect). Communicators can also engage in facework, which is the process of developing messages with concern for the recipient's face desires. Although facework can take place

in any communicative context, it is particularly important when communicating social support (Goldsmith, 1992). For example, effective emotional support messages are communicated in such a way to avoid imposing on the recipient's autonomy (i.e., ability to act freely without imposition), criticizing the recipient (Goldsmith, 1994; Ray & Veluscek, 2017), or making the recipient feel as though he or she cannot solve one's own problems (Goldsmith, 1992). In the cancer context, face needs are particularly pertinent. Patients' time and energy are often depleted by the demanding schedule of attending appointment and treatments and the physically draining nature of the disease and its treatment. Unsurprisingly, negative face threats are the most frequently reported reason cancer patients perceive some support offers as unwanted (Floyd & Ray, 2017).

Additionally, cancer patients often report fellowship face threats based on the competing desires to be treated normally while also having their cancer situation recognized at other times (Ray & Veluscek, 2017).

Considering multiple characteristics of support messages may affect message effectiveness, it is useful to consider a multidimensional approach to evaluating support messages, such as that put forth by Goldsmith, Alexander, and McDermott's (2000). Unlike other research that has evaluated message effectiveness from a unidimensional perspective (e.g., helpful versus unhelpful or matched versus mismatched), Goldsmith and colleagues posited that support messages may vary in their helpfulness (i.e., problem-solving utility), supportiveness (i.e., relational assurances), and sensitivity (i.e., emotional awareness). For example, a supportive message may be perceived by the recipient as helpful, but also insensitive. Therefore, supporters hoping to convey effective

support messages ought to consider the multiple factors that affect whether recipients view such support as effective.

Low-Quality Support Outcomes

Whereas as effective support messages are associated with recipients experiencing positive outcomes, attention should also be given to instances when ineffective support leads to negative outcomes. Examples of ineffective or problematic support include some messages failing to meet recipients' expectations for support and messages being interpreted as insensitive or ignorant (Ray & Veluscek, 2017). Problematic support may negatively influence the support recipient (High & Steuber, 2014; Jones & Guerrero, 2001; Jones, 2004), the provider (Jones, 2004; Ray & Veluscek 2017), and the relationship between the recipient and provider (Brock & Lawrence, 2009; Dehle, Larson, & Landers, 2001; Ray & Veluscek 2016; Wan, Jaccard, & Ramey, 1996).

Ray and Veluscek (2016) provide an example of how support recipients view emotional support messages of differing quality. In this study breast cancer patients and survivors identified whether emotional support messages of varying quality (specifically, the messages' verbal person-centeredness; see Burlinson, 1982) were preferred to a second option: the supporter not attempting to provide any emotional support whatsoever. Interestingly, a threshold developed between messages of differing levels of quality, suggesting that recipients may view some provider's support attempts as so problematic that they would rather the person not say anything at all. Therefore, an intention to help is not sufficient to ensure a support message is effective (Krishnasamy, 1996) and the benefits of emotional support messages (previously described herein) are only realized if the recipient perceives these messages as at least surpassing a threshold of moderate

quality (Ray & Veluscek, 2016). In fact, Dakof and Taylor (1990) discuss the importance of providing quality emotional support messages, saying “emotional support is most likely to be perceived as helpful and most likely to be perceived as unhelpful when it is absent or misguided” (p. 86). Together, these findings show that low-quality support can be detrimental (for further review see Holmstrom, Burlleson, & Jones, 2005); it is not enough to have good intentions. Supporters must know “what to say (as well as what not to say)” (Burlleson, 2008, p. 208). One issue with such advice, though, is that some supporters experience anxiety, which may affect their ability to effectively communicate. The following section explores the nascent research area of supporter anxiety.

Supporter Anxiety

Beyond potentially creating negative outcomes for the recipient, some supporters may experience anxiety over communicating support, particularly if the situation is perceived by the supporter as a social-evaluative threat. For one, a portion of the population exhibits trait levels of anxiety in all social interactions across contexts (McCroskey, 1977). Therefore, the provision of emotional support to someone with cancer could be considered anxiety-inducing to this segment of the population simply because it is a social interaction. For the rest of the population, though, the specific situation of communicating emotional support may still produce anxiety. To illustrate the potential for anxiety to occur before or during support provision, consider two other areas of support research: reasons for forgoing support provision and threats to supporters’ positive face (i.e., the desire for approval and acceptance from others).

Ray, Manusov, and McLaren (in press) found many of the reasons people provided for not communicating emotional support to someone with cancer are

associated with fears of rejection or failure. Specifically, participants feared losing control of their emotions or expressed concern over not knowing what to say or saying something that ultimately does more harm than good for the person they know with cancer. Second, when confronted with the decision of whether to provide support to someone in need, either choice may threaten the person's positive face. For example, choosing not to provide support may portray someone as uncaring, whereas providing inadequate support may harm one's image of being a competent supporter or friend (DePaulo, 1982; Wortman & Lehman, 1985). This becomes particularly salient considering the ability to provide emotional support is an important factor in the development and maintenance of close relationships (Burleson, 2003). Ray and Veluscek (2017) suggested that supporting cancer patients may be a social-evaluative situation on the basis that some cancer patients devalued a supporter's abilities after a low-quality support attempt.

Together, the potential for failure and the loss of positive face when acting as a supporter likely creates anxiety for many in the population considering fear is often rooted in the possibility of social rejection and failure (Shaver et al., 1987). Therefore, based on prior research on the potential for threats to supporters' positive face and recent research on reasons for forgoing support provision, there is strong evidence that support provision can be an anxiety-producing situation.

To provide a formative summary of the information initially covered herein, the communication of emotional support messages often benefits its recipients; however, because emotional support messages can vary in effectiveness, the potential for supportive interactions to go poorly exists. Furthermore, the potential for supporters to

fail in their support provision attempts and experience a loss of positive face demonstrates why some supporters may experience anxiety when faced with the task of providing emotional support. Therefore, it is important to consider what variables predict the quality of emotional support messages and the amount of anxiety supporters experience when communicating emotional support to cancer patients. The researcher proposes that one behavior a supporter may engage in prior to communicating support that affects support message quality is message planning. The planning of messages allows for one to identify goals (in this case providing high-quality support to someone with cancer) and think through specific communicative ways to reach these goals. Accordingly, an overview of Berger's (1997) planning theory, detailed next, can provide the relevant knowledge on message planning as a potential predictor and serve as the theoretical frame for this study.

Planning Theory

Berger's (1997, 2015) planning theory consists of a series of propositions. The first and broadest proposition asserts that organisms seek to satisfy the superordinate goal of survival. To do so, they engage in goal-directed behavior aimed at satisfying the survival goal. This is not unlike the superordinate goal of survival espoused by evolutionary biologists, evolutionary psychologists, and some in the communication discipline, which has been theorized to explain a multitude of physical and behavioral adaptations throughout time (Darwin, 1859; Tooby & DeVore, 1987).

Next, *Homo sapiens*' cognitive abilities have evolved in response to the need to satisfy goals (Bogdan, 1994 1997, 2000), leading to more efficient and effective satisfaction of the survival goal. In part, this is due to humans having developed cognitive

structures allowing for episodic long-term memory (Wood, Baxter, & Belpaeme, 2011), which allows for recalling plans from prior interactions that led to goal achievement (Berger, 2015). As will be discussed later in this chapter, those with experience communicating support to cancer patients may benefit from having these prior plans to draw upon as needed.

Next, a multitude of goals is achieved daily by using language as a tool (Clark, 1994; Wittgenstein, 1953). For example, through communication people attempt to solve problems, inform, persuade, entertain, and relate to others. Furthermore, the desire to achieve these various goals motivates one's actions and, in turn, these plans guide those actions. Thus, it is important to distinguish between goals and plans as two distinct concepts. Specifically, goals are "mental end states toward which people strive" (Berger, 2015, p. 90). Conversely, plans are knowledge structures that allow humans to envision action sequences leading to goal attainment.

Next, goals exist as hierarchies within humans' long-term memory. Atop the hierarchy are abstract goals; underneath the abstract goals are concrete sub-goals that enable the abstract goal to be met. For example, supporters may have the abstract goal of making cancer patients feel better by communicating emotional support, which would be achieved through the sub-goals of telling them they are loved and that they are not alone in their cancer journey. Logically, accomplishing the sub-goals will contribute to accomplishing the abstract goal.

Like goals, plans are also organized hierarchically and consist of the action sequences one creates to achieve goals. Of note, humans have the cognitive complexity not only to develop complex plans but to also evaluate the effectiveness of such plans and

retain them in long-term memory for later recall and reuse in the future. This ability to store and re-implement previous plans increases humans' effectiveness and efficiency in reaching their goals. For example, supporters do not need to formulate a new plan each time they communicate support to a distressed friend or loved one. Instead, they likely rely, at least partially, on prior plans stored in the long-term memory that can be modified to meet the demands of the unique communication context being encountered.

Lastly, the ability to understand the messages and actions of other people is grounded in humans' ability to understand goals and plans. When asked to account for their behaviors, people often reply by stating their goals (e.g., "I was trying to make them feel better"). Therefore, understanding others' goals and plans allows communicators to respond effectively, and in meaningful ways (Berger & Palomares, 2011).

The Role of Experience and Reticence in Planning

Although planning messages may have direct influence on the content and delivery of emotional support messages and the anxiety a supporter experiences while communicating such messages, it would be shortsighted to ignore other variables that may moderate these outcomes. To guide the selection of moderator variables to test, it is worth returning to Berger's (1997, 2015) planning theory, which states that failures to achieve communication goals in everyday interactions might be due to low-quality plans, inadequate ability to perform plans, or both. Two variables that might address low-quality plans or the inadequate ability to perform plans are prior experience providing emotional support and reticence. The following section provides further detail and rationale for investigating these two variables as potential moderators.

Prior experience providing emotional support. One of the primary sources of knowledge that informs a person's plans to achieve a social goal is his or her own prior experiences of attempting to achieve a similar goal (Berger, 1997). Plans are often created by relying on memories of prior trial and error instances of attempting to achieve a certain social goal. Eventually, if a goal has been pursued many times in the past, or if a plan is mentally rehearsed enough, the plan may become a "canned plan" (i.e., a plan requiring nearly zero cognitive energy to recall and implement). Although canned plans from past situations are rarely a perfect match for a new situation, people typically opt to slightly modify prior plans to adjust them to the new situations. Thus, prior experience planning to obtain a specific goal may benefit the planner in future instances when attempting to achieve either the exact same goal or a somewhat similar goal. Likewise, those who have are attempting a new goal, and therefore have no prior experiences to rely on, should also gain more from planning as opposed to those who are using planning to tweak canned plans.

As Fiske and Taylor (1991) note, an individual is unlikely to develop a new plan because people typically try to expend minimal effort when processing information. Additionally, Berger (1995) found planners have trouble interpreting complex information when under stress, which may also influence a planner's reliance on prior plans. Therefore, people typically prioritize searching their long-term memory for an already-formulated plan before processing new information (Berger, 1997) because recalling a prior plan requires minimal cognitive effort (Hammond, 1989; Riesbeck & Schank, 1989). Furthermore, planners often experience a success bias in which, compared to nonplanners, they believe they are more likely to reach their goals after the

planning process has occurred. Considering people's propensity to forgo developing new plans, the success bias, and Berger and Jordan's (1992) finding that people rarely revisit and evaluate plans' effectiveness after implementation, it is unsurprising that plans are frequently reused. Barring catastrophic failure of prior plan implementation, people tend to assume their prior plans were adequate and opt to reuse plans to avoid expending additional cognitive energy.

The availability of previously formulated plans from prior experiences like the stressor at hand coupled with a lack of critical evaluation of prior implementation of these plans should address many of the characteristics of anxiety-inducing situations, such as novelty, unpredictability, and loss of control (Nicolson, 2008). Shaver et al. (1987) also notes that a fear state can be induced by the potential for social rejection and failure. Therefore, those who can readily access prior plans with some level of confidence that such plans will be successful (even if it is based upon a success bias) should perceive a stressor as less novel, more predictable, more within their control, and less likely to lead to rejection or failure. Next, a person's trait level of reticence is considered as a possible variable that may work in tandem with planning and prior experience to affect emotional support and anxiety outcomes.

Reticence. Reticence as a communication construct describes a lack of adequate communication skills (Phillips, 1977) and a tendency to avoid social interactions based on the belief that one "will lose more by talking than by remaining silent" (Phillips, 1984, p. 2). Although reticence focuses on the belief that one cannot communicate well in social interactions, Phillips recognizes that reticence "is often accompanied by anxiety that can impede both performance and receptivity to instructions (Phillips, 1997, p. 142).

In fact, reticence was originally introduced to the communication discipline by Phillips (1965) as a personality disorder. Not until a subsequent revision of the definition of reticence (Phillips, 1977) was the concept reconstrued as a problem of ineptitude in social interactions (for detailed review of the history of the reticence construct, see Keaten & Kelly, 2000). Years later, Phillips (1991) would describe the problematic behaviors of reticent communicators, categorizing them in accordance with the five classical canons of rhetoric: invention, disposition, style, delivery, and memory. Identifying communication skill deficiencies using this categorization serves a diagnostic purpose, allowing practitioners to focus on developing specific issues of social interaction.

It is necessary to distinguish reticence from its cognate constructs of communication apprehension and shyness, the latter of which potentially creating considerable confusion given the lay use of the word reticence. First, communication apprehension solely addresses issues of anxiety and fear of communicating, regardless of level of communication skills (McCroskey, 1980). Reticence, however, focuses primarily on skills-based deficiencies accompanied by varying degrees of speaking anxiety (Phillips, 1980). Regarding the inclusion of anxiety, reticence is similar to communication apprehension (see Kelly, 1982 for extended discussion); however, McCroskey (1977, 1980) claims that reticence is the broader construct under which communication apprehension occurs more narrowly.

Identification of reticent individuals relied on a diagnostic interview procedure until the development of the Reticence Scale (Keaten et al., 1997). The scale consists of six factors, with five of the factors (knowledge, timing, delivery, organization, and memory) relating to the five classical canons of rhetoric. A sixth factor, anxiety, was

included in the scale due to the historical rates of communication anxiety reported by participants in the Penn State Reticence Program. In two separate samples, only 10 and 13 percent respectively reported being unskilled but not anxious (Kelly, Keaten, & Begnal, 1994). This is further justified by Phillips's (1977) initial conceptualization of reticence as an anxiety disorder and McCroskey noting that individuals with communication skills deficiencies are likely to experience communication apprehension (1984).

The breadth of the reticence construct (i.e., measuring anxiety and also skill in terms of knowledge, organization, delivery, memory) is particularly well-suited for use with planning theory. Given that successful goal attainment is most likely to occur at the crossroads of high quality plans and adequate ability to perform such plans (Berger, 1997), reticence as a construct accounts for knowledge, organization, and delivery. Furthermore, the reticence construct also measures memory, which aligns with planning theory's assertion that *Homo sapiens* can engage in planning because of their ability to recall prior plans from long-term memory.

Proposed Outcomes of Planning Supportive Messages

Having overviewed the relevant literature on emotional support and the role of planning, prior experience, and reticence in message production, attention can now be given to specific outcome variables possibly affected by the planning process. Specifically, the forthcoming section is divided into three subsections focusing on different types of outcome variables to be investigated. These are (1) perceptual outcomes, (2) behavioral outcomes, and (3) physiological outcomes. In general, the hypotheses made for each outcome in the following sections first predict a main effect

(i.e., planning is better than not planning), followed by a predicted moderation by experience, reticence, or both, depending on the outcome.

Perceptual outcomes. Most of the perceptual outcomes in this study are concerned with support message effectiveness. Goldsmith and colleagues (2000) operationalized support message effectiveness as a tripartite model composed of emotional awareness (i.e., how sensitive a supporter's message is), relational assurances (i.e., how comforting a supporter's message is), and problem-solving utility (i.e., how helpful a supporter's message is). Furthermore, to understand perceptions of message effectiveness from both the sender and receiver's perspective, message effectiveness ratings were obtained from both the message provider and cancer patient recipients. For this study, cancer patients were defined as anyone who had been diagnosed with cancer at any point, and therefore included some people actively battling cancer and others who had entered remission and survivorship. The term "patient" was chosen over "survivor" based on research showing that people with cancer more frequently liked the label "patient" as opposed to "survivor" (Deber, Kraetschmer, Urowitz, & Sharpe, 2005).

Beginning with message providers' ratings of message effectiveness, prior research suggests planners experience a success bias after planning but prior to communicating messages (Knowlton & Berger, 1997). That is, a side effect of the planning process is planners exhibiting overconfidence in their message planning leading to successfully achieving goals in a forthcoming conversation. To demonstrate this, Knowlton and Berger (1997) conducted three experiments in which participants were either given a planning period or not and then provided an estimate of how likely they felt they could achieve the goal. In all three experiments, those who had time to plan for the

goal provided higher success estimates, although this difference between groups was only significant in the first two of the three experiments. Overall, the research on success bias in the context of planning theory is best summarized by the Berger (1997), who noted “The propensity for individuals to become more confident of their ability to attain focal goals after they have developed a plan, which itself may or may not be effective, may fuel overconfidence about potential success of the plan” (p. 130). Therefore, the following is hypothesized.

H1: Planners rate their own messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility than nonplanners.

Although planning may have a direct effect on message providers’ self-ratings of message effectiveness, it also possible that experience communicating support to people with cancer will also moderate any such association. As mentioned earlier, people tend to believe their plans will be successful (Knowlton & Berger, 1997) and also rarely evaluate the effectiveness of their plans after an interaction has occurred (Berger & Jordan, 1992). Taken together, planners with prior experience should believe those plans will be successful again in the future. Furthermore, Petronio and colleagues (1992) have found an association between the number of times a plan is employed and the success of the plan; however, her research team’s findings were in the context of strategic embarrassment rather than emotional support. Thus, planners with prior experience may gain less from planning because of their ability to recall and rely on prior plans. Conversely, planners without experience should gain more from planning when compared to planners with prior experience because the planning process is starting from

nothing rather than tweaking previously used plans. Therefore, the following hypothesis is made.

H2: Experience providing emotional support moderates the effect of planning on providers' reports of (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility, such that planning leads to higher self-ratings on these outcomes for those without experience communicating emotional support to cancer patients than those with such experience.

These first two hypotheses are offered from the perspective of the supporter who is communicating the message to a friend who has hypothetically been diagnosed with a serious form of cancer. That is, these ratings are self-reports rather than evaluations made by message recipients. Because emotional support messages are communicated with the intention to affect the recipients, such as cancer patients, it is important to consider how support recipients evaluate emotional support messages. Previous research suggests message effectiveness may be tied to plan effectiveness. For example, Berger notes the content of plans is tied to their effectiveness in achieving goals (1997) and Phillips (1977) included goal identification and planning to reach goals as tactics for improving communicative performance. Therefore, the following hypothesis is offered.

H3: Cancer patients rate planners' messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility than nonplanners.

Experience communicating support to cancer patients may moderate the main effect of planning on cancer patients' message effectiveness ratings such that planning is more beneficial for those with less experience than those with more experience. For one,

those with prior experience can potentially recall the plans used in previous interactions and not rely solely on interpreting information from the novel situation occurring before them. Furthermore, those with prior plans developed from previous experiences will typically rely on these plans rather than interpret the new situation as this requires less cognitive energy (Fiske & Taylor, 1991). Instead, those with experience tend to engage in what Waldron (1990) refers to as third tier planning, which involves “replacement, modification, or supplementing of pre-specified plans when such plans match insufficiently with requirements of the situation” (p. 185). Because the foundational elements of a plan are already in place for those with experience, a short planning period, such as the one experienced by those in the planning condition in this experiment, could be utilized to tweak and refine one’s prior plans. Conversely, greater gains in message effectiveness are potentially possible for those who do not have prior experience communicating support to people with cancer because these supporters are essentially starting from nothing. Taken together, the following hypothesis is offered.

H4: Experience providing emotional support moderates the effect of planning on cancer patients’ ratings of (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility, such that planning leads to higher ratings on these outcomes for those without experience communicating emotional support to cancer patients than those with such experience.

Because each recorded support message was rated by both the supporter and recipient using the same message effectiveness scale, it is also possible to investigate if supporters and cancer patients rate messages similarly or dissimilarly. Prior research across disciplines has shown inflation bias tends to occur when people are asked to rate

their own abilities or performance—overestimating their own abilities in a variety of contexts (Alicke & Govorun, 2005; Kruger, 1999; Kruger & Dunning, 1999; Krueger & Mueller, 2002; Sedikides, Gaertner, & Toguchi, 2003). For example, people have been shown to overestimate themselves in noncommunicative domains such as perceived driving ability (Horswill, Sullivan, Lurie-Beck, & Smith, 2013; Roy & Liersch, 2013) and physical attractiveness (Pozzebon, Visser, & Bogaert, 2012), and during communicative tasks such as breaking bad news (Hodges, Regehr, & Martin, 2011) or conveying empathy in a healthcare context (Floyd, Generous, Clark, Simon, & McLeod, 2015). Thus, according to the inflation bias, it is likely that message providers will overestimate their ability to communicate emotional support. Therefore, the following hypothesis is made.

H5: Irrespective of planning condition, message providers view their messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility than cancer patients.

As noted previously, facing the task of providing emotional support may produce anxiety for the supporter and lead to some would-be supporters deliberately not communicating supportive messages toward cancer patients (Ray et al., 2017). The reasons provided for forgoing provision of emotional support were multifarious, yet one third of the 599 reasons provided by the study's participants were related to concerns over failure or social rejection. Thus, multiple reasons for forgoing support appear to be rooted in how the provider thinks he or she would be perceived by the recipient (i.e., social-evaluative threats). Although the exploratory study of reasons for forgoing communicating emotional support used a sample of individuals who had not provided

support, it is plausible that similar concerns of social evaluation undergird the anxiety experienced by some who do decide to provide emotional support.

Engaging in planning may attenuate supporters' experiences of anxiety in the same way that planning and practice reduce anxiety of those asked to deliver a speech (Ayres, Schliesman, & Sonandré, 1998). That is, the planning process may reduce experiences of anxiety by providing an opportunity for planners to develop messages in advance, preventing them from being caught unprepared in a conversation where supportive messages are expected. Thus, the planning process can provide a time for supporters to figure out what to say and how to say it. Therefore, the following hypothesis is offered.

H6: Planners report less anxiety after recording a support messages than nonplanners.

Furthermore, experience communicating emotional support to people with cancer may moderate the effect planning has on self-reported anxiety. Those with experience have two potential advantages over those who are facing a completely novel situation such as supporting someone with cancer. First, they likely have prior plans they can rely on for guidance as they prepare to enter the upcoming supportive interaction. Because communicators rarely revisit the effectiveness of previously used plans (Berger & Jordan, 1992), it is likely that any pre-existing plans are still seen as viable approaches to the forthcoming interaction. Thus, those who believe they have a viable plan to reach a communicative goal such as providing support experience would experience less anxiety than someone without a plan. That is, those without experience are facing a novel situation in which they may be evaluated. Second, based on the research on planning

theory and the success bias (Knowlton & Berger, 1997), those who have prior experience likely have greater confidence in their ability to communicate emotional support to cancer patients. Therefore, the following hypothesis is made.

H7: Experience providing emotional support moderates the effect of planning on providers' anxiety after recording their messages, such that planning reduces anxiety more for those without experience than for those with experience.

In addition to individual differences in prior experience communicating support to cancer patients, a supporter's trait-level reticence may also moderate the effects of planning on perceptions of anxiety. Reticent communicators believe they lack adequate communication skills and are inept in social interactions (Phillips, 1977). Additionally, reticent communicators also experience anxiety regarding interactions (Keaten, Kelly, & Finch, 1997). This combination of anxiety and perceived inadequate communication abilities places reticent communicators at a disadvantage in novel, evaluative social contexts (Burgoon & Koper, 1984). Taken together, reticent communicators are more likely to benefit from planning because the process of planning can restore a sense of control over an anxiety-provoking interaction. Although planning may provide the same effect for less reticent communicators, those who are highly reticent likely have more to gain from the planning process given their higher levels of anxiety. Therefore, the following is hypothesized.

H8: Reticence moderates the effect of planning on providers' anxiety after recording their messages, such that planning reduces anxiety more for those who are more reticent than those who are less reticent.

Thus far, the predictions offered have focused on perceptual outcomes related to message effectiveness. Nonverbal communication also deserves consideration given that planning is not limited to verbal content (Honeycutt, 2003) and because plans rely on nonverbal communication to be effectively enacted (Berger, 1997). Thus, the following section considers how planning and reticence may affect a supporter's nonverbal communication.

Behavioral outcomes. Prior studies have considered the influence of a supporter's nonverbal immediacy behaviors on perceptions of emotional support quality (Jones, 2004; Jones & Burleson, 2003; Jones & Guerrero, 2001). Nonverbal immediacy consists of various behaviors that convey empathy, warmth, and closeness by decreasing the physical and/or psychological distance between communicators (Jones, 2004). Specific nonverbal immediacy behaviors include, but are not limited to, closer proxemic distances and more frequent use of touch, direct gaze, pitch variety, gesturing, and positive facial expressions (for review, see Andersen, Andersen, & Jensen, 1979). Nonverbal immediacy behaviors are an important aspect of the emotional support process because they convey liking (Wiener & Mehrabian, 1968), stimulate physiological arousal connected to feeling warmth, care, and love (Andersen, Guerrero, Buller, & Jorgensen, 1998), and communicate interpersonal warmth and closeness by fostering feelings of psychological connection (Mehrabian, 1971).

Furthermore, Honeycutt (2003) notes that plans are not limited to verbal content but may also include nonverbal behaviors that help achieve a goal. Thus, in the context of support provision, nonverbal immediacy behaviors, such as direct gaze, pitch variety, vocal fluency, and a general awareness of the need to convey concern might be

incorporated into the plans to provide emotional support messages. Additionally, Berger (1997) declares that even the best formulated communication plans will be ineffective if they cannot be performed adequately. Some of the performance inadequacies discussed by Berger, such as limited range of nonverbal behaviors, can potentially be addressed through the rehearsal, which may occur during the planning process. For example, prior studies have shown rehearsing to positively influence other nonverbal behaviors such as reduced use of object adaptors (Allen & Honeycutt, 1997), fewer silent pauses, and shorter onset speech latencies (i.e., greater vocal fluency; Allen & Edwards, 1991). Therefore, the following hypotheses are offered.

H9a: Planners use more direct gaze than nonplanners while recording an emotional support message.

H10a: Planners use more pitch variety than nonplanners while recording an emotional support message.

H11a: Planners communicate with more vocal fluency than nonplanners while recording an emotional support message.

H12a: Planners convey more nonverbal concern than nonplanners while recording an emotional support message.

Although it is possible that planning affects nonverbal immediacy behaviors, prior research suggests that reticence may also influence nonverbal immediacy. Burgoon and Koper (1984) tested whether level of reticence was tied to decreases in immediacy and affiliative behaviors. In both experiments, as reticence increased, nonverbal immediacy behaviors such as facial animation, forward lean, and nodding decreased. Interestingly,

this pattern held for their second experiment and became more pronounced when the participants were placed in more stressful situations.

Because reticent communicators experience a combination of anxiety and a perceived deficit of communication skills, it is unsurprising that reticent communicators struggle in unfamiliar, evaluative contexts (Burgoon & Koper, 1984). As a result, they may become less expressive and less immediate, reducing their body movements, facial animation, and speaking in a monotonous voice (Mulac & Sherman, 1974). Burgoon and Koper summarized this argument best when they said “by virtue of their attributed shyness, social ineptitude, antisocial attitudes, sense of isolation, and feelings of psychological distance, reticent communicators should manifest greater detachment and aloofness in their interaction with others and should be less successful at expressing warmth and interest” (1984, p. 605). Importantly, Burgoon and Koper’s study looked at many of the same aspects of nonverbal communication being investigated in the present study, including eye contact (as direct gaze in this study), pitch variety, and vocal fluency. The present study also includes a global evaluation of a supporter’s level of concern based on their nonverbal behaviors and, although this was not part of Burgoon and Koper’s study, many of the nonverbal behaviors they investigated are tied to appearing concerned (e.g., reduced body movements and facial animation).

Planning may remedy the less immediate nonverbal behaviors of those who are more reticent. As mentioned earlier, Honeycutt (2003) has espoused that planning can involve both verbal content and nonverbal communication, and some research has shown planning reduces undesirable nonverbal behaviors such as vocal fluidity (Allen &

Edwards, 1991) and use of object adaptors (Allen & Honeycutt, 1997). Therefore, the following hypotheses are made.

H9b: Reticence moderates the effect of planning on direct gaze, such that planning yields more direct gaze for those who are more reticent than those who are less reticent.

H10b: Reticence moderates the effect of planning on pitch variety, such that planning yields more pitch variety for those who are more reticent than those who are less reticent.

H11b: Reticence moderates the effect of planning on fluency, such that planning yields greater vocal fluency for those who are more reticent than those who are less reticent.

H12b: Reticence moderates the effect of planning on concern, such that planning yields more nonverbal concern for those who are more reticent than those who are less reticent.

Physiological outcomes. Given that supporters may reap physiological benefits after communicating support (Inagaki & Eisenberger, 2016; Piferi & Lawler, 2006), it is surprising that few researchers have investigated the physiological experiences of support providers before, during, and immediately following the support provision process. This study addresses this gap in the literature by investigating physiological stress responses in those who communicate emotional support messages. Specifically, stress is measured using an endocrine marker (salivary free cortisol) and two cardiovascular markers (heart rate and blood pressure).

Prior research has shown the physiological stress response activates in the face of both physical and also psychological threats, such as social-evaluative threats in which others could be negatively evaluated on one's performance (Kudielka, Hellhammer, & Kirschbaum, 2007). Communicating with others can, at times, can be perceived as a stressor if the interaction is perceived as a social-evaluative threat. Although a great deal of research has been written about social-evaluative threats experienced in the public speaking context (Beatty, 1988; McCroskey, 1977), these threats may also occur in interpersonal contexts as evidenced by multiple lines of research investigating issues of face and politeness (Goffman, 1959; 1967; Keaten & Kelly, 2000; Lim & Bowers, 1991). Such threats are consistently associated with cortisol elevation, particularly if the threat is viewed as uncontrollable and having the potential to negatively affect one's social presentation (Dickerson & Kemeny, 2004; Kirschbaum, Pirke, & Hellhammer, 1993).

It is worth noting the importance of measuring physiological markers of stress as opposed to relying solely on self-reports of anxiety that were previously discussed. Although asking for perceptions of anxiety in the face of stressors is one avenue to assess reactions to a stressful situation, self-ratings may succumb to self-presentation bias. The inclusion of physiological stress markers combats this possibility as many of these variables are beyond the control of an individual (i.e., it is easier to lie about not being anxious than it is to decrease the creation of the hormone cortisol in response somehow to a perceived stressor).

The steroid hormone cortisol, which is often implicated in the stress response when facing threats to one's self-presentation (Kirschbaum et al., 1993), will be the endocrine marker of stress investigated in the present study. Cortisol is secreted into the

bloodstream by the hypothalamic-pituitary-adrenal (HPA) axis when a person's body responds to a perceived environmental threat to physical, mental, or social well-being. Roughly 95% of cortisol secreted by the HPA axis quickly binds to globulins and albumin. The remaining cortisol is referred to as *free cortisol* because it remains biologically active and available to the body's systems to generate necessary energy to address the stressor. Therefore, free cortisol levels begin to rise within minutes of initial exposure to a stressor, followed by a gradual return to baseline levels (the half-life of cortisol in blood is approximately one hour; Nicolson, 2008).

Importantly, not all stressors lead to activation of the HPA and the subsequent increase of free cortisol (Nicolson, 2008). However, situations characterized by novelty, unpredictability, and perceived lack of control, especially during social-evaluative tasks, have routinely been linked to HPA activation (Dickerson & Kemeny, 2004; Rose, 1984). For example, McEwan (1998) notes that, for most people, the HPA-axis activates in response to public speaking; however, for 90 percent of the population the amount of cortisol secreted decreases with each subsequent speech delivered. Because planning can allow for message rehearsal and the imagining of how a conversation may occur (Allen & Honeycutt, 1997; Edwards, Honeycutt, & Zagacki, 1988; Honeycutt, 1991), planning should attenuate the cortisol response by creating a sense of control and predictability. Thus, the following hypotheses are offered.

H13a: Planners experience less cortisol reactivity than nonplanners after recording an emotional support message.

Whereas the neuroendocrine system elevates cortisol in response to a threat, the cardiovascular system reacts to stressors through increases in heart rate and blood

pressure (Haynes, Gannon, Orimoto, O'Brien, & Brandt, 1991; Kudielka, Buske-Kirschbaum, Hellhammer, & Kirschbaum, 2004; Matthews, Salomon, Brady, & Allen, 2003; Treiber et al., 2003). For example, in the face of social-evaluative stressors, heart rate typically increases approximately 15-25 beats per minutes and increases in both systolic and diastolic blood pressure occur routinely (Kudielka, Hellhammer, & Kirschbaum, 2007). Although these cardiovascular measurements have not been conducted specifically regarding potential anxiety experienced when communicating emotional support, the provision of emotional support could be perceived as a social-evaluative stressor on the basis that supporters who communicate poorly are at times evaluated negatively by support recipients (Ray & Veluscek, 2017). Again, message planning can provide a time for thinking through how an interaction may occur (Bruce & Newman, 1978) and what needs to be said to achieve the goal of providing effective support (Berger, 1997). Therefore, the following hypotheses are offered.

H14a: Planners experience less heart rate activity after recording an emotional support message than nonplanners.

H15a: Planners experience less mean arterial pressure reactivity after recording an emotional support message than nonplanners.

So far, the physiological hypotheses offered have predicted main effects of planning on cortisol, heart rate, and mean arterial pressure reactivity. Prior research suggests, though, that experience and reticence may also moderate the effects of planning on these physiological outcomes. Recalling that the stress response is exacerbated in situations marked by novelty, unpredictability, and loss of control (Dickerson & Kemeny, 2004; Nicolson, 2008; Rose, 1984) and that fear is induced by the possibility of failing

and experiencing social rejection (Shaver et al, 1987), prior experience providing emotional support should attenuate these stress-provoking characteristics.

Those with more prior experience providing emotional support should have previously formulated plans available to them. Moreover, because planners rarely review their prior plans' effectiveness (Berger & Jordan, 1992), these plans should still be viewed as a viable strategy for conveying emotional support in the present study's context. Thus, access to prior plans should limit the anxiety experienced when providing support via a sense of familiarity with the goal of providing emotional support. Furthermore, those with prior experience who are given a few minutes to plan may be able to recall the prior successful instances of providing emotional support or use the time to refine and rehearse their prior plans, both of which should increase a sense of controllability and confidence to succeed when providing emotional support in the present situation.

Additionally, people appear to become desensitized to communicative situations initially viewed as stressful. For example, cortisol reactivity caused by a public speaking stressor decreased over time as the number of speeches delivered by an individual increased (McEwan, 1998). Thus, applying the same logic to the communicative task of providing emotional support to someone with cancer, it is feasible that prior experience communicating support in this context will reduce the novelty (and therefore stressfulness) of the situation. Experience should also result in the formulation of expectations of how the supportive interaction will occur, thus reducing the perceived unpredictability of the situation. Thus, although message planning should reduce the perceived stressfulness of a situation for all supporters, the stress-ameliorating effects of

planning should be greater for those without experience communicating support to cancer patients compared to those who have had such an experience. Therefore, the following moderation effects are hypothesized.

H13b: Experience moderates the effect of planning on cortisol reactivity, such that planning leads to less cortisol reactivity for those without experience providing support than for those with such experience.

Reticence may also moderate the effects of planning on cortisol reactivity.

H14b: Experience moderates the effect of planning on heart rate reactivity, such that planning leads to less heart rate reactivity for those without experience providing support than for those with such experience.

H15b: Experience moderates the effect of planning on mean arterial pressure reactivity, such that planning leads to less mean arterial pressure reactivity for those without experience providing support than for those with such experience.

Although experience could address issues of social-evaluative threats such as novelty, unpredictability, and loss of control, it is also possible that characteristics of the communicator could moderate the effects of planning on physiological manifestations of anxiety. Specifically, a supporter's trait-level reticence (i.e., inadequate communication skills and ineptitude to communicate in social interactions; Phillips, 1977) could moderate the effects of planning. That is, even though planning may provide an opportunity to think through a message before communicating it, Berger (1997) notes "the effectiveness of any action plan aimed at achieving a social goal is the joint product of the plan, and the skills and attributes of the social actor who carries out the plan" (p. 87). Reticence is a useful potential moderator to investigate, given that it includes a

dimension of anxiety in addition to the measurement of communication skills such as knowledge and memory (Keaten, Kelly, & Finch, 1997), both of which are implicated in the planning process (see prior discussion on knowledge from prior experience and accessing previous plans in long-term memory).

Considering prior research has shown that reticent individuals struggle with novel, social-evaluative contexts (Burgoon & Koper, 1984), it is reasonable that highly reticent individuals have more to gain from the process of planning in terms of minimizing the stress response. If stress-provoking situations are perceived as such due to their novelty, unpredictability, and uncontrollability (Dickerson & Kemeny, 2004; Rose, 1984) and reticent communicators perceive themselves as lacking communication skills and being anxious about communicating (Phillips, 1977; 1980; 1991) then the process of planning may address these issues by allowing the planner to chart a course of action for the forthcoming conversation (Hayes-Roth & Hayes-Roth, 1979; Wilensky, 1983). Doing so could reduce the uncontrollable aspects of a perceived social-evaluative threat, which have been associated with the physiological stress response. Therefore, the following moderation effect is hypothesized.

H13c: Reticence moderates the effect of planning on cortisol reactivity, such that planning leads to less cortisol reactivity for those who are less reticent than for those who are more reticent.

H14c: Reticence moderates the effect of planning on heart rate reactivity, such that planning leads to less heart rate reactivity for those who are less reticent than for those who are more reticent.

H15c: Reticence moderates the effect of planning on mean arterial pressure reactivity, such that planning leads to less mean arterial pressure reactivity for those who are less reticent than for those who are more reticent.

CHAPTER 2

METHOD

To explore the effects of planning on perceptual, behavioral, and physiological outcomes, 100 undergraduate students completed a laboratory session in which they recorded emotional support messages to opposite-sex friends who had hypothetically been diagnosed with a serious form of cancer. Fifty of these students were randomly assigned to have time to plan such messages, whereas the other 50 engaged in a distraction task instead. Following the 100 laboratory sessions, a sample of 100 cancer patients who were unrelated to the laboratory participants each rated one of the messages recorded during the laboratory sessions. Thus, each of the 100 messages recorded during the laboratory sessions were watched and rated by one cancer patient. Arizona State University's Institutional Review Board approved all procedures detailed herein (see Appendix A).

Laboratory Participants

Laboratory participants ($N = 100$) were 50 women and 50 men ranging in age from 18 to 44 ($M = 19.95$ years; $SD = 3.17$). These participants were recruited from undergraduate communication courses at Arizona State University; however, only 36 of the 100 laboratory participants were communication majors. The majority (68%) of the participants self-identified as Caucasian, whereas other participants self-identified as Hispanic/Latino(a) (11%), Asian (7%), both Hispanic/Latino(a) and Caucasian (7%), Black/African-American (4%), and both Asian and Caucasian (1%). Additionally, 2 percent of participants self-identified as more than two ethnicities. It is also worth noting that 43 of the 100 laboratory participants reported having prior experiences

communicating emotional support to someone diagnosed with cancer. These 43 participants with prior support were split nearly evenly between the two experimental conditions with 21 randomly assigned to the planning condition and the 22 randomly assigned to the writing distraction task.

To qualify for participation, prospective laboratory participants had to be 18 years of age or older at the time of the prescreening survey and be able to speak, read, and think in English. Furthermore, because salivary samples of cortisol were collected, exclusion criteria were also necessary (Nicolson, 2008). Additionally, prospective participants with autoimmune disorders, cancer, cardiovascular disease, endocrine disease, epilepsy, hepatitis, hypertension, kidney disease, liver disease, rheumatic disorders, or type 1 diabetes did not qualify for participation as these ailments and the medications frequently used in their treatment often directly affect the HPA axis. Additionally, those who were pregnant or breastfeeding were also excluded. Finally, the researcher also followed Nicolson's (2008) recommendation to exclude prospective participants who have used prednisone or hydrocortisone in the past 6 months because these medications can have long-lasting effects on the HPA feedback system that may affect cortisol levels. An affirmative answer to any of these conditions, medications, or life situations described above redirected the prospective participant to a page on the prescreening survey indicating he or she did not qualify for participation and thanked the person for his or her time.

Procedures

Recruitment of laboratory participants. Doctoral students on the research team recruited undergraduate students at Arizona State University to participate in the study.

Doing so was advantageous as the potential participants could easily access the Health Communication Laboratory in Stauffer Hall of Arizona State University's Tempe campus and could also be compensated with course credit. Initial recruitment efforts occurred in introductory communication courses because these classes are taken by students from many different academic majors. Indeed, the resulting sample was composed of a majority (63%) of students majoring in an area other than communication. After initial recruitment efforts stalled, further recruitment also occurred in a variety of upper-level communication courses. During these recruiting efforts, students were provided information about the study and a link to the prescreening survey was distributed electronically. Prospective participants were told to expect the prescreening survey to take approximately 15 minutes and participation in the laboratory session to last approximately 65-75 minutes. Participants were compensated with extra credit at a point value determined by their course instructor (for laboratory session recruitment script, see Appendix B).

Experimental procedures. All potential participants who expressed interest in participating were sent a prescreening survey to ensure they met the inclusion and exclusion criteria. The prescreening survey consisted of a welcome page, an electronic informed consent form, questions regarding inclusion and exclusion criteria, measures related to reticence and prior emotional support experiences, and contact information (for full prescreening survey, see Appendix C). Prospective participants who qualified for participation were contacted by the lead researcher via email to schedule a laboratory session using the Acuity online scheduling system. Participants were asked to refrain from eating, drinking caffeine or alcohol, brushing their teeth, exercising, and

smoking/using nicotine during the hour prior to the start of their laboratory session, as any of these behaviors can be problematic for conducting hormonal assays on salivary samples. A reminder email regarding these requests, information about the appointment, and directions to the laboratory were sent to participants 24 hours before their laboratory session through an automated feature of the Acuity online scheduling system. Participants who do not show up to their scheduled laboratory appointments were called by the researcher conducting the session 10 minutes after the time the session was scheduled to begin. Those who do not show up to their appointment were invited to reschedule.

Upon arriving at the laboratory, the researcher greeted the participant and provided an informed consent form (see Appendix D). After reading the form, the prospective participant decided whether to participate. An affirmative answer was communicated by signing and dating the informed consent form, at which time the researcher conducting the laboratory session also signed and dated the form. Next, the participant informed the researcher if they had engaged in any of the following behaviors in the 60 minutes prior to the laboratory session: exercising, smoking cigarettes, using nicotine, consuming alcohol, or brushing his or her teeth. Those who responded affirmatively to having engaged in any of these activities in the hour leading up to the laboratory session were invited to reschedule for a later date. Such instances were noted on the laboratory session form, which was also used to detail the time and date, researchers present, and other pertinent information relating to the laboratory session (see Appendix E).

The participant was then seated at a desk with a computer and asked to relax quietly for 15 minutes to allow his or her body to reach a baseline state before proceeding

with the rest of the procedures. During this time, the participant was asked to refrain from using any electronic devices, consuming food or drinks, or working on any work responsibilities or homework (for specific instructions for the relaxation period, see Appendix F). This period allowed the participant's cortisol levels to reach a baseline level and is a common practice in experimental designs involving collection of hormonal data (e.g., Floyd et al., 2007; Kiecolt-Glaser et al., 1993). Eight minutes into the 15-minute relaxation period, the participant completed a pen and paper copy of the short form of the State-Trait Anxiety Inventory (STAI-6, Marteau & Bekker, 1992) to measure self-perceptions of any anxiety being experienced in the current moment (see Appendix G). During the last six minutes of this fifteen-minute waiting period, the participant's blood pressure and heart rate were taken three times at two-minute intervals using a Dinamap Pro 100 cardiovascular monitoring unit (General Electric, Tampa, FL). These three measurements were averaged to create baseline blood pressure and heart rate measurements. At the end of the fifteen minutes the researcher collected the participant's baseline cortisol using a SalivaBio Oral Swab and Saliva Collection Tube (Salimetrics LLC, State College, PA). The saliva collection period lasted for 90 seconds.

After retrieving the saliva swab and storing the sample in a freezer, the researcher asked the participant to use the computer at the desk in front of them to work on an online survey in which the participant selected an opposite-sex friend to think about for an upcoming scenario. In the same survey, the participant also answered questions about the closeness of the friendship, his or her perception of equity in the relationship, and a series of questions designed to quantify the amount of prior experience the participant has had

providing emotional support messages to the friend he or she chose for the forthcoming scenario (for full pre-exposure survey, see Appendix H).

The researcher then turned on a camera placed atop the computer monitor looking straight towards the participant, recording him or her from the shoulders up. After activating the camera, the researcher also activated a screen recording software program (Open Broadcast Software Studio Version 19.0.2) to record the events occurring on the computer at which the participant is seated (like a screenshot, but a video instead).

Next, the researcher provided the participant with a hypothetical scenario in which the friend chosen during the previous survey had been diagnosed with cancer (for full scenario, see Appendix I). The scenario specifically stated that the participant had only heard about the diagnosis and had not yet talked to the friend about it yet. The participant notified the researcher once he or she had finished reading the scenario.

At this time, the researcher gave the participant a sealed envelope from the laboratory session folder that contained either the treatment or comparison condition instructions (details on randomization and the instructions for each condition are provided at the beginning of the measures and instrumentation section of this chapter). Once the instruction envelope was opened, the researcher began a stopwatch, left the room, and returned four minutes later. Upon return, the researcher asked the participant to stop working on the task from the instruction packet and took another measurement of the participant's blood pressure and heart rate. Directly following this determination of cardiovascular markers, the participant completed a second iteration of the STAI-6 state anxiety measure. As soon as the participant finished the STAI-6, the researcher asked the participant to immediately begin recording an emotional support message for the

opposite-sex friend previously chosen for the hypothetical scenario. At this time, the researcher will start another determination of blood pressure and heart rate.

Immediately after the participant concluded recording his or her emotional support message, the researcher took another determination of blood pressure and heart rate and had the participant complete a third iteration of the STAI-6. Meanwhile, the researcher deactivated the camera and the OBS screen recording software.

Next, the participant worked on a final set of survey questions, answering electronically using the computer at which he or she was seated (see Appendix J for full post-exposure survey). In rare cases, the researcher had to interrupt the participant to collect a second and third salivary sample; however, most of the participants completed the survey before it was time to collect the second saliva sample.

Because it can take between 15 and 25 minutes for peak cortisol levels to occur in saliva due to experiencing a stressor, the second salivary collection occurred 20-minutes after the participant finished recording the message. Thus, this second saliva collection measures the cortisol secreted in response to recording the message. The third salivary sample was collected 35 minutes after the participant finished recording the message. This third saliva collection measures how quickly the participant's cortisol levels return to baseline. At the time of the third salivary collection, blood pressure and heart rate were also determined one final time and a fourth iteration of the STAI-6 was administered. After collecting the third saliva sample and completing the last survey, the participant was debriefed on the study and offered a copy of the debrief form (see Appendix K), which included the researcher's contact information, and thanked for participating. After completing all laboratory sessions, the lead researcher notified the participants'

instructors via email that the laboratory session had occurred, and that extra credit could be awarded.

Procedures specific to salivary samples. Because cortisol levels follow a diurnal pattern in which they peak shortly after awakening and then taper off throughout the day (Kirschbaum & Hellhammer, 1989), laboratory sessions were conducted in the late afternoon and early evening to reduce background noise from this diurnal pattern. Conducting sessions in the afternoon and evening also makes it easier to provoke the HPA axis to secrete cortisol because the HPA axis is relatively inactive later in the day (Kudielka, Schommer, Hellhammer, & Kirschbaum, 2004). Finally, this timing was also advantageous as it was less likely the participants had recently eaten or awoken, which is important because both these factors can potentially confound the salivary cortisol data (Nicolson, 2008). To further increase control over the possible effects of time of day on cortisol, the researcher also recorded the time each session started and included it as a control variable in the cortisol data analyses (e.g., Floyd et al., 2007). Ultimately though time of day did not influence the results of the current study.

All salivary cortisol samples were collected using the swab method, as opposed to the passive drool method, which would not be suitable given the number of salivary collections occurring. Participants were asked to place the swab underneath their tongue because this specific placement yields similar results to collections via the passive drool method (Hodgson & Granger, 2013). All saliva samples were labeled using custom bar-coded saliva sample labels (e.g., “Ray Dissertation, Participant # - Sample #) and samples were stored in an Igloo FRF110 Vertical Freezer (Igloo Products Corp, Katy, TX) at approximately -17 degrees Celsius in 4-inch conical tube cryostorage boxes (Salimetrics,

State College, PA). The temperature inside the freezer was monitored with a La Crosse Technology 314-152-B Digital Refrigerator-Freezer Thermometer (La Crosse Technology Ltd., La Crosse, WI) to ensure the freezer maintained an adequate temperature during storage.

After all laboratory sessions occurred, the 300 saliva samples (3 per each of the 100 participants) were shipped on dry ice to the IISBR at University of California – Irvine. In the days after arrival, the saliva samples were analyzed for levels of free cortisol. Once analysis was complete, the data was sent to the lead researcher and the salivary samples were destroyed by the IISBR staff.

Collecting message ratings by cancer patients. A portion of the study’s hypotheses relied on cancer patients viewing one of the emotional support messages recorded by the laboratory participants and subsequently rating the message and supporter on various characteristics via an online survey (see Appendix L). To be eligible to participate as a message rater, the person must have been diagnosed with cancer at some point in their life, currently be 18 years of age or older, and fluent in English. Furthermore, the cancer patient participants were in no way connected to the laboratory participants. To recruit cancer patients, the researcher engaged in snowball sampling. Initially, the lead researcher created a Facebook post to recruit cancer patients in his network (see Appendix M). After participating, these participants were asked to provide the names and emails of other cancer patients who might be interested in participating. Information about the study was subsequently shared within private Facebook groups for cancer patients and by participants on their own Facebook pages.

Cancer patient demographics. The cancer patients recruited to rate the recorded messages were 81 females, 18 males, and one person reporting their sex as “other.” The number of months since initial cancer diagnosis ranged from 2 months to 468 months ($M = 72.11$ months; $SD = 80.67$). Demographic data was also collected regarding age and ethnicity; however, only 75 of the 100 cancer patients provided answers to these questions. Age ranged from 18 years to 79 years ($M = 51.19$ years; $SD = 13.28$). Most raters self-reported their ethnicity as White/Caucasian (61%), whereas 12% reported being Hispanic/Latino(a), 2% as being Asian/Pacific Islander, and 25% choosing not to answer the question. On average, the questionnaire took 18.00 minutes to complete ($SD = 32.15$) and cancer patients were compensated with a \$5.00 Amazon eGift card (for full budget of this project, see Appendix N).

Coding nonverbal behaviors. Some hypotheses relied on data provided by trained coders for four nonverbal immediacy behaviors: direct gaze, vocal fluency, pitch variety, and concern. Trained coders were three communication graduate students and one undergraduate communication honors student who were unfamiliar with the study’s goals, manipulations, hypotheses, and research questions. Two of the coders were asked to code nonverbal immediacy behaviors that relied solely on audio (i.e., pitch variety and vocal fluency), whereas the other two coders were asked to code the remaining nonverbal behaviors that relied on both the audio and video of the recorded messages. The first 20 seconds of each message was used as the coding interval. In some instances, the recorded message was shorter than 20 seconds. In these cases, the coders coded the entire message. Prior to coding the videos, each pair of coders were trained on the definitions of the nonverbal immediacy behaviors they were coding. Following the training session for

each pair of coders, each pair was asked to separately code 20 participants not used during the training using a coding form (see Appendix O). Intraclass correlation statistics were then ran on these 20 participants to determine if the coders were reliable. The pair of coders focused on pitch variety and vocal fluency were reliable; however, the pair of coders focused on direct gaze and concern required an additional training session since the intraclass correlation for concern did not reach an adequate level. Following the second training session, this pair of coders again coded 20 participants. Intraclass correlations on the combined 40 participants coded by both coders across both training sessions were .70 or greater and therefore deemed adequate (for intraclass correlations, see Table 1). Once both pairs of coders were deemed reliable, the remaining videos were divided between the coders evenly for coding.

Measures and Instrumentation

All hypotheses in this study are similarly constructed, relying on the random assignment of participants to a planning or writing condition as the independent variable. Additionally, reticence or prior experience communicating emotional support to someone with cancer are used as moderating variables to make further predictions regarding the association between planning and the study's various outcomes, which have been subcategorized into the following categories: perceptual, behavioral, and physiological. Reliability statistics for the current study (i.e., Cronbach's alpha, intraclass correlation, assay reliability) appear in Table 1.

Random assignment to planning or writing distraction task condition. The researcher used a stratified random assignment of participants to either the treatment group or the comparison group. Stratification was based on participant sex (Shadish,

Cook, & Campbell, 2002). Participants assigned to the treatment group participated in a four-minute planning period prior to recording their support message, whereas participants assigned to the comparison group did not engage in planning and instead partook in a writing activity detailed later in this chapter. With a sample of 100 participants, each of the two groups had 25 male participants and 25 female participants, for a total of 50 participants per group.

Each participant was assigned a number, with odd numbers used for male participants and even numbers used for female participants. For each participant, a folder with all necessary forms for the laboratory session was created. Within this folder was a sealed envelope containing instructions regarding how the participant would spend his or her time prior to recording an emotional support message (i.e., comparison group writing task or treatment group planning task). To keep the researcher blind to the condition assigned to the participant, a third party was asked to place the instructions into the envelopes, seal them, and place them into the laboratory session folders randomly, but in such a way as to guarantee an even number of treatment and control group instructions were placed across the male and female folders. This person also maintained a list of which conditions were used for which envelopes. The following is a detailed look at the two sets of instructions a participant could receive.

Treatment group instructions. Participants in the treatment group were instructed to use the computer in the laboratory to plan what they would say to communicate emotional support. Specifically, these instructions read:

The researcher will return in four minutes. Please use this time to type up a plan for the emotional support message you are about to record. Use the Microsoft Word document in front of you. Please begin now.

Comparison group instructions. Participants assigned to the comparison group were asked to complete an alternative writing assignment unrelated to the recording of a support message. Instructions were adapted from the control group instructions of a study on expressive writing and the coping process (Pennebaker, Colder, & Sharp, 1990). Additionally, these instructions were adopted as they were expected to prevent participants from having time to engage in planning their emotional support message prior to recording. The instructions read:

The researcher will return in four minutes. Please use this time to type up a description of what you have done since you woke up this morning. It is important that you describe things exactly as they occurred. Do not mention your own emotions, feelings, or opinions. Your description should be as objective as possible. Use the Microsoft Word document in front of you. Please begin now.

Reticence. Keaton, Kelly, and Begnal's (1997) reticence scale consists of twenty-four 6-point Likert scale items (1 = *Strongly Disagree* and 6 = *Strongly Agree*) evenly divided across six subscales: anxiety, knowledge, timing, organization, delivery, and memory. Although similar to (and moderately correlated with) McCroskey's (1982) PRCA-24 scale, the reticence scale differs from the PRCA-24 in that it exclusively focuses on interacting in social situations. The reticence scale demonstrates adequate construct and concurrent validity and has previously been shown to be internally consistent ($\alpha = .95$). Individual subscales have also demonstrated adequate internal

consistency, with alpha reliabilities ranging from .80 to .92 (see Keaten, Kelly, & Finch, 1997). To include reticence as a moderating variable in ANOVA models, a dichotomous variable was created using a median split. This resulted in 50 participants categorized as highly reticent and 50 participants as low in reticence.

Experience communicating emotional support to cancer patients. Participants self-reported whether they had prior experience communicating emotional support to someone they know who had been diagnosed with cancer. This resulted in a dichotomous experience variable. Of the 100 participants, 57 reported not having experience communicating emotional support to someone with cancer, whereas 43 reported having such experience. Importantly, participants with experience communicating emotional support to someone with cancer were almost evenly divided between the planning task and writing distraction task conditions (22 engaged in the writing distraction task, whereas 21 engaged in planning). Likewise, those without prior experience were also almost evenly split between the two experimental conditions (29 with experience engaged in planning, whereas 28 without experience engaged in the writing distraction task). Such a division allowed for approximately equal group sizes when testing the moderating effects of experience.

Message effectiveness (H1-H4). The emotional support messages recorded during the laboratory sessions were rated by both the laboratory participant who communicated the message and by a cancer patient who later viewed the recorded message. In both instances, message effectiveness was determined using Goldsmith, McDermott, and Alexander's (2000) three factor scale of support message quality. The three factors of the scale are problems-solving utility, relational assurance (i.e.,

encouraging, supportive, and comforting), and emotional awareness. Each factor is composed of four semantic-differential-type scales (e.g., helpful/hurtful; comforting/distressing; and sensitive/insensitive) and each factor has previously demonstrated internal reliability when assessed by the scale's developers in a sample of 420 undergraduate college students at a large Midwestern university (problem-solving utility $\alpha = .80$, relational assurance $\alpha = .84$, and emotional awareness $\alpha = .75$). The scale's developers caution, however, against using a single composite score across all three factors since prior uses of the scale have shown support messages may be rated differently across the three factors (i.e., some messages might be rated highly on relational assurance, but much lower on problem-solving utility). Thus, the hypotheses utilizing data from this scale were further broken down into the three separate hypotheses to test for effects of the independent variable and moderating variable(s) on each aspect of supportive message's effectiveness.

Inflation bias (H5). To measure a potential inflation bias, laboratory participants and cancer patients' scores on the message effectiveness scale were compared against each other. Specifically, the cancer patients' message effectiveness scores were subtracted from the laboratory participants' message effectiveness scores. Any resulting positive values indicated the laboratory participant rated his or her message higher in effectiveness than the cancer patient did. Likewise, negative values would indicate that the cancer patient evaluated the message as more effective than the laboratory participant did. Because the scale consists of semantic differential items, rewording only occurred in the scale's directions (e.g., "the message you viewed" was changed to "the message you recorded").

Self-reported anxiety (H6-H8). Self-report measures of anxiety were taken at four points during the laboratory session using Marteau and Bekker's (1992) short-form version of the State-Trait Anxiety Inventory (STAI: Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Twenty items comprise the full-length state anxiety subscale from the original STAI, which is designed to measure the level of anxiety one is experiencing during the present moment. Marteau and Bekker's short-form version was developed for implementation in the healthcare settings where quicker reports of state anxiety were needed, and accordingly, the six items of this subscale only measure state anxiety.

The STAI short-form employed in this study has six 4-point Likert style items (1 = *not at all* and 4 = *very much so*) and example items include "I feel calm" and "I am worried." The short-form version of the state anxiety subscale previously demonstrated acceptable internal reliability ($\alpha = .82$) in a sample composed of medical students, nursing students, and pregnant women. It is worth noting that Chlan, Savik, and Weinert (2003) have also developed another six-item short form version of the STAI; however, according to analyses by Tluczek, Henriques, and Brown (2009), the Marteau and Bekker version of the short form, when compared to the Chlan et al., version, had slightly better internal consistency and better goodness of fit during a confirmatory factor analysis.

For hypothesis six, the state anxiety reported directly following the recording of the message (time 3) was utilized. For hypothesis seven, the difference between state anxiety levels reported at baseline (time 1) were subtracted from state anxiety levels reported after recording (time 3) to create a score for increase in self-reported state

anxiety. For these hypotheses, the state anxiety reported just before the start of recording the message (time 2) was tested as a potential covariate.

Nonverbal immediacy behaviors (H9-H12). Support providers' amount of direct gaze, pitch variety, vocal fluency, and concern were coded for using single-item global assessments. Each item included bipolar anchors such as no direct gaze/continuous direct gaze and no concern/a great deal of concern. These items were completed by the trained coders for each of the 100 participants. Intraclass correlations demonstrated intercoder reliability and are available in Table 1.

Salivary free cortisol reactivity (H13). Saliva samples were analyzed for free cortisol using standard second-antibody techniques at the IISBR at the University of California – Irvine. Hypotheses concerned with salivary cortisol levels specifically investigate the change in salivary cortisol levels from a single baseline determination taken at the end of a fifteen-minute relaxation period (time 1) to twenty minutes after recording the support message (time 2). Waiting twenty minutes until after recording the message was necessary because cortisol peaks in saliva approximately twenty minutes after experiencing a stressor. Positive values indicate increased cortisol, whereas negative values indicate reduced cortisol. Intra- and inter-assay coefficients of variability appear in Table 1.

Cardiovascular reactivity (H14 & H15). This study investigated two cardiovascular variables: mean arterial pressure (MAP) reactivity and heart rate reactivity. Both heart rate and blood pressure were measured simultaneously by a Dinamap Pro 100 cardiovascular monitoring unit (General Electric, Tampa, FL). Blood pressure was first calculated as mean arterial pressure (MAP), which is calculated by

doubling the diastolic blood pressure, adding systolic blood pressure to this number, then dividing by three. The doubling of the diastolic number is due to two-thirds of the cardiac cycle occurring in diastole. To calculate reactivity, the researcher team first measured the laboratory participant's MAP and heart rate three times at the start of the laboratory session. The average of these three determinations for MAP and heart rate were used as baseline values. Next, the baseline MAP and heart rate were subtracted from the MAP and heart rate determination that occurred immediately after the laboratory participant recorded their message. Therefore, positive values for MAP or heart rate reactivity indicate an increase from baseline to the post-recording determination. Additionally, heart rate and mean arterial pressure values taken just before the laboratory participant recorded his or her message were included as covariates in hypotheses 14 and 15.

Relational closeness. It is possible that relational closeness may moderate the association between planning and various outcomes, therefore relational closeness was tested as a potential covariate. Relational closeness data was provided by the laboratory participant regarding his or her closeness to the friend the participant chose to think about for the hypothetical scenario. Relational closeness was measured using Aron, Aron, and Smollan's (1992) inclusion of other in the self scale—a single pictorial item displaying seven sets of two circles that vary in the degree they overlap. In this study, one circle represented the participant and the other the opposite-sex friend chosen by the participant for the scenario. The greater the degree of overlap of the circles, the greater the relational closeness.

Empathy. It is also possible a participant's level of trait empathy—that is, one's ability to vicariously experience another person's emotions—may moderate the

association between message planning and various outcome variables. Thus, participants completed the Brief Form of the Interpersonal Reactivity Index (B-IRIL: Ingoglia, Lo Coco, & Albiero, 2016). The B-IRI consists of sixteen 5-point Likert scale items (1 = *Does not describe me at all* and 5 = *Describes me very well*) dispersed evenly across four subscales: empathic concern, perspective taking, personal distress, and fantasy. At the time of development and validation, Cronbach's alpha for these four subscales ranged from .68 to .82.

Demographic variables. For descriptive purposes, demographic data was collected from both the laboratory participants and the cancer patients and patients who rated the recorded messages. Laboratory participants reported their age, sex, and ethnicity. Cancer patients who rated a support message were asked to provide their age, sex, ethnicity, date of initial cancer diagnosis, and cancer site.

Manipulation Check

The first question of the survey following the recording of the emotional support message acts as the manipulation check. This item asks, "Approximately how many minutes did you spend planning the emotional support message you just recorded?" An independent samples t-test will be performed to investigate differences between the treatment and comparison groups regarding number of minutes spent planning. It is expected that those in the planning condition will report significantly more minutes spent planning than those in the comparison condition.

CHAPTER 3

RESULTS

Manipulation Check

A manipulation check was conducted to ensure that participants assigned to the planning condition spent significantly more minutes planning their emotional support message than participants assigned to the comparison group. As predicted, the results of an independent samples t-test showed that participants in the planning group ($M = 3.27$; $SD = 1.73$) spent significantly more time planning than participants in the comparison group ($M = 1.50$; $SD = 2.16$), $t(98) = -4.53$, $p < .001$, Cohen's $d = .90$. Additionally, in the post-test survey, all 100 participants correctly identified the activity they performed (i.e., planning or writing task) in the time just prior to recording their message. The planning manipulation was successful.

Data Preparation and Scale Reliability

Instances of missing data were addressed by imputing the mean of the variable for which data was missing. Next, composite variables were calculated for outcome variables and reliabilities for these scales were checked and reported using Cronbach's alpha (See Table 1). Finally, a median split created the high and low conditions of the reticence independent variable. An independent samples t-test showed the high reticence condition ($M = 58.48$; $SD = 10.67$) was significantly higher than the low reticence condition ($M = 33.32$; $SD = 8.31$), $t(98) = -13.15$, $p < .001$, Cohen's $d = 2.63$.

Descriptive Statistics

Independent samples t-tests were used to test for significant differences based on sex and ethnicity across the dependent variables. Because participants could report being

multiple ethnicities, a series of independent samples t-tests were conducted to test for differences for each ethnicity (e.g., white versus nonwhite, Hispanic versus non-Hispanic). There were no significant differences based on participant ethnicity. There were, however, significant sex differences for the nonverbal immediacy behaviors of vocal fluency and pitch variety. Regarding vocal fluency, the results of an independent samples t-test showed female participants were significantly more fluent ($M = 4.99$; $SD = 1.41$) than male participants ($M = 3.99$; $SD = 1.67$), $t(98) = -3.24$, $p = .002$, Cohen's $d = .65$. Female participants also showed significantly greater pitch variety ($M = 4.20$; $SD = 1.21$) than male participants ($M = 3.21$; $SD = 1.24$), $t(98) = -4.05$, $p < .001$, Cohen's $d = .81$.

Additionally, bivariate correlations were conducted to identify which variables were significantly related to the dependent variables. Supporters' reports of relational closeness to the person receiving the supportive message was correlated with nonverbal level of concern, $r(98) = .23$, $p = .019$. Empathy was significantly correlated to use of pitch variety, $r(98) = .21$, $p = .039$, and participants' self-ratings of their recorded message's level of emotional awareness, $r(98) = .22$, $p = .032$. Participant age was not correlated to any dependent variable.

Perceptual Predictions (Hypotheses 1-8)

Hypotheses 1-5 are perceptual predictions that rely on reports of message effectiveness. The same message effectiveness scale (Goldsmith et al., 2000) was completed by both the supporter recording the message and a cancer patient who viewed the message. Hypotheses 6-8 rely on supporters' self-reports of state anxiety measured at three times throughout the laboratory session using a short-form state anxiety scale

(Marteau & Bekker, 1992). These three self-reports were a pre-recording baseline measure (time 1), an iteration that occurred after the planning or writing task (time 2), and an iteration that occurred immediately after recording the support message (time 3).

Hypotheses 1 and 2: Supporters' ratings of recorded messages. A MANOVA was conducted to test the predictions that planners rate their own messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility, in comparison to nonplanners (H1). The same MANOVA also tested the prediction that experience providing emotional support to someone with cancer moderates these associations, such that planning is more beneficial for those without experience than for those with experience (H2).

MANOVA assumes normally distributed dependent variables. The three dependent variables in this MANOVA were considerably negatively skewed (emotional awareness = -.622; relational assurance = -.807, problem-solving utility = -.475). To address this, two outliers were removed. This resulted in improved skewness scores for all three dependent variables (emotional awareness = -.294; relational assurance = -.136, problem-solving utility = -.244).

Dependent variables in MANOVA must be related both conceptually and empirically. From a conceptual standpoint, emotional awareness, relational assurances, and problem-solving utility are related in that they reflect the components of Goldsmith et al.'s (2000) social support message effectiveness scale. The variables also had a substantial average correlation, $r = .73$, Bartlett's test of sphericity $\chi^2(5) = 155.51, p < .001$. Both assumptions for the dependent variables were therefore satisfied.

MANOVA also assumes homogeneity of variances at both the multivariate and univariate level. A nonsignificant Box's M test indicated that this assumption was met at the multivariate level. At the univariate level, Levene's test of equality of variances was nonsignificant for emotional awareness ($p = .091$), but significant for relational assurance ($p = .002$) and problem-solving utility ($p = .004$). To address this violation, various transformations were used on the relational assurance and problem-solving utility variables (i.e., z-score, Log10, square root); however, all transformations resulted in at least one dependent variable still violating the assumption of homogeneity at the univariate level. Furthermore, improvements in homogeneity scores at the univariate level often came at the cost of skewness scores increasing back to the original values prior to removing the two outliers. Ultimately, the non-transformed scores were used while excluding the two outliers. Although this did not address the violation of homogeneity at the univariate level, ANOVA models are robust to violations of this assumption and the researcher deciding addressing issues of skewness (i.e., a potential violation of normality) to be more important.

The MANOVA yielded a significant multivariate main effect of planning on supporters' ratings of their recorded messages' effectiveness, $\Lambda = .92$, $F(3, 92) = 2.80$, $p = .044$, partial $\eta^2 = .08$. The multivariate main effect of experience communicating support to people with cancer was nonsignificant, $\Lambda = .93$, $F(3, 92) = 2.54$, $p = .07$, observed power = .59, partial $\eta^2 = .07$. Likewise, the multivariate interaction effect between planning and experience was nonsignificant, $\Lambda = .95$, $F(3, 92) = 1.51$, $p = .217$, observed power = .39, partial $\eta^2 = .05$.

The first hypothesis (H1a-H1c) predicted a main effect of planning on providers' ratings of their messages' emotional awareness, relational assurance, and problem-solving utility, such that those in the planning condition would rate their messages higher on all three dimensions. The univariate main effect of planning on relational assurance was significant, $F(1, 94) = 8.04, p = .006$, partial $\eta^2 = .08$. As hypothesized, planners rated their messages as having more relational assurance ($M = 5.89; SD = .76$) than did nonplanners ($M = 5.44; SD = .95$). The univariate main effect of planning on problem-solving utility was significant, $F(1, 94) = 4.31, p = .041$, partial $\eta^2 = .04$. As predicted, planners rated their messages as having more problem-solving utility ($M = 5.40; SD = .85$) than did nonplanners ($M = 5.09; SD = .95$). The univariate main effect of planning on providers' ratings of emotional awareness was nonsignificant, $F(1, 94) = 2.63, p = .108$, observed power = .36, partial $\eta^2 = .03$. Planners' ratings of their messages' emotional awareness ($M = 5.64; SD = .94$) did not significantly differ from nonplanners' ratings ($M = 5.39; SD = .96$). Therefore, hypothesis H1a was not supported, whereas hypotheses H1b and H1c were supported, but with small effect sizes.

The second hypothesis (H2a-H2c) predicted that experience providing support moderates the association between planning and emotional awareness, relational assurance, and problem-solving utility. The multivariate tests for these outcomes were nonsignificant. Although some scholars maintain that univariate effects should not be interpreted if the multivariate effect is nonsignificant, Huberty and Morris (1989) provided that univariate effects can be probed in the absence of a significant multivariate effect if a Bonferroni correction (or similar procedure) is employed to protect against inflated alpha error. With three dependent variables being investigated, the Bonferroni

correction applied here reduced the alpha level from .05 to .017. The univariate interaction effects between planning and experience were nonsignificant for emotional awareness, $F(1, 94) = 3.76, p = .056$, observed power = .48, partial $\eta^2 = .04$; relational assurance, $F(1, 94) = 3.43, p = .067$, observed power = .45, partial $\eta^2 = .04$; and problem-solving utility, $F(1, 94) = 4.03, p = .047$, observed power = .51, partial $\eta^2 = .04$. Therefore, hypotheses H2a, H2b, and H2c were not supported.

Hypotheses 3 and 4: Cancer patients' ratings of recorded messages. A second MANOVA was conducted to test the predictions that cancer patients rate planners' messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility, in comparison to nonplanners (H3). The same MANOVA also tested the prediction that whether supporters have prior experience providing emotional support to someone with cancer moderates these associations, such that planning is more beneficial for those without experience than for those with experience (H4).

MANOVA assumes normally distributed dependent variables. The three dependent variables in this MANOVA were slightly negatively skewed (emotional awareness = $-.267$; relational assurance = $-.461$, problem-solving utility = $-.377$); however, outliers were not detected and various transformations (i.e., Log10, square root, z-score) resulted in either no change in skewness scores or an increase in negative skew. Therefore, non-transformed scores were used in this MANOVA.

A MANOVAs dependent variables must be related both empirically and conceptually. From a conceptual standpoint, the same argument from H1 is applied here since the same variables were employed. That is, emotional awareness, relational assurances, and problem-solving utility are related in that they reflect the components of

Goldsmith et al.'s (2000) social support message effectiveness scale. The variables also had a substantial average correlation, $r = .87$, Bartlett's test of sphericity $\chi^2(5) = 293.63$, $p < .001$. Both assumptions for the dependent variables were therefore satisfied. MANOVA also assumes heterogeneity of variances at both the multivariate and univariate level. A nonsignificant Box's M test and Levene's test for equality of variances indicated that this assumption was met at both the multivariate and univariate levels.

The MANOVA yielded a significant multivariate main effect of planning, $\Lambda = .89$, $F(3, 94) = 3.87$, $p = .012$, partial $\eta^2 = .11$. The multivariate main effect of experience communicating support to people with cancer was nonsignificant, $\Lambda = .94$, $F(3, 94) = 1.92$, $p = .13$, observed power = .48, partial $\eta^2 = .06$. Likewise, the multivariate interaction effect between planning and experience was nonsignificant, $\Lambda = .95$, $F(3, 94) = 1.74$, $p = .163$, observed power = .44, partial $\eta^2 = .05$.

The third hypothesis (H3a-H3c) predicted a main effect of planning on cancer patients' ratings of the messages' emotional awareness, relational assurance, and problem-solving utility. The univariate main effect of planning on relational assurance was significant, $F(1, 96) = 7.83$, $p = .006$, partial $\eta^2 = .08$. As hypothesized, planners' messages were rated by cancer patients as having more relational assurance ($M = 5.18$; $SD = 1.45$) than nonplanners' messages ($M = 4.34$; $SD = 1.76$). The univariate main effect of planning on problem-solving utility was also significant, $F(1, 96) = 8.43$, $p = .005$, partial $\eta^2 = .08$. As predicted, planners' messages were rated by cancer patients as having more problem-solving utility ($M = 4.92$; $SD = 1.28$) than nonplanners' messages ($M = 4.17$; $SD = 1.51$). The univariate main effect of planning on cancer patients' ratings of emotional awareness was nonsignificant, $F(1, 96) = 3.75$, $p = .056$, observed power =

.48, partial $\eta^2 = .04$. Therefore, hypothesis H3a was not supported, whereas hypotheses H3b and H3c were supported.

The fourth hypothesis (H4a-H4c) predicted that experience providing support moderates the association between planning and emotional awareness, relational assurance, and problem-solving utility. The multivariate interaction effect between planning and experience was nonsignificant. However, as with H1 and H2, a Bonferroni correction was applied to adjust the univariate critical alpha level from .05 to .017. The univariate interaction effects between planning and experience were nonsignificant for emotional awareness, $F(1, 96) = 4.62, p = .034$, observed power = .57, partial $\eta^2 = .05$; relational assurance, $F(1, 96) = 6.04, p = .125$, observed power = .33, partial $\eta^2 = .02$; and problem-solving utility, $F(1, 96) = 3.19, p = .077$, observed power = .42, partial $\eta^2 = .03$. Therefore, hypotheses H4a, H4b, and H4c were not supported. It is worth noting, though, that H4a would have been significant, albeit with a small effect size, if a Bonferroni correction was not applied.

Hypothesis 5: Inflation bias. The fifth hypothesis predicted that irrespective of planning condition, message providers view their messages as having more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility than cancer patients' reports for the same messages. Each hypothesis was tested using a paired samples t-test. For each of the self-rated variable, one outlier was detected and excluded from analysis. Results showed that, in terms of emotional awareness, message providers ($M = 5.50; SD = .96$) rated their messages significantly higher than cancer patients ($M = 4.64; SD = 1.65$), $t(98) = 4.61, p < .001$, Cohen's $d = .64$. In terms of relational assurance, message providers ($M = 5.66; SD = .89$) rated their messages significantly higher than cancer

patients ($M = 4.75$; $SD = 1.66$), $t(98) = 5.57$, $p < .001$, Cohen's $d = .68$. Finally, in terms of problem-solving utility, message providers ($M = 5.23$; $SD = .92$) rated their messages significantly higher than cancer patients ($M = 4.53$; $SD = 1.44$), $t(98) = 4.51$, $p < .001$, Cohen's $d = .58$. Hypotheses 5a, 5b, and 5c were supported.

Hypotheses 6 and 7: Supporters' self-reports of anxiety. An ANCOVA was used to test the prediction that planners experience less anxiety than nonplanners prior to recording their messages (H6). The same ANCOVA was also used to test if the association between planning and increased anxiety is moderated by whether the participant has experience communicating support to someone with cancer, such that planning reduces anxiety more for those without experience than for those with experience (H7). The dependent variable was the change in self-reported state anxiety from pre-recording baseline (time 1) to immediately after recording the support message (time 3). Positive values indicate increased anxiety and negative values indicate decreased anxiety. State anxiety measured before recording the message (time 2) was included as a covariate since a greater increase in time 2 anxiety could affect scores on time 3 anxiety.

ANCOVA assumes homogeneity of variances. Levene's test of equality of variances was nonsignificant, therefore the homogeneity of variances assumption was met. The time 2 state anxiety was a significant covariate and retained in the final model.

The interaction of planning and experience was significant, $F(1, 95) = 4.14$, $p = .045$, partial $\eta^2 = .04$. Planners who did not have experience communicating emotional support to cancer patients reported the greatest increase in state anxiety ($M = 5.71$; $SD = 4.94$), followed by planners who had such experience ($M = 5.62$; $SD = 4.24$), nonplanners

without experience ($M = 4.30$; $SD = 4.30$), and nonplanners with experience ($M = 3.18$; $SD = 4.35$). Planned contrasts were used to probe this significant finding but yielded nonsignificant results. Scheffé post hoc tests were also conducted to detect any significant differences between levels; however, these tests were also nonsignificant. The ANCOVA produced nonsignificant main effects for planning, $F(1, 95) = .12, p = .728$, observed power = .06, partial $\eta^2 = .001$; and for experience, $F(1, 95) = .41, p = .521$, observed power = .10, partial $\eta^2 = .004$. Thus, H6 and H7 were not supported.

Hypothesis 8: Reticence as a moderator of the planning and anxiety association. Hypothesis eight predicted that reticence moderates the association between planning and change in state anxiety from baseline to immediately after recording the support message, such that planning does more to attenuate increases in anxiety for those who are more reticent than for those who are less reticent. An ANCOVA was conducted with level of state anxiety reported just before recording the message (time 2) as the covariate. Levene's test of equality of variances was nonsignificant. The ANCOVA produced a significant main effect for reticence, $F(1, 95) = 4.67, p = .033$, partial $\eta^2 = .05$. Specifically, when controlling for time 2 state anxiety, there was a greater change in state anxiety for low reticence participants ($M = 5.34$; $SD = 4.85$) than for highly reticent participants ($M = 4.14$; $SD = 4.17$). Results were nonsignificant for the main effect of planning, $F(1, 95) = .0004, p = .982$, observed power = .05, partial $\eta^2 < .001$; and the interaction effect, $F(1, 95) = .05, p = .821$, observed power = .06, partial $\eta^2 = .001$. Hypothesis 8 was not supported.

Behavioral Predictions (Hypotheses 9-12)

This study looks at four nonverbal outcomes occurring during the laboratory participants' message recordings: direct gaze, pitch variety, vocal fluency, and concern. Although some of these nonverbal behaviors were significantly correlated, the average intercorrelation ($r = .09$) was considered insufficient to warrant the use of a MANOVA or MANCOVA. Therefore, ANOVAs were used to test each nonverbal outcome.

Hypothesis 9a and 9b: Direct gaze. An ANOVA tested the predictions that planners would use more direct gaze than nonplanners (H9a), and that reticence moderates this effect, such that planning yields higher direct gaze for those who are more reticent than those who are less reticent (H9b). The assumption of homogeneity of variances was met via a nonsignificant result for Levene's test of equality of variances. The ANOVA yielded nonsignificant main effects for planning, $F(1, 96) = .07, p = .791$, observed power = .06, partial $\eta^2 = .001$; and for reticence, $F(1, 96) = .77, p = .383$, observed power = .14, partial $\eta^2 = .01$; as well as a nonsignificant interaction effect, $F(1, 96) = .21, p = .651$, observed power = .07, partial $\eta^2 = .002$. Therefore, H9a and H9b were not supported.

Hypothesis 10a and 10b: Pitch variety. An ANOVA tested the predictions that planners use more pitch variety than nonplanners (H10a), and that reticence moderates the effect of planning on pitch variety, such that planning yields higher pitch variety for those who are more reticent than those who are less reticent (H10b). Before conducting the ANOVA, a significant sex difference was detected for pitch variety such that female participants ($M = 4.20; SD = 1.21$) used greater pitch variety than male participants ($M = 3.21; SD = 1.24$), $t(98) = -4.05, p < .001$, Cohen's $d = .81$. Therefore, participant sex was

included as an independent factor. Participants' level of empathy was initially included as a covariate due to a significant bivariate correlation between empathy and pitch variety ($r = .21$; $p = .039$); however, empathy was later removed from the final model because it was nonsignificant as a covariate. A nonsignificant result for Levene's test for equality of variances showed the assumption of homogeneity of variances was met.

As expected based on the t-test used to initially detect a sex difference on pitch variety, the ANOVA produced a significant main effect of sex, $F(1, 92) = 16.00$, $p < .001$, partial $\eta^2 = .15$, wherein more pitch variety was used by female participants ($M = 4.20$; $SD = 1.21$) than by male participants ($M = 3.21$; $SD = 1.24$). Results were nonsignificant for the interaction of sex, planning, and reticence, $F(1, 92) = 3.01$, $p = .086$, observed power = .40, partial $\eta^2 = .03$; the interaction of planning and sex, $F(1, 92) = .01$, $p = .938$, observed power = .05, partial $\eta^2 < .001$; the interaction of reticence and sex, $F(1, 92) = .02$, $p = .883$, observed power = .05, partial $\eta^2 < .001$; the interaction of planning and reticence, $F(1, 92) = .01$, $p = .92$, partial $\eta^2 < .001$; the main effect of planning, $F(1, 92) = .41$, $p = .526$, observed power = .10, partial $\eta^2 = .004$; and the main effect of reticence, $F(1, 92) = 1.97$, $p = .163$, observed power = .29, partial $\eta^2 = .02$. Hypotheses 10a and 10b were not supported.

Hypothesis 11a and 11b: Vocal fluency. An ANOVA tested the predictions that planners communicate with greater vocal fluency (H11a) and that reticence moderates the effect of planning on vocal fluency, such that planning yields greater vocal fluency for those who are more reticent than those who are less reticent (H11b). Due to a significant sex difference on vocal fluency, participant sex was included as a factor. Specifically, female participants were coded as more fluent ($M = 4.99$; $SD = 1.41$) than male

participants ($M = 3.99$; $SD = 1.67$), $t(98) = -3.24$, $p = .002$, Cohen's $d = .65$. The Levene's test for equality of variances was nonsignificant and therefore the homogeneity of variances assumption was met.

The main effect of planning was significant, $F(1, 92) = 6.20$, $p = .015$, partial $\eta^2 = .06$, indicating that vocal fluency was significantly greater for planners ($M = 4.81$; $SD = 1.58$) than for nonplanners ($M = 4.17$; $SD = 1.61$). The ANOVA also produced a significant interaction effect for reticence and sex, $F(1, 92) = 5.09$, $p = .026$, partial $\eta^2 = .05$. Scheffé post hoc tests revealed that high reticence males were significantly less fluent ($M = 3.45$; $SD = 1.77$) than low reticence males ($M = 4.41$; $SD = 1.48$), low reticence females ($M = 4.93$; $SD = 1.48$), and high reticence females ($M = 5.04$; $SD = 1.62$). Finally, the main effect of sex was significant $F(1, 92) = 10.46$, $p = .002$, partial $\eta^2 = .10$, indicating that vocal fluency was significantly greater for female participants ($M = 4.99$; $SD = 1.41$) as opposed to male participants ($M = 3.99$; $SD = 1.67$). Results were nonsignificant for the interaction of sex, planning, and reticence, $F(1, 92) = .95$, $p = .333$, observed power = .16, partial $\eta^2 = .01$; the interaction of planning and sex, $F(1, 92) = 1.41$, $p = .238$, observed power = .22, partial $\eta^2 = .02$; and the main effect of reticence, $F(1, 92) = .96$, $p = .330$, observed power = .16, partial $\eta^2 = .01$. Hypothesis 11a was supported, but hypothesis 11b was not supported.

Hypotheses 12a and 12b: Concern. An ANCOVA tested the predictions that planners appear more concerned than nonplanners (H12a), and that reticence moderates the effect of planning on concern, such that planning yields greater perceived concern for those who are more reticent than those who are less reticent (H12b). Supporters' self-reported relational closeness to the support recipient was included as a covariate because

it was significantly correlated to concern ($r = .23$; $p = .019$). The Levene's test for equality of variances was nonsignificant, and therefore the assumption of homogeneity of variances was met. The covariate was significant and retained in the final model. Results were nonsignificant for the interaction effect of reticence and planning, $F(1, 95) = .26$, $p = .614$, observed power = .08, partial $\eta^2 = .003$; the main effect of planning, $F(1, 95) = 3.705$, $p = .057$, observed power = .48, partial $\eta^2 = .04$; and the main effect of reticence, $F(1, 95) = .51$, $p = .477$, observed power = .11, partial $\eta^2 = .01$. Hypothesis 12a and 12b were not supported.

Physiological Predictions (Hypotheses 13-15)

Nicolson (2008) notes that salivary cortisol data is often skewed and recommends removing participants with cortisol levels more than four standard deviations above or below the mean to avoid gross violations of normality. Indeed, the cortisol distributions in the present study were considerably positively skewed (time 1 = 2.694; time 2 = 1.543). Therefore, the researcher ultimately decided on a more stringent threshold of three standard deviations above or below the mean as part of an effort to address the skewness of the distribution. Four participants were removed. Two of these four participants had cortisol levels more than three standard deviations above the mean at baseline (time 1), whereas two participants had cortisol levels more than three standard deviation above the mean just prior to recording (time 2). Removal of these four participants improved skewness scores (time 1 = .853; time 2 = .754). The same threshold of three standard deviations above or below the mean was also employed to detect outliers for the cardiovascular variables of heart rate and mean arterial pressure.

Hypotheses 13a-13c: Cortisol reactivity. Two ANOVAs were conducted to test predictions related to cortisol reactivity. The dependent variable was the change in salivary cortisol levels from a single baseline determination taken at the end of a fifteen-minute relaxation period (time 1) to 20 minutes after recording the support message (time 2). Waiting 20 minutes until after recording the message was necessary because cortisol peaks in saliva approximately 20 minutes after experiencing a stressor. Positive values indicate increased cortisol, whereas negative values indicate reduced cortisol.

The first ANOVA tested the predictions that planners experience less cortisol reactivity after recording their message than nonplanners (H13a), and that the association between planning and cortisol reactivity is moderated by experience communicating emotional support to someone with cancer (H13b). Levene's test for equality of variances was nonsignificant. Results were nonsignificant for the interaction of planning and experience, $F(1, 92) = .001, p = .972$, observed power = .05, partial $\eta^2 < .001$; the main effect of experience, $F(1, 92) = .47, p = .497$, observed power = .10, partial $\eta^2 = .01$; and the main effect of planning, $F(1, 92) = .98, p = .325$, observed power = .17, partial $\eta^2 = .01$. H13a and H13b were not supported.

The second ANOVA for this set of hypotheses tested the prediction that reticence moderates the association between planning condition and cortisol reactivity (H13c). Levene's test for equality of variances was nonsignificant. The predicted interaction between planning and reticence was significant, $F(1, 92) = 4.21, p = .043$, partial $\eta^2 = .04$. Planned contrasts were utilized to further probe this interaction effect. Low reticence and high reticence participants who did not engage in planning were assigned a coefficient of zero, those who planned and were highly reticent were assigned a

coefficient of 1, and those who planned and were low on reticence were assigned a coefficient of -1. The contrast was significant, $t(92) = -2.22, p = .029$, such that those in the high reticence planning group ($M = -.06; SD = .05$) experienced a greater decrease in cortisol than those in the low reticence planning group ($M = -.008; SD = .09$). The main effect of reticence on cortisol reactivity was nonsignificant $F(1, 92) = 1.22, p = .273$, observed power = .19, partial $\eta^2 = .01$. H13c was supported.

Hypotheses 14a-14c: Heart rate reactivity. Two ANOVAs were conducted to test predictions related to heart rate reactivity. In both ANOVAs three participants (two in the planning condition and one in the distraction task condition) were not included due to experimenters not collecting baseline heart rate data during their laboratory sessions. The first ANOVA tested the predictions that planners experience less heart rate reactivity after recording their message than nonplanners (H14a), and that the association between planning and heart rate reactivity is moderated by experience communicating emotional support to someone with cancer (H14b). The dependent variable was the change in heart rate (beats per minute) from the average of three baseline determinations (time 1, time 2, and time 3) to immediately after recording the support message (time 5). Positive values indicate increased heart rate, whereas negative values indicate reduced heart rate. The initial model also included heart rate just before recording the message (time 4) as a covariate; however, this covariate was not significant and removed from the final model. Levene's test for equality of variances was nonsignificant.

The first ANOVA produced a significant main effect of planning, $F(1, 93) = 6.77, p = .011$, partial $\eta^2 = .07$, in which heart rate decreased more for planners ($M = -4.00; SD = 7.38$) than for nonplanners ($M = -.31; SD = 5.29$). Results were nonsignificant for the

interaction of planning and experience, $F(1, 93) = 1.42, p = .236$, observed power = .19, partial $\eta^2 = .02$; and for the main effect of experience, $F(1, 93) = .63, p = .430$, observed power = .11, partial $\eta^2 = .01$. Therefore, H14a was supported, but H14b was not supported.

The second ANOVA for this set of hypotheses tested the prediction that reticence moderates the association between planning condition and heart rate reactivity (H14c). Levene's test for equality of variances was nonsignificant. The ANOVA produced a nonsignificant interaction effect between planning and reticence, $F(1, 93) = .41, p = .523$, observed power = .10, partial $\eta^2 = .004$; as well as a nonsignificant main effect of reticence, $F(1, 93) = 2.04, p = .156$, observed power = .29, partial $\eta^2 = .02$. H14c was not supported.

Hypotheses 15a-15c: Mean arterial pressure reactivity. Two ANCOVAs were conducted to test predictions related to mean arterial pressure reactivity. In both analyses, one participant in the distraction task condition was excluded due to experimenters not collecting baseline blood pressure data during a laboratory session. The first ANCOVA tested the predictions that planners experience less mean arterial pressure reactivity after recording their message than nonplanners (H15a), and that the association between planning and mean arterial pressure reactivity is moderated by experience communicating emotional support to someone with cancer (H15b). The dependent variable was the change in mean arterial pressure from the average of three baseline determinations (time 1, time 2, and time 3) to the mean arterial pressure observed immediately after recording the support message (time 5). Positive values indicate increased mean arterial pressure, whereas negative values indicate decreased mean arterial pressure. The model also

included mean arterial pressure just before recording the message (time 4) as a covariate. Levene's test for equality of variances was nonsignificant. The time 4 MAP covariate was significant and retained in the final model.

Results were significant for the interaction of planning and experience, $F(1, 93) = 4.182, p = .044, \text{partial } \eta^2 = .04$. Planners who had prior experiencing communicating emotional support to cancer patients experienced the greatest change in mean arterial pressure ($M = 6.29; SD = 6.33$), followed by nonplanners without experience ($M = 5.04; SD = 7.06$), planners without experience ($M = 4.72; SD = 5.58$), and nonplanners with experience ($M = 2.46; SD = 5.74$). Planned contrasts were used to probe this significant finding but yielded nonsignificant results. Various post hoc tests (e.g., Scheffé, Tukey, LSD) were also conducted to detect any significant differences between levels; however, these tests were also nonsignificant. Nonsignificant results occurred for the main effect of experience, $F(1, 93) = .31, p = .582, \text{observed power} = .09, \text{partial } \eta^2 = .003$, and the main effect of planning, $F(1, 93) = .98, p = .324, \text{observed power} = .16, \text{partial } \eta^2 = .01$. H15a and H15b were not supported.

The second ANCOVA tested the prediction that reticence moderates the association between planning and mean arterial pressure reactivity (H15c). Levene's test for equality of variances was nonsignificant. Once again, mean arterial pressure measured just before recording (time 4) was included as a covariate. Results were nonsignificant for the interaction of planning and reticence, $F(1, 93) = .06, p = .801, \text{observed power} = .06, \text{partial } \eta^2 = .001$; and for the main effect of reticence, $F(1, 93) = .42, p = .521, \text{observed power} = .10, \text{partial } \eta^2 = .004$. H15c was not supported. A summary of these results can be found in Table 3.

CHAPTER 4

DISCUSSION

Cancer is a common but serious disease with approximately 14 million new cases diagnosed each year [Centers for Disease Control and Prevention (CDC), 2015]. Because cancer is a physical ailment, a cancer diagnosis is often accompanied by additional stressors that consume a new patient's already limited time and energy. Between scheduling and attending appointments, completing treatments, disclosing the diagnosis to loved ones, and managing fears and uncertainties regarding one's health and identity, it is unsurprising that researchers found between one third to one half of all cancer patients report psychosocial or emotional distress (Carlson & Bultz, 2003).

In the months following a cancer diagnosis, cancer patients often receive an outpouring of support from friends, family, and other loved ones, and among these supportive interactions, emotional support messages are a common form of comfort received from others (Arora et al., 2007). Importantly, not all emotional support messages are equally effective (Burlison, 1982, 2008), and recent research has explored reasons why cancer patients view some emotional support messages negatively (Ray & Veluscek, 2017). Therefore, the present study investigates how planning may improve the quality of emotional support messages in a cancer context.

The present study is based on the premises that message quality and message planning both affect the outcomes reported by a message recipient. The first premise has been verified through decades of research on social support. That is, receiving effective emotional support results in myriad benefits for recipients, including emotional improvement (High & Dillard, 2012; Jones & Wirtz, 2006), improved physiological

stress recovery (Sarason, Sarason, & Gurung, 1997), and relationship satisfaction and well-being (Barbee & Cunningham, 1995; Dehle, Larsen, & Landers, 2001). Importantly, the potential for emotional support messages to create these benefits for the recipient is contingent on the quality of the emotional support message received (Dakof & Taylor, 1990; Peters-Golden, 1982). Regarding the second premise, far less research has focused on the actions a supporter can take—such as message planning—to increase the quality of the message being communicated. To address that oversight, this experiment employs planning theory (Berger, 1997) to investigate the potential for message planning to increase support message effectiveness.

This chapter begins by summarizing the perceptual, behavioral, and physiological findings from the experiment. Next, theoretical, practical, clinical, pedagogical, and methodological implications of the findings are discussed. Finally, the study's strengths and weaknesses are considered, and future research directions are offered.

Perceptual Findings

The perceptual predictions advanced in this study related to the perceptions of both those communicating the message (i.e., the laboratory participants) and those who played the role of message recipient (i.e., the cancer patients). Specifically, H1 and H2 hypothesized that those who engage in planning before recording their support message would rate their messages as more effective than those who were not given an opportunity to plan, and that experience in providing emotional support would moderate this associate. Planners rated their messages as significantly more effective than nonplanners on relational assurances and problem-solving utility, but not on emotional awareness. It is worth noting, though, that the planners and nonplanners differed in self-

ratings of emotional awareness in the hypothesized direction, but this difference was not large enough to yield a significant result.

Whether one had experience communicating emotional support to someone with cancer was expected to moderate these main effects; however, this hypothesis was not supported. One potential explanation is that the situation presented to the supporters was different enough from their real-life experiences supporting someone with cancer that those experiences were not applicable or useful when planning or communicating their support message during the laboratory session. For example, their experiences may have been with a family member or coworker instead of a close friend, and the cancer diagnosis may have been minor and easily treatable as opposed to severe. Moreover, simply being in a laboratory environment instead of a natural occurring conversation may have been novel enough to render those experiences inapplicable. Finally, it is possible that each supportive interaction is unique such that experience simply does not help people engaging in planning and communicating supportive messages for cancer patients.

H3 and H4 predicted that cancer patients would rate messages from planners as significantly more effective than nonplanners' messages, and that experience providing emotional support would moderate this association. Cancer patients evaluated messages from planners as significantly more effective than nonplanners in terms of relational assurances and problem-solving utility, but not emotional awareness. These results mirror the findings from H1, and similarly, the nonsignificant result for emotional awareness was in the hypothesized direction, but the difference between groups was not large enough to be significant. Like the results from the self-ratings of message effectiveness, cancer patients' ratings of message effectiveness were not moderated by the supporter's

experience communicating emotional support to cancer patients (H4). Again, it is possible that those experiences supporting someone with cancer were not useful because the scenario from the laboratory session, although still in the cancer context, differed from the participant's own experiences.

The fifth hypothesis investigated whether an inflation bias was occurring, by comparing supporters' self-ratings of message effectiveness to cancer patients' ratings of message effectiveness. As predicted, H5 found that regardless of planning condition, laboratory participants rated their messages as more effective than did the cancer patients who later evaluated the messages.

The remaining perceptual hypotheses (H6-H8) focused on laboratory participants' self-reports of anxiety after recording their messages, and whether trait levels of reticence or prior experience communicating emotional to those with cancer moderated the effects of planning on state anxiety. None of the hypotheses related to self-reported anxiety was supported. One possibility is that the statistical tests for these hypotheses were underpowered. Indeed, for all but one of the hypotheses regarding state anxiety, observed power was less than or equal to .10. Furthermore, one interaction effect yielded a *p*-value less than .05; however, the subsequent probing did not result in any significant differences between groups, which may have also been due to a lack of statistical power. Had the sample size been increased, it is possible that a better assessment of these hypotheses could have occurred.

Behavioral Findings

The second major category of predictions concerned four nonverbal behaviors: direct gaze (H9a and H9b), pitch variety (H10a and H10b), and vocal fluency (H11a and

H11b), and also the extent to which the supporter nonverbally conveyed concern (H12a and H12b). For each behavior, planning was predicted to lead to better performance (e.g., more pitch variety), and the effects of planning were expected to be moderated by one's level of reticence. In general, the behavioral predictions were not supported. Reticence did not prove itself a moderating variable for any of the four behaviors, and planning returned a significant main effect only for vocal fluency (H11a). The significant direct effect of planning on vocal fluency occurred in the predicted direction: planners were coded as more fluent than nonplanners.

One possible explanation for a lack of significant findings pertaining to the behavioral predictions could be that participants in the planning condition focused primarily on planning the verbal content of their messages. In doing so, it is possible that the nonverbal, performative aspects of communicating emotional support received little attention in the planning period. Had participants also been encouraged to engage in rehearsing the message, it is possible that nonverbal behaviors of direct gaze, pitch variety, and conveying concern would have played a larger role in the participants' planning. This possibility awaits further empirical investigation.

Physiological Findings

Several predictions were tested concerning planning, reticence, and experience in relation to the supporters' physiological stress responses. Three physiological markers that are often implicated in the stress response (Kudielka et al., 2007; Thorsteinsson & James, 1999) were employed as dependent variables: salivary cortisol, heart rate, and blood pressure (measured as mean arterial pressure). Each of these markers was measured in terms of reactivity (i.e., increases from one or more baseline determinations

to a determination occurring after exposure to a stressor, such as recording an emotional support message).

Planning did not yield a significant main effect on cortisol reactivity as predicted (H13a), nor did experience moderate the association between planning and cortisol reactivity (H13b). In support of H13c, however, a significant interaction effect occurred between planning and reticence. As expected, the effect of planning on cortisol reactivity was moderated by the supporter's trait-level reticence, such that planning resulted in less cortisol reactivity for those who are more reticent than those who are less reticent.

A main effect of planning, as well as moderating effects of reticence and experience, were also predicted for both cardiovascular outcomes. For heart rate reactivity, a significant main effect occurred for planning (H14a). As hypothesized, planners experienced less heart rate reactivity than nonplanners. Neither reticence nor experience moderated this association between planning and heart rate reactivity, however (H14b and H14c). Whereas planning had a main effect on heart rate reactivity, the same main effect was absent in terms of planning's effect on mean arterial pressure reactivity (H15a). Furthermore, reticence and experience did not moderate the association between planning and mean arterial pressure reactivity (H15b and H15c).

Regarding the seemingly contradictory results of the main effects of planning on heart rate and mean arterial pressure reactivity, it is important to remember that although heart rate and mean arterial pressure are both measures of the cardiovascular system's stress response, changes in heart rate are not necessarily correlated with changes in blood pressure. Thus, whereas the heart may increase in beats per minute in response to a

stressor, healthy blood vessels typically dilate in response to stressors to allow for better blood circulation (American Heart Association, 2016).

Once again, experience did not moderate the main effect associations, and this may be due to the novelty of the specifics of the hypothetical scenario presented during the laboratory session. Reticence also failed to moderate the main effect association between planning and cardiovascular outcomes. It is worth noting, though, that the observed power for both tests of the moderating effect of reticence were exceptionally low (.06 and .10, respectively). A summary of the support for each hypothesis appears in Table 3.

Effect Sizes

Before discussing the implications of this study's findings, it is worth commenting on the effect sizes tied to many of the supported hypotheses. Partial eta-squared was the effect size used when an ANOVA model employed to test a hypothesis. For the supported hypotheses, partial eta-squared values ranged from .04 to .08, which under Cohen's (1988) guidelines would suggest small to moderate effects. This suggests that when hypotheses were supported, the effect of planning, reticence, or other independent variables were accounting for a relatively minor amount of variability in the outcome variables. Interestingly, some analyses yielded p -values just above .05, but with the same effect size as similar hypotheses that had p -values just under .05. Thus, it is prudent to consider the minimal differences between some hypotheses that were barely significant and others that were barely nonsignificant.

One exception to this pattern was the effect sizes for the paired-samples t -tests utilized to test hypotheses related to inflation bias. For H5a-H5c, values of Cohen's d

ranged from .58 to .68, suggesting a moderate to large effect of role (i.e., supporter or recipient) on ratings of support messages on three message effectiveness outcome variables. Having commented on the analyses' effect sizes, the implications discussed next can be more accurately interpreted. These implications are categorized into five areas: theoretical, practical, clinical, pedagogical, and methodological.

Theoretical Implications

One important theoretical implication of these findings relates to instances of success bias during the planning process. Previous research shows that planners rate themselves as more likely to achieve their goals in a forthcoming interaction than nonplanners (Knowlton & Berger, 1997). Whereas Knowlton and Berger's study showed success bias occurs after planning but prior to communicating, this study investigated whether experiences of success bias occurred *after* communicating a message.

Results show that planners rated their messages as more effective than nonplanners on relational assurances and problem-solving utility. Although significant differences between planners and nonplanners did not emerge for emotional awareness, the planners' messages were still rated higher than nonplanners' messages by supporters and recipients. It appears, then, that the success bias is occurring after a support message is communicated. This is consequential considering some supporters of a cancer patient would expect to engage in multiple supportive interactions over the course of weeks, months, or years. From this multiple supportive interaction perspective, a supporter's perception that his or her plans were successful after communicating one instance of support would shape his or her perceived ability to "successfully" communicate support in future interactions, potentially fueling the success bias experienced just prior to the

next supportive interaction. If this assertion is true, then planning theory would suggest there is little motivation for the supporter to revisit his or her plan to evaluate its effectiveness because it is believed to be a successful pathway to reaching the goal of providing support. Furthermore, good planners can recognize opportunities to adapt their plans as they are being implemented based on the ongoing social interaction (Hayes-Roth & Hayes-Roth, 1979). Success bias may blind communicators from these opportunities to adapt their plans as the interaction unfolds on the basis that planners rarely assess the effectiveness of plans they believe are successful (Berger & Jordan, 1992).

Interestingly, when cancer patients rated the messages recorded by laboratory participants, the same pattern of significant findings occurred. Planners' messages were rated better than nonplanners' messages in terms of relational assurances and problem-solving utility, but not emotional awareness. This is particularly important given that the ultimate judge of a message's effectiveness is the recipient of the message. That is, unlike goals that can be objectively measured such as whether someone has taken the most efficient route home from work, successfully achieving communicative goals such as supporting someone with cancer depends on the recipient's assessment of a supporter's message. The findings from the present study reinforce the value of engaging in planning; however, due to the asynchronous communication occurring in the present study, these findings should not be generalized to face-to-face, real-time interactions.

In addition to planners' messages being perceived as generally more effective than nonplanners' messages, it is important to note that message effectiveness ratings also significantly differed between the supporters and cancer patients, regardless of whether the supporter was a planner or nonplanner. It appears that after communicating

emotional support, most supporters were engaging in an inflation bias by exhibiting an overestimation in their communication abilities. This phenomenon of rating one's own abilities higher than others rate them is common (Alicke & Govorun, 2005; Kruger, 1999; Kruger & Dunning, 1999; Krueger & Mueller, 2002; Sedikides, Gaertner, & Toguchi, 2003). For example, in the healthcare context, studies found novice physicians overestimate their abilities to competently communicate bad news to standardized patients (Hodges, Regehr, & Martin, 2011) and physician assistant students overrated their empathic communication skills (Floyd, Generous, Clark, Simon, & McLeod, 2015). A meta-analysis showed that physicians frequently engage in inflation bias—rating their performance on a variety of metrics (e.g., interactions with standardized patients, chart audits, simulations of simple surgical tasks) higher than ratings from a variety of third parties ranging from supervisors to family members of patients (Davis et al., 2006). The present study suggests that supporters also engage in inflation bias when communicating emotional support to recently diagnosed cancer patients.

Because communicators continue to think about the goals being pursued and the plans they are implementing as their interactions progresses (Waldron, 1990; Waldron & Applegate, 1994), it is important to consider how inflation bias may affect supporters' continued planning and plan adaptations as a supportive interaction continues. The inflation bias would predict that supporters perceive the implementation of their plans as more effective than how recipients rate the messages. It is possible then, that some supportive messages are ill-received by the person in need while being perceived as effective by the supporter. Thus, one potential implication of the inflation bias that needs

further investigation is whether inflation bias blinds supporters from realizing the need to adapt one's strategies during the interaction.

Inflation bias also poses a potential problem for people who will engage in multiple supportive conversations in their lifetime. Recall that one of the propositions of planning theory is that humans possess the cognitive abilities to formulate plans, evaluate the effectiveness of plans, and to retain plans in long-term memory for later recall. These abilities, together, may potentially increase the efficiency in which humans achieve the same goal again in the future because of the ability to recall and rely on prior plans (Hammond, 1989; Hayes-Roth & Hayes-Roth, 1979; Pea & Hawkins, 1987; Petronio et al., 1992). Inflation bias creates a potential problem in that humans, although having the capacity to evaluate plans, may not do so accurately (i.e., evaluating the implementation plans positively while the recipient viewed the message or interaction negatively). Therefore, recollections of plan effectiveness may be inaccurately stored in one's long-term memory. The result would be future implementations of a plan that is not as effective as believed, or not optimized for success. Logically, believing a plan stored in long-term memory is effective would also create higher levels of success bias when the communicator relies on that plan in future interactions; however, this is only conjecture and needs empirical testing.

A consideration worth noting is how inflation bias was measured in this study. The inflation bias is a matter of believing one is better at something than he or she is. In the present study, the inflation bias was determined by comparing supporters' own message effectiveness ratings against message effectiveness ratings of the cancer patient receiving the message. In doing so, it may appear that the researcher has blindly trusted

that the cancer patients' message ratings are more accurate than the supporters' message ratings. In reality, all perceptions of message effectiveness are subjective, regardless if the perceptions are made by a supporter or recipient. The decision to compare the supporters' ratings against the recipients' ratings was made because the researcher believes that the message effectiveness ratings made by the people with cancer who are receiving the messages are more meaningful, not because they are believed to be more accurate. That is, the cancer patients' ratings were used as the reference point because, ultimately, they are the targets of the emotional support messages being communicated.

Practical Implications

Perhaps the most important audience for these findings are those who know someone recently diagnosed with cancer. Given that supporters consistently self-rated their messages as more effective than did cancer patients, it is recommended that supporters conduct an honest self-assessment of the emotional support messages they plan to communicate. Some may reject this recommendation based on the belief that they possess the ability to provide support, and to those individuals, a corollary recommendation is offered: Take a moment to self-reflect on your ability to accurately gauge your own ability in any situation. Consider, even for a moment, that there is room for improving one's skill to communicate effective emotional support. Furthermore, consider seeking honest feedback from others regarding your ability to communicate emotional support and the plans you have created to communicate emotional support.

Whether engaging in self-reflection or seeking feedback from others regarding plans to communicate support, communicators ought to consider the characteristics of supportive messages (i.e., emotional awareness, relational assurances, and problem-

solving utility) and determine what to communicate to meet the cancer patient's desired support. Thus, a useful way to begin planning would be to consider the needs of the support recipient. Prior research on the optimal matching model of support (Cutrona & Russell, 1990) aligns with this approach of communicating supportive messages that match recipients' desires, particularly because failing to do so can result in the recipient not feeling better about the stressor (Cutrona & Suhr, 1994). Supporters should also recall that support messages may be viewed favorably by recipients on one characteristic (i.e., problem-solving utility), while simultaneously perceived as lacking in other characteristics (i.e., relational assurances and emotional awareness). Therefore, any self-reflection on the effectiveness of a support message should consider which of these three characteristics are most valued by the recipient at the moment of the interaction, and to what extent the messages communicated meet those needs. This is particularly important given that support recipients have expectations for the types of support messages received (Pierce, Sarason, & Sarason, 1991), and failing to meet these needs can actually make a recipient feel worse about the situation (Cutrona & Suhr, 1994; Goldsmith & Fitch, 1997). On the contrary, a laboratory study found that recipients who had their support desires met after participating in stressful tasks experienced faster recovery from elevated cortisol levels (Priem & Solomon, 2015).

The next recommendation is for supporters to consider engaging in message planning prior to communicating support to someone with cancer. Supporters and cancer patients both perceived messages from planners as more effective in terms of relational assurances and problem-solving utility. Thinking through one's goals as a supporter and one's communication strategies for reaching these goals, even for only a few minutes,

may lead to recipients viewing a message more positively. Furthermore, it may also lead to the supporter viewing the message more positively, too, which could increase the supporter's confidence in future instances when support is communicated. Importantly, planning can be accomplished relatively quickly. For example, the laboratory participants in this study were given only four minutes to plan, yet this was sufficient time to create significantly more effective messages. It is necessary to note though that the significant findings regarding message effectiveness yielded small to medium effect sizes, suggesting that planning can improve messages, but only to some extent. Additionally, these findings occurred during an asynchronous interaction and therefore may not generalize to face-to-face interactions.

Clinical Implications

This study's findings can also be used by communication training professionals. For example, planning can address issues regarding competently delivering support messages. Recalling that some communicators refrain from communicating emotional support to people they know with cancer because they are worried they will appear incompetent (Ray et al., in press), practitioners can focus on developing nonverbal behaviors that are tied to perceptions of speaker competency. The results of hypothesis 11a identified vocal fluency as a specific behavior that was positively influenced by the planning process and prior studies show vocal fluency is positively associated with perceptions of a speaker's competence (Miller & Hewgill, 1964), credibility, and composure (Burgoon, Birk, & Pfau, 1990). Importantly, planners in the present study were coded as more vocally fluent. These findings are in line with prior studies that compared planners and nonplanners on similar constructs such as frequency and duration

of speech onset latencies and nonvocalized pauses (Allen & Edwards, 1991; Greene, 1984). Therefore, practitioners can recommend planning as an exercise that should lead to increased vocal fluency, and in turn, increased perceptions of speaker competence.

Planning may also attenuate the stress response, particularly for highly reticent communicators who are anxious about communicating support. Prior research suggests that supporting cancer patients can evoke anxiety (Wortman & Dunkel-Schetter, 1979), and a recent study confirmed that some would-be supporters chose not to communicate support to a cancer patient out of fear of being negatively evaluated by the would-be recipient (Ray, Manusov, & McLaren, in press). Furthermore, experiencing acute stressors, such as delivering a speech, has consistently been tied to increases in salivary cortisol (Kudielka, Hellhammer, & Kirschbaum, 2007). Therefore, one way to assess whether a strategy such as planning addresses the perceived stressfulness of a communication moment such as providing support is to observe the amount of cortisol generated in response to a stressor.

This study showed that reticence moderated the effect of planning on salivary cortisol reactivity, such that the highly reticent supporters who engaged in planning experienced less cortisol reactivity than low reticence supporters who engaged in planning. Considering that cortisol reactivity is negatively related to perceived control over a situation (Nicolson, 2008), one possible explanation for these results is that a brief planning period increases perceived control over the anticipated stressor, particularly for those who are highly reticent.

Pedagogical Implications

This study can also inform how the topic of social support is taught in communication courses. First, a cancer diagnosis can be used as a context for case studies in which students practice planning and communicating supportive messages. Case studies involve the analysis of a situation or problem and challenges students to “identify objectives and goals for key characters by putting themselves in the shoes of those characters” (McDade, 1995, p. 9). Such an approach naturally complements this study’s use of planning theory. Furthermore, utilizing situations that are realistic can enhance the meaningfulness of the learning experience (Dunlap & Grabinger, 1996). With just under 40% of the population expected to experience cancer at some point in life (National Cancer Institute, 2017), most people will likely encounter multiple instances when they will communicate support to people with cancer, or other significant chronic stressors (Randall & Bodenmann, 2009). Furthermore, the cancer context is likely relevant to many undergraduate students. In this study, 43 of the 100 undergraduate laboratory participants ($M_{age} = 19.95$ years) already had experience supporting someone with cancer, and it is feasible that many more would have this experience in the years following college. For example, Peters-Golden (1982) found in a sample of 100 adults ($M_{age} = 35$ years), 84% knew someone with cancer. Thus, although cancer prevalence across all sites is relatively low for traditional-aged college students, it is much more likely that they will be communicate support to someone with cancer at some point in their early adult life. Therefore, the cancer context can serve as a relevant case study in the communication classroom.

Additionally, the inflation bias findings suggest that students will be overconfident in their abilities to communicate emotional support. Teachers can create classroom activities in which students engage in message planning, deliver the message in a mock situation, and then evaluate the effectiveness of one's plans as a way of determining a plan's success. Planning research shows people rarely revisit prior plans to evaluate their effectiveness, so by doing so via an in-class activity, students can gain feedback from their peers on the effectiveness of their support messages and identify ways to improve as supporters.

Methodological Implications

This study also presents important methodological implications for future research endeavors involving cancer patients or other populations that may be difficult to access. Ideally, the study of supportive communication in the cancer context would occur between a supporter and the person he or she knows who has been recently diagnosed with cancer. This might not be feasible, however, considering the increased number of tasks, appointments, and stress a recently diagnosed cancer patient faces. Recruitment efforts to obtain an adequate sample size for a dyadic interaction study occurring in an on-campus laboratory between a recently diagnosed cancer patient and a supporter could take months if not years.

The design of this experiment can serve as a model for future studies involving cancer patients or other populations that may be difficult to access. The goal of the design is to generate two sets of participants: supporters who engage participate in a laboratory session and message recipients who are actual cancer patients. The first set of participants consists of English-speaking adults who can be recruited from undergraduate courses.

These participants engage in the more labor-intensive aspects of data collection, including completing prescreening questionnaire and a laboratory session in which they record an emotional support message. Admittedly, this portion of the design experiences threats to ecological validity. The data collection occurs in a laboratory and the participants record a support message for one of their own friends; however, the friend chosen is only hypothetically diagnosed with cancer.

The second set of participants comprise the cancer patients who watch the recorded emotional support messages and provide ratings on variables related to the quality of the message, how the message made them feel, and how they feel about the supporter. This part of the process is much less time consuming and can be completed via an online questionnaire in which the recorded message is embedded. Again, locating an adequate sample size of cancer patients could take months if participation required a laboratory visit. Therefore, reserving the online-only portion of participation for the participant population that is more difficult to access is a more efficient way to proceed.

This approach, although not perfect, is an improvement over study designs in which neither person in the interaction has actually experienced the context firsthand. That is, the present study's design consists of one person who has actually been diagnosed with cancer, whereas the other person is asked to imagine the context as a hypothetical situation. Worth noting, however, is that almost half of the laboratory participants ($n = 43$) had prior experience communicating emotional support to someone with cancer, suggesting that many of the participants had firsthand experience with this context that they could draw upon when imagining the hypothetical scenario. This was further supported by the emotional reactions of some of those participants who recorded a

message in this hypothetical situation. That is, on multiple occasions, laboratory participants either became choked up or temporarily cried before or during the recording of their messages.

Because this study measured message effectiveness, it was important for the recipient rating the message to be as similar as possible to the person for which the message was recorded. Again, the ideal situation would be for the supporter actually to know someone recently diagnosed with cancer, record a message for that person, and have that person rate the message. This approach would not be particularly difficult to implement; however, it would be much more time consuming than the approach described above in which the intended message recipient is replaced with a different person with cancer. Although not ideal, this method is better than having a random person who has never experienced cancer rating the message. In sum, the study involved 200 total participants: 100 acting as supporters and 100 acting as recipients of support. By utilizing this design, a total of 143 of the 200 participants (71.5%) had real-life experience with supportive communication in the cancer context. Had the study not relied on actual cancer patients to rate these messages, it is possible that only 43 of the 200 participants (21.5%) would have firsthand experience with this context.

A second methodological implication of this study was the importance of including multiple types of data, which allowed for triangulation to occur. For example, stress was measured in the neuroendocrine system (i.e., salivary cortisol collections), the cardiovascular system (i.e., heart rate and blood pressure determinations), and via self-reports of anxiety, which acted as a proxy for a self-report of stress. By triangulating physiological data, the researcher was able to determine different ways that laboratory

participants experienced stress and also observe times when the physiological stress response was enacted, but not simultaneously consciously recognized by the participant via his or her self-reports of anxiety. Future studies ought to consider how stress may operate outside of the conscious awareness of the participant and plan accordingly to measure the stress response via both physiological and survey methods.

Strengths and Limitations

As with most research endeavors, the present study had both strengths and limitations. Beginning with the study's limitations, it is important to note that the laboratory participants were recording emotional support messages in response to a hypothetical scenario, thus detracting from the ecological validity of the findings. That is, the supporter and recipient lacked any real connection or relationship. In designing this study in such a fashion, though, the researcher was able to investigate the effect of planning on message effectiveness and other outcome variables while controlling for the possible confounding effects of relational history between supporter and recipient. One downside of sacrificing ecological validity, though, is that measurements of stress and anxiety may have been mitigated by the fact that the friend for whom the message was recorded was not actually diagnosed with a serious form of cancer. This is not to say that the scenario failed to elicit emotional reactions. In fact, some participants exhibited signs of distress such as fighting back tears, suggesting the scenario may have had face validity in terms of anxiety provocation.

A second limitation related to the experimental design was the asynchronous nature of the communication between the supporter and recipient. Recall that the supporters recorded a message during a laboratory session and then, at a later date, the

recorded messages were watched and rated by cancer patients. This design does not capture how supporters may adjust their messages and behaviors midway through supportive conversations based on nonverbal feedback from recipients, nor does it account for the turn-taking nature of supportive conversations in which support is communicated over several messages. The design of this experiment may be more relevant to computer-mediated communication and forms of asynchronous communicating such as leaving voicemails or messages on social media. Thus, the generalizability of the findings is limited in face-to-face contexts but might be particularly applicable to instances of asynchronous communication.

A third limitation is that the laboratory participants were all undergraduate college students. There are well-documented drawbacks of recruiting undergraduate student participants, such as greater homogeneity (Peterson, 2001), less stable peer group relationships, and a less developed sense of self in comparison to segments of the population who are not traditional college students (Sears, 1986). Due to funding restraints, though, it was not feasible to recruit and compensate segments of the population besides undergraduate students. Conversely, those who were recruited to watch and rate the recorded videos were all current cancer patients (defined broadly to include all people who had been diagnosed with cancer at some point in their life). Although, the sample of cancer patients endured its own drawbacks (e.g., a disproportionate number were white females), having people who have been diagnosed with cancer rate the messages improved the validity of those findings.

Another limitation worth noting is concerned with effect sizes and statistical power. As previously mentioned, many of the supported hypotheses had small effect

sizes. Furthermore, many of the nonsignificant hypotheses were considerably underpowered, with some observed power values reaching .10 or lower. These two issues are tied together given that greater statistical power is needed to detect smaller effects of independent variables on dependent variables. Thus, one possibility is that the effect of planning on outcomes such as perceived increases in anxiety is so small that it would require a great deal of statistical power to detect a significant effect. Another possibility is that some statistical tests were underpowered not because the effect being sought was small, but because the test itself needed a larger sample size for it to properly analyze the data.

The study also exhibited many strengths. One strength was that the predictions tested herein were theoretically grounded in Berger's (1997) planning theory. Furthermore, the choice of reticence and experience as moderating variables was made based on Bradford and Petronio's (1998) application of planning theory in which they offered six concepts that affect planning: information about the recipient, plan timing, context, nature of the relationship, prior experience, and skill. Indeed, reticence at least partially accounts for skill, whereas experience providing emotional support to someone with cancer accounts for context and prior experience. The remaining three concepts were measured (e.g., nature of the relationship) or controlled as part of the experimental design (e.g., plan timing and information about the recipient).

Second, the experimental design of the study was a methodological strength that allowed for the adjudication of causal relationships as opposed to mere associations derived from cross-sectional designs. Additionally, the breadth of data derived through the design is also noteworthy. For example, each message was rated on multiple variables

of interest by both the supporter and by a cancer patient, the physiological stress response was measured in both the endocrine and cardiovascular systems, and trained coders provided behavioral data. Although most of the hypotheses focused on physiological outcomes were not supported in the current study, the inclusion of multiple physiological markers allowed for triangulation of data had more of the analyses been significant.

Future Directions

The present study is a single investigation in a broader line of research on emotional support interactions following a cancer diagnosis. Just as the present study's central questions were influenced in part by the findings from prior publications in this line of research (see Ray, Manusov, & McLaren, in press; Ray & Veluscek, 2016, 2017), the present study in turn provides multiple opportunities for future research projects.

This study operationalized message quality based on ratings of message effectiveness (Goldsmith et al., 2000). Although this is useful in providing broad perceptions of a message's problem-solving utility, emotional awareness, and use of relational assurances, this approach ignores the possible micro-level use of specific words that may affect perceptions of message quality. For example, Hersh's (2011) lexical analysis of support messages on an online breast cancer forum revealed that message quality (i.e., verbal person-centeredness) was related to the increased use of "you" and decreased use of "I." These findings were determined using verbal person-centeredness as the independent variable and frequency of certain words as the dependent variable. Transcripts of messages recorded in this study could be used to determine if planning leads to increased use of "you" pronouns and decreased use of "I" pronouns, which in turn could predict variables related to message quality and perceptions of the supporter.

This study operationalized experience in terms of whether the laboratory participant had experience communicating emotional support to someone with cancer. Future studies ought to consider how much experience laboratory participants have communicating emotional support rather than relying on whether the person has experience or not. Furthermore, the measurement of experience could occur in terms of providing emotional support in general, providing emotional support to the specific person being supported in the laboratory session, and providing support in the cancer context. Given the findings related to success bias and inflation bias, future studies ought to consider how one's perceived ability to provide support affects his or her subsequent communication of support messages.

Many of the messages recorded in the present study began with expressions of disappointment (i.e., "I can't believe you didn't tell me about your diagnosis"), but then went on to provide messages of love, empathy, and concern. This poses a potential dilemma for social support researchers who often reduce entire support messages into a single rating; however, this dilemma also presents an opportunity for future research. For example, if employing Burleson's (1982) hierarchy of verbal-person centeredness to categorize this study's messages, difficulties would arise as some portions of a message could be low person-centered and other portions be considered highly person-centered. Thus, a useful research endeavor would be to understand how message recipients perceive and later recall supportive interactions that include a combination of both low person-centered and high person-centered support. Given the proclivity for people to engage in a negativity bias in which they focus more on negative aspects of a message or event (for overview, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), it is worth

investigating what percent of a support message can be low-quality before the message's high-quality portions are overlooked or nullified.

Future studies should also seek to further support this study's findings regarding the success bias, particularly in natural, non-laboratory settings. The desire to "impress the researcher" who was present at the time of message recording may have influenced self-reported measures of goal achievement. Moreover, in a naturalistic setting the real-time reactions and responses from the message recipient would likely affect one's perceived success in achieving a goal as well. If this is the case, then changes in success bias occurring before, during, and following supportive communication may depend on the channel through which the communication occurs. Specifically, synchronous communication in which verbal and nonverbal feedback occurs would likely cause real-time changes in one's perception of his or her success as a communicator.

The results of this study may have also differed had the communication taken place between a supporter and recipient who know each other and have relational history. Prior research has shown that the relationship's relevance to the stressor may affect how favorably a recipient views a supportive interaction. For example, colleagues' support was rated more favorably than family members' support regarding work stressors (Metts, Geist, & Gray, 1994). In the cancer support context, it is possible that friends acting as supporters may be viewed more favorably if the supportive messages included portions that demonstrated the relevance of the relationship to the current situation, possibly by recalling prior stressors that have been overcome together. The current study design did not allow this to happen; however, future research can determine how much of an effect relational relevance has on emotional support following a cancer diagnosis by studying

dyads who know each other. Additionally, future research can investigate the role of planning when spouses or significant others (as opposed to friends) are expected to provide support while also experiencing their own needs for support. That is, researchers ought to investigate how planning supportive messages occur when the supporter and recipient are both affected by the psychological aspects of the disease and may need support.

Finally, this study approached the planning process with the presumption that any planning is better than no planning; however, future research should investigate potential curvilinear associations between planning effort and message effectiveness. Indeed, earlier studies using planning theory found that planning was curvilinearly related to verbal and nonverbal action fluidity. For example, Knowlton and Berger (1997) tasked participants with persuading a confederate to adopt their attitude on an issue and asked participants to prepare one, three, or six arguments in advance. When the confederate rejected the participant's first argument and asked for a second argument, the onset speech latencies of those with three arguments were shorter than those who had planned either one or six arguments. Although this provides preliminary support for Berger's (1997) planning theory proposition that number of alternatives planned for is curvilinearly related to one nonverbal aspect of action fluidity, future studies ought to investigate the potential deleterious effects of overplanning on several nonverbal behaviors. One such behavior that shows promise is vocal fluency throughout the message given that the present study found planners were more vocally fluent than nonplanners. Moreover, future studies should investigate whether this curvilinear effect is

observed in asynchronous contexts such as communicating support over computer mediated channels where speech onset latencies and vocal fluency cannot occur.

Motivation to plan and communicate support should also be considered in conjunction with the above discussion of underplanning and overplanning. Berger (1997) proposes that plan complexity (i.e., the number of contingencies and level of detail involved in planning) is related to desire to achieve a goal. For example, Berger (1988) conducted an experiment in which participants planned persuasive arguments aimed at changing another person's attitude on an issue. A moderate positive correlation occurred between the number of action units in the participants' plans and the participants' issue involvement. Thus, those who are highly motivated to achieve a desired goal, such as comforting a cancer patient, may engage in overplanning, which may lead to reduced action fluidity.

Additionally, the literature on deception motivation also provides insight into the potential drawbacks of planning and perceived message effectiveness. DePaulo, Lanier, and Davis (1983) performed an experiment on planned deception and found, regardless of whether participants were telling the truth or lying, those who planned their messages were perceived as less honest, more tense, and less spontaneous than those who did not plan their messages. That is, overall a lack of spontaneity may adversely affect how communicators are perceived. Berger (1997) has also discussed the potential for planned spontaneity, which may remedy the adverse effects of planning that DePaulo and colleagues found in their experiment. Specifically, Berger notes that some plans may provide potential courses for action in a broad sense by stipulating in advance what would be appropriate in or inappropriate behavior in a situation. By operating within

these boundaries, spontaneity can still occur based on the specific chosen course of action selected from the available appropriate options. This possibility should be considered considering the prior discussion on overplanning and plan complexity. Perhaps the best plans are those that provide general courses of action, but still allow for spontaneity.

One final future direction worth considering is the effects of rehearsal as a specific planning behavior. Honeycutt (2003) differentiates planning and rehearsal, stating that rehearsal is a specific behavior that only some planners perform. Furthermore, rehearsal may be a particularly useful planning behavior as Berger (1997) notes that “the effectiveness of any action plan aimed at achieving a social goal is the joint product of the plan, and the skills and attributes of the social actor who carries out the plan” (p. 87). Thus, whereas the planning process may produce better plans, the rehearsal of one’s plans may increase the supporter’s ability to carry out one’s plans. Moreover, rehearsal allows for a communicator to test out his or her planned messages and make subsequent adjustments. For example, Pea and Hawkins (1987) found that children who created an initial plan and were then given an opportunity to re-plan created more efficient plans than those who had only one planning opportunity. Additionally, in the public speaking context, Ayres (1996) found that highly apprehensive communicators typically spend more time practicing than their counterparts and a follow-up study showed that highly apprehensive students who practiced speeches reported less apprehension and more willingness to communicate after delivering a speech (Ayres, Schliesman, & Sonandré, 1998). Taken together, prior research on rehearsal suggests it is a promising planning behavior worth investigating in the cancer context. Thus, future studies ought to investigate the possible additive effects of not only planning, but also specifically

engaging in message rehearsal, too. Such a study could yield important practical and pedagogical implications if the results did indeed find rehearsal to increase message effectiveness and nonverbal immediacy behaviors beyond the effects of only planning,

Summary

To conclude, this study illuminated many benefits of message planning when people are tasked with communicating emotional support to someone diagnosed with cancer. In general, taking time to plan one's message led to cancer patients viewing the message as more effective; however, regardless of whether the supporters planned, they typically overestimated their own messages' effectiveness. Those who planned were also coded as more vocally fluent and, at times, demonstrated an attenuated physiological stress response to the task of communicating support. The findings provide numerous future directions for research that could further illuminate the experiences of support providers during health crises such as the months following an initial cancer diagnosis.

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Table 1.

Reliability scores, means, standard deviations, scale ranges, and observed data ranges.

Scale/Variable	Reliability	<i>M</i>	<i>SD</i>	Scale Range	Data Range
Reticence*	.92	45.90	15.83	6-126	6-93
Self-Rated Message Effectiveness					
Emotional Awareness Subscale*	.88	5.46	1.03	1-7	1.75-7
Relational Assurance Subscale*	.89	5.62	.95	1-7	2.25-7
Problem-Solving Utility Subscale*	.87	5.20	.97	1-7	2-7
Cancer Patient Ratings of Message Effectiveness					
Emotional Awareness Subscale*	.95	4.63	1.65	1-7	1-7
Relational Assurance Subscale*	.96	4.76	1.66	1-7	1-7
Problem-Solving Utility Subscale*	.91	4.54	1.44	1-7	1-7
State-Trait Anxiety Inventory Short Form Baseline*	.66	8.41	2.05	6-24	6-16
State-Trait Anxiety Inventory Short Form Before Recording*	.88	11.25	4.11	6-24	6-22
State-Trait Anxiety Inventory Short Form After Recording*	.85	13.15	4.56	6-24	6-23
Interpersonal Reactivity: Empathic Concern Subscale*	.70	16.73	2.50	4-20	9-20

Relational Closeness ^{**}	–	5.00	1.52	1-7	1-7
Fluency [†]	.86	4.49	1.62	1-7	1-7
Concern [†]	.86	3.68	1.45	1-7	1-7
Direct Gaze [†]	.95	3.63	1.76	1-7	1-7
Pitch Variety [†]	.70	3.71	1.31	1-7	1-7
Intra-Assay Coefficient of Variability	4.3%	–	–	–	–
Inter-Assay Coefficient of Variability	4.7%	–	–	–	–

Notes. * = Inter-item reliability assessed using Cronbach's alpha, † = Inter-coder reliability assessed using intraclass correlations. Intra-assay coefficient values are an expression of consistency between the two times each saliva sample was tested for cortisol. Intra-assay coefficient values under 10% are acceptable. Inter-assay coefficient values are an expression of consistency across plates of assays. Inter-assay coefficient values under 15% are acceptable. **Relational closeness was measured using a global (single-item) scale,

Table 2

Intercorrelations amongst dependent variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Emotional Awareness (Self)	-													
2. Relational Assurances (Self)	.72**	-												
3. Problem-Solving Utility (Self)	.74**	.76**	-											
4. Emotional Awareness (Px)	.09	.24*	.13	-										
5. Relational Assurances (Px)	.09	.27*	.14	.89**	-									
6. Problem-Solving Utility (Px)	.06	.17	.14	.86**	.87**	-								
7. Anxiety	-.05	.04	-.09	.04	.06	.04	-							
8. Direct Gaze	.15	.18	.16	.14	.14	.17	.06	-						
9. Pitch Variety	.01	.06	-.01	.004	.04	.04	.13	.19	-					
10. Fluency	-.05	.10	.05	.07	.13	.04	-.01	.30*	.43**	-				
11. Concern	.18	.16	.22	.29*	.32*	.35**	.09	.30*	.01	.06	-			
12. Cortisol Reactivity	-.06	-.01	.05	-.02	-.06	-.02	-.001	.06	-.004	.16	-.13	-		
13. Heart Rate Reactivity	.07	-.11	-.12	-.01	-.12	-.02	-.03	.01	-.06	-.33*	-.09	-.11	-	
14. MAP Reactivity	-.04	-.10	.05	.05	.08	.10	.04	.08	.14	.16	-.02	.09	.02	-

* $p < .05$ (two-tailed). ** $p < .001$ (two-tailed). Self = Variable was rated by the person who recorded the message. Px = Variable was rated by a cancer patient who viewed the message.

Table 3

Summary of results for hypothesis tests.

Hypothesis	Result
H1a: Planners rate their own messages as having more emotional awareness than nonplanners	Not Supported
H1b: Planners rate their own messages as having more relational assurance than nonplanners	Supported
H1c: Planners rate their own messages as having more problem-solving utility than nonplanners	Supported
H2a: Experience providing emotional support to cancer patients moderates the association between planning and self-ratings of emotional awareness, such that planning leads to higher self-ratings for those without experience compared to those with such experience	Not Supported
H2b: Experience providing emotional support to cancer patients moderates the association between planning and self-ratings of relational assurance, such that planning leads to higher self-ratings for those without experience compared to those with such experience	Not Supported
H2c: Experience providing emotional support to cancer patients moderates the association between planning and self-ratings of problem-solving utility, such that planning leads to higher self-ratings for those without experience compared to those with such experience	Not Supported
H3a: Cancer patients rate planners' messages as having more emotional awareness than nonplanners	Not Supported
H3b: Cancer patients rate planners' messages as having more relational assurances than nonplanners	Supported
H3c: Cancer patients rate planners' messages as having more problem-solving utility than nonplanners	Supported
H4a: Experience providing emotional support to cancer patients moderates the association between planning and cancer patients' ratings of emotional awareness, such that planning leads to higher self-ratings for those without experience compared to those with such experience	Not Supported

H4b: Experience providing emotional support to cancer patients moderates the association between planning and cancer patients' ratings of relational assurance, such that planning leads to higher ratings for those without experience compared to those with such experience	Not Supported
H4c: Experience providing emotional support to cancer patients moderates the association between planning and cancer patients' ratings of problem-solving utility, such that planning leads to higher ratings for those without experience compared to those with such experience	Not Supported
H5a: Irrespective of planning condition, message providers view their messages as having more emotional awareness	Supported
H5b: Irrespective of planning condition, message providers view their messages as having more relational assurances	Supported
H5c: Irrespective of planning condition, message providers view their messages as having more problem-solving utility	Supported
H6: Planners report less anxiety after recording a support message than nonplanners	Not Supported
H7: Experience communicating emotional support to cancer patients moderates the effect of planning on providers' anxiety, such that planning reduces anxiety more for those without experience than those with such experience	Not Supported
H8: Reticence moderates the effect of planning on providers' anxiety, such that planning reduces anxiety more for those who are more reticent than those who are less reticent	Not Supported
H9a: Planners use more direct gaze than nonplanners while recording an emotional support message	Not Supported
H9b: Reticence moderates the effect of planning on direct gaze, such that planning yields more direct gaze for those who are more reticent than those who are less reticent.	Not Supported
H10a: Planners use more pitch variety than nonplanners while recording an emotional support message	Not Supported

H10b: Reticence moderates the effect of planning on pitch variety, such that planning yields more pitch variety for those who are more reticent than those who are less reticent.	Not Supported
H11a: Planners communicate with more fluency than nonplanners while recording an emotional support message	Supported
H11b: Reticence moderates the effect of planning on vocal fluency, such that planning yields greater vocal fluency for those who are more reticent than those who are less reticent.	Not Supported
H12a: Planners appear more concerned than nonplanners while recording an emotional support message	Not Supported
H12b: Reticence moderates the effect of planning on appearing concerned, such that planning yields greater perceived concern for those who are more reticent than those who are less reticent.	Not Supported
H13a: Planners experience less cortisol reactivity than nonplanners after recording an emotional support message	Not Supported
H13b: Experience moderates the effect of planning on cortisol reactivity, such that planning leads to less cortisol reactivity for those without experience providing emotional support to cancer patients than those with such experience	Not Supported
H13c: Reticence moderates the effect of planning on cortisol reactivity, such that planning leads to less cortisol reactivity for those who are more reticent than those who are less reticent	Supported
H14a: Planners experience less heart rate reactivity than nonplanners after recording an emotional support message	Supported
H14b: Experience moderates the effect of planning on heart rate reactivity, such that planning leads to less heart rate reactivity for those without experience providing emotional support to cancer patients than those with such experience	Not Supported
H14c: Reticence moderates the effect of planning on heart rate reactivity, such that planning leads to less heart rate reactivity for those who are more reticent than those who are less reticent	Not Supported

H15a: Planners experience less mean arterial pressure reactivity than nonplanners after recording an emotional support message	Not Supported
H15b: Experience moderates the effect of planning on mean arterial pressure reactivity, such that planning leads to less mean arterial pressure reactivity for those without experience providing emotional support to cancer patients than those with such experience	Not Supported
H15c: Reticence moderates the effect of planning on mean arterial pressure reactivity, such that planning leads to less mean arterial pressure reactivity for those who are more reticent than those who are less reticent	Not Supported

APPENDIX A
INSTITUTIONAL REVIEW BOARD DOCUMENTATION

Instructions and Notes:

- Depending on the nature of what you are doing, some sections may not be applicable to your research. If so mark as “NA”.
- When you write a protocol, keep an electronic copy. You will need to modify this copy when making changes.

1 Protocol Title

Include the full protocol title: Personality, Physiology, and Emotional Support Messages

2 Background and Objectives

Provide the scientific or scholarly background for, rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge.

- Describe the purpose, specific aims, or objectives.
- State the hypotheses to be tested.
- Describe the relevant prior experience and gaps in current knowledge.
- Describe any relevant preliminary data.

Emotional support messages have the potential to create beneficial outcomes for recipients, providers, and the relationship between the recipient and provider. However, not all emotional support messages are high quality and prior research has illustrated instances of low-quality support messages leading to negative consequences for recipients, providers, and relationships. With the potential for some messages to go awry, it is worthwhile to consider the behaviors supporters engage in that predict the quality of emotional support messages. One such behavior that may yield higher quality support messages is message planning. Thus, the goal of this dissertation is to use planning theory to experimentally test whether planning predicts quality of message content, message delivery, message evaluations, and physiological stress reactions to the potential stress of providing emotional support messages.

Part One of the Study

In part one of this two part study, 150 participants will participate in a laboratory session focused around the hypothetical situation of learning a close friend they care about has been diagnosed with cancer. Participants will complete a series of self-report measures during a prescreening survey, and pending qualification, will then schedule themselves for a laboratory session expected to last approximately 60-75 minutes. During the laboratory portion of the procedure, the participants will either be told to spend four minutes writing about the things they have done for the past 24 hours, or, they will be given four minutes to plan their emotional support message. Then, all participants will be asked to record an emotional support message for their friend.

Salivary samples will also be collected at three times throughout the course of the session for later analysis of salivary free cortisol (a hormone implicated in the stress response). We will also monitor the participant's heart rate and blood pressure throughout the laboratory session as an additional type of physiological measurement of anxiety. It is expected that participants engaging in planning will produce the higher quality support messages and experience a smaller stress response in comparison to the control group. It is also hypothesized that the effects of planning on message quality and supporter anxiety will also be moderated by the amount of prior experience participants have providing emotional support, as well as their trait levels of anxiety toward communicating, in general. There is no preliminary data to report. The hypotheses and research questions listed below will be investigated.

Part Two of the Study

Part two of this study involves the recruitment of cancer survivors for the viewing of one of the recorded videos and answering questions about the video. Additionally, four coders will be trained on coding nonverbal behaviors and will also view the videos recorded by those taking part in the laboratory portion of the session. These procedures are needed to answer some of the RQs/Hs listed below. The RQs/Hs with one *asterisk will be answered using the responses from cancer survivors in part two of this study. The RQs/Hs with two **asterisks will be answered using responses from trained coders in part two of the study.

*H1: Planning and prior experience providing emotional support interact to affect (a) message effectiveness and (b) affective improvement, such that these outcomes are higher when participants have time to plan and have more prior experience than when participants have no time to plan and have less prior experience.

**H2: Planning and reticence interact to affect nonverbal immediacy, such that nonverbal immediacy is higher when participants have time to plan and are less reticent than when participants have time to plan and are more reticent.

H3: Supporters who engage in planning experience a significantly smaller amount of cortisol reactivity to recording an emotional support message than supporters who do not engage in planning.

H4: Supporters who engage in planning have greater cortisol recovery after recording an emotional support message than supporters who do not engage in planning.

H5: Supporters who engage in planning experience a smaller increase in heart rate while recording an emotional support message than supporters who do not engage in planning.

H6: Supporters who engage in planning experience a smaller increase in blood pressure while recording an emotional support message than supporters who do not engage in planning.

H7: Planning and prior experience providing emotional support interact to affect (a) cortisol reactivity to recording an emotional support message, (b) cortisol recovery after recording an emotional support message, (c) heart rate while recording an emotional support message, and (d) blood pressure while recording an emotional support message, such that these physiological responses are higher when

participants do not have time to plan and have had minimal prior experience than when participants have time to plan and have more prior experience.

H8: Planning and reticence interact to affect (a) cortisol reactivity to recording an emotional support message, (b) cortisol recovery after recording an emotional support message, (c) heart rate while recording an emotional support message, and (d) blood pressure while recording an emotional support message, such that these physiological responses are higher when participants do not have time to plan and are more reticent than when participants have time to plan and are less reticent.

H9: Supporters who engage in planning report less anxiety after recording an emotional support message than supporters who do not engaging in planning.

H10: Planning and prior experience providing emotional support interact to effect self-reported anxiety, such that anxiety is higher when participants do not have time to plan and have had minimal prior experience than when participants have time to plan and have more prior experience.

H11: Planning and reticence interact to effect self-reported anxiety, such that anxiety is higher when participants do not have time to plan and are more reticent than when participants have time to plan and are less reticent.

H12: Supporters who engage in planning rate their own message as more effective in comparison to the ratings supporters who do not engage in planning report for their messages.

*RQ1: Are cancer survivors' ratings of emotional support messages' problem-solving utility predicted by (a) the supporter's prior experience providing emotional support, (b) reticence, (c) interpersonal communication competence, (d) trait empathy, and (e) whether the supporter was given a brief message planning period prior to performing their emotional support message?

*H13a: Cancer survivors evaluate emotional support messages from supporters who engage in planning as creating more affective improvement than emotional support messages from supporters who do not engage in planning.

*H13b: The effect of planning on creating affective improvement is moderated by support provision experience, such that greater experience corresponds with greater effect.

*H13c: The effect of planning on creating affective improvement is moderated by reticence, such that greater reticence corresponds with weaker effect.

*H13d: The effect of planning on creating affective improvement is moderated by interpersonal communication competence, such that greater interpersonal communication competence corresponds with greater effect.

*H13e: The effect of planning on creating affective improvement is moderated by trait empathy, such that greater trait empathy corresponds with greater effect.

**RQ2: To what extent, if any, do supporters in the two conditions vary in their use of nonverbal immediacy behaviors?

RQ3a: How, if at all, do participants in the planning group and control group differ in average heart rate when anticipating performing an emotional support message?

RQ3b: How, if at all, do participants in the planning group and control group differ in average heart rate when performing an emotional support message?

RQ3c: How, if at all, do participants in the planning group and control group differ in average heart rate in the ten minutes after performing an emotional support message?

RQ4a: How, if at all, do participants in the planning group and control group differ in heart rate variability when anticipating performing an emotional support message?

RQ4b: How, if at all, do participants in the planning group and control group differ in heart rate variability when performing an emotional support message?

RQ4c: How, if at all, do participants in the planning group and control group differ in heart rate variability in the ten minutes after performing an emotional support message?

RQ5a: How, if at all, do participants in the planning group and control group differ in mean arterial blood pressure when anticipating performing an emotional support message?

RQ5b: How, if at all, do participants in the planning group and control group differ in mean arterial blood pressure when performing an emotional support message?

RQ5c: How, if at all, do participants in the planning group and control group differ in mean arterial blood pressure in the ten minutes after performing an emotional support message?

H14a: Supporters who engage in planning will self-report a significantly smaller amount of anxiety to anticipating performing an emotional support message in comparison to supporters not engaging in planning.

H14b: The effect of planning on self-reported anxiety related to anticipating performing an emotional support message is moderated by support provision experience, such that greater experience corresponds with greater effect.

H14c: The effect of planning on self-reported anxiety related to anticipating performing an emotional support message is moderated by reticence, such that greater reticence corresponds with weaker effect.

H14d: The effect of planning on self-reported anxiety related to anticipating performing an emotional support message is moderated by interpersonal communication competence, such that greater interpersonal communication competence corresponds with weaker effect.

H14e: The effect of planning on self-reported anxiety related to anticipating performing an emotional support message is moderated by trait empathy, such that greater trait empathy corresponds with weaker effect.

H15a: Supporters who engage in planning will self-report a significantly smaller amount of anxiety to performing an emotional support message in comparison to supporters not engaging in planning.

H15b: The effect of planning on self-reported anxiety related to performing an emotional support message is moderated by support provision experience, such that greater experience corresponds with weaker effect.

H15c: The effect of planning on self-reported anxiety related to performing an emotional support message is moderated by reticence, such that greater reticence corresponds with weaker effect.

H15d: The effect of planning on self-reported anxiety related to performing an emotional support message is moderated by interpersonal communication competence, such that greater interpersonal communication competence corresponds with weaker effect.

H15e: The effect of planning on self-reported anxiety related to performing an emotional support message is moderated by trait empathy, such that greater trait empathy corresponds with weaker effect.

H16: Supporters who engage in planning will rate their emotional support message as having significantly more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility than supporters who did not engage in planning.

H17: The effect of engaging in planning on supporters' perceptions of their performed messages creating more (a) emotional awareness, (b) relational assurance, and (c) problem-solving utility is moderated by supporters' perceptions of how well they planned their messages, such that greater satisfaction with the planning period corresponds with greater effect.

H18a: Supporters who engage in planning will rate their emotional support message as creating significantly more affective improvement for the recipient than messages from supporters who do not engage in planning.

H18b: The effect of engaging in planning on supporters' perceptions of their performed messages creating affective improvement is moderated by supporters' perceptions of how well they planned their messages, such that greater satisfaction with the planning period corresponds with greater effect.

H19: Greater amounts of prior experience providing emotional support will lead to more complex plans (more inclusion of contingencies in plan).

H20a: Supporters who engage in planning will experience a significant greater increase in their self-perceived ability to provide emotional support in general than those who do not engage in planning.

H20b: The effect of engaging in planning on increases in supporters' self-perception of ability to provide emotional support in general, is moderated by the perception of how well the planning period went, such that greater satisfaction with how the planning period went corresponds with greater effect.

H21a: Supporters who engage in planning will experience a significant greater increase in their self-perceived ability to provide emotional support to cancer patients than those who do not engage in planning.

H21b: The effect of engaging in planning on increases in supporters' self-perception of ability to provide emotional support to cancer patients, is moderated by the perception of how well the planning period went, such that greater satisfaction with how the planning period went corresponds with greater effect.

3 Data Use

Describe how the data will be used. Examples include:

- Dissertation, Thesis, Undergraduate honors project
- Publication/journal article, conferences/presentations
- Results released to agency or organization
- Results released to participants/parents
- Results released to employer or school
- Other (describe)

The data will initially be used for my dissertation. The data will also be used for publications, including journal articles and possible popular press writings (e.g., blog posts submitted to Psychology Today and similar outlets). Data will also be presented at various conferences to which the lead researcher and others on the research team may submit findings.

4 Inclusion and Exclusion Criteria

Describe the inclusion and the exclusion criteria for the study.

Describe how individuals will be screened for eligibility.

Indicate specifically whether you will target or exclude each of the following special populations:

- Minors (individuals who are under the age of 18)
- Adults who are unable to consent
- Pregnant women
- Prisoners
- Native Americans
- Undocumented individuals

For Part One of the Study

Inclusion criteria for this study are (1) Participant must be 18 years of age or older at the time of initial recruitment and (2) able to think, read, and speak in English. Exclusion criteria for this study include any of the following: autoimmune disorders, cancer, cardiovascular disease, endocrine disease, epilepsy, hepatitis, hypertension, kidney disease, liver disease, rheumatic disorders, or type 1 diabetes. These were chosen because these ailments and the medications frequently used in their treatment often directly affect the HPA axis, which is implicated in the production of cortisol, which is an outcome measure in this study. Those who are pregnant or breastfeeding, or who have received the steroids prednisone or cortisone in the past six months will also be excluded from the study for the same reason (potential influence on cortisol production). These specific exclusion criteria are based on prior research that has shown those various conditions and states to affect cortisol production and secretion.

Minors, adults who are unable to consent, prisoners, Native Americans, and undocumented individuals will not be specifically targeted for recruitment to this study.

Prospective participants will be sent an online survey that will ask about inclusion and exclusion criteria. Those who are eligible for participation will then be contacted by the research team to schedule a laboratory session.

For Part Two of the Study

Participants must be 18 years of age or older, able to think, read and speak in English, and must have been diagnosed with cancer at some point in their lifetime.

5 Number of Participants

Indicate the total number of participants to be recruited and enrolled

- Provide a rationale for the proposed enrollment number
- What percentage of screened individuals will likely qualify for the study?

For Part One of the Study

A power analysis performed on the statistical software program G*POWER suggests a sample size of 150 to achieve adequate statistical power, therefore the number of participants will be 150. We expect 95% of individuals in the adult population to meet qualifications for participation.

For Part Two of the Study

For the portion of the study in which cancer survivors are recruited to view and rate one of the videos recorded in the laboratory portion of this study, we will recruit approximately 450 participants.

6 Recruitment Methods

- Describe when, where, and how potential participants will be identified and recruited.
- Describe materials that will be used to recruit participants. (Attach copies of these documents with the application.)
- Does any member have a dual role with the study population?

For Part One of the Study

WHO IS RECRUITING: Recruitment will be done by the Colter Ray (the lead researcher), as well as three other communication doctoral students acting as laboratory assistants (Nikki Truscelli, Alaina Veluscek, and Dayna Kloeber).

WHEN: Recruitment efforts will begin in July of 2017 and last until 150 participants have participated in the laboratory procedure. Recruitment is expected to conclude at the end of December 2017.

WHERE & HOW: Recruitment will be conducted through multiple channels to identify the target number of participants ($N = 150$). Colter Ray, Nikki Truscelli, Alaina Veluscek, and Dayna Kloeber will first contact undergraduate students at ASU's Tempe campus. Instructors in the Hugh Downs School of Human Communication will be made aware of the study and will be provided a recruitment script they can read to their students during class. If further recruitment is needed, the research team will then contact ASU staff members and graduate students from departments outside of their own (all four members of the research team are in the Hugh Downs School of Human Communication). This will be done through word of mouth, relying on prior contacts these four have made in the years they have been doctoral students at ASU. Once this second wave of recruitment effort is no longer fruitful, recruitment will continue, if needed, by having these same four members of the research team seek participants from their personal networks not related to ASU. This will also occur through word of mouth and via posts on social media platforms (e.g., Facebook, Twitter, Instagram, etc...).

*No members have a dual role with the study population.

For Part Two of the Study

Colter Ray will recruit participants for Part Two by contacting cancer-related organizations and charities, as well as members of his personal network. Part two recruitment will begin as soon as the first laboratory session has concluded. Thus, recruitment for part two is expected to run concurrent with part one of the study and conclude by the end of December 2017.

MORE INFO: See attached recruiting scripts.

7 Study Timelines

Describe:

- The duration of an individual participant's participation in the study.
- The duration anticipated to enroll all study participants.
- The estimated date for the investigators to complete this study (up to and including primary analyses).

First contact with prospective participants will be made via an emailed link to a prescreening survey. This prescreening survey will have its own electronic consent form and will ask questions regarding the inclusion and exclusion criteria, as well as some additional scales measuring moderator and demographic variables. The prescreening survey is expected to take 15 minutes on average.

Following the prescreening survey, those who qualify will be contacted via email to schedule a laboratory session. We estimate an individual's participation to last for 60-75 minutes in the Health Communication Laboratory on the Tempe Campus of ASU (Stauffer Hall Room 349).

However, it is worth noting that participants will also be asked to refrain from a list of activities in the 60 minutes prior to arriving at the Health Communication Laboratory. Specifically, we request participants refrain from drinking caffeine or alcohol, exercising, brushing their teeth, using nicotine or tobacco, or eating for the 60 minutes before the start of the lab session. One of the attachments to this application provides the text of the reminder email that will be sent to participants 24 hours before their lab session reminding them to refrain from these activities for the hour before the start of their lab session. Following the end of the scheduled laboratory session, the participant's involvement in the study is complete.

It is expected to take from August 2017 to December of 2017 (5 months) to enroll all study participants. As laboratory sessions are complete, the videos that have been recorded in the laboratory sessions will be sent to the cancer survivors so they can rate the videos. We expect this to also occur over the months of August through December.

Data collection (i.e., laboratory sessions and ratings) is expected to conclude at the end of December 2017. Primary analysis is expected to conclude by February 2018.

8 Procedures Involved

Describe and explain the study design. Provide a description of all research procedures being performed and when they are performed. Describe procedures including:

- The documents/ measures / devices/ records /sampling that will be used to collect data about participants. (Attach all surveys, scripts, and data collection forms.)
- What data will be collected including long-term follow-up?
- All drugs and medical devices used in the research and the purpose of their use, and their regulatory approval status.
- Describe the available compensation (monetary or credit that will be provided to research participants).
- Describe any costs that participants may be responsible for because of participation in the research.

Procedures for Part One of Study

Prospective participants will be directed to complete a pre-study questionnaire online that will assess inclusion/exclusion criteria, demographic information, and measures that are potential covariates, including personality traits, prior experience providing emotional support, communication apprehension, reticence, and interpersonal communication competence.

Participants who meet the inclusion/exclusion criteria will be invited to schedule a laboratory visit. In this invitation email participants will be asked to refrain from the following for the 60 minutes prior to their laboratory session: eating, consuming alcohol or caffeine, smoking, using nicotine, exercising, and brushing their teeth. When participants arrive at the laboratory for their appointment, participants will be consented and confirm that they have not done any of the activities from the reminder email in the 60 minutes leading up to their laboratory assignment

After the participant is checked in to the laboratory, a heart rate monitor will be clipped to the left earlobe and a blood pressure cuff put on the left arm. They will then be asked to sit quietly in the laboratory for 15 minutes. This is so the participant's body can enter a baseline state. Thus, during this time the participant will be asked not to engage in any activities (e.g., using their phone, eating, drinking, working on homework or other responsibilities). During the last six minutes of the 15 minutes the researcher will take the participant's blood pressure three times at two-minute intervals. At the end of the 15 minutes the researcher will collect a sample of saliva (see attached PDF on proper collection technique from SalivaBio that we will be following). While saliva is being collected, the participants will also complete a brief six-item pen and paper questionnaire of their current level of anxiety (rated on a 1-4 Likert scale). The heart rate monitor and blood pressure cuff will remain on the participant for the duration of the participation in the laboratory session.

Next, the researcher will ask the participant to sit at a desk with a computer. Here they will be asked to choose an opposite-sex friend to think about in the upcoming scenario, and to answer a few questions about their friendship.

At this time the researcher will turn on two cameras to record the participant. One camera will be atop the computer's monitor to record the person from the shoulders up and the other will be on a tripod to the right of the participant to record the entire person's body movements and gestures. The researcher will also start a software program called OBS Studio that will record the activity taking place on the computer screen (similar to a screen shot, but a video of the screen instead).

Once the cameras have been activated, the researcher will give the participant a sheet of paper with a scenario in which the friend chosen from the prior survey is imagined to have been diagnosed with a serious form of cancer. The participant will notify the researcher once they have finished reading the scenario. At this time the researcher will be given an envelope containing either the control condition instructions (writing task) or the experimental condition instructions (planning task). Once the envelope is opened, the researcher will begin a stopwatch and leave the room and return four minutes later.

Four minutes later, the researcher will return and ask the person to stop working on their task and will have their blood pressure taken again while also filling out a second iteration of the six-item anxiety scale. Starting at this point, blood pressure will be taken automatically every two minutes for four additional determinations. After filling out the anxiety scale, the participant will then be asked to immediately begin recording an emotional support message for the person they chose in the instructions. After they are done recording the message, the researcher will stop the recording process on both cameras and the OBS Studio software. Immediately after finishing recording the message, the researcher will note the time on the stopwatch since the second and third saliva collections occur 20 and 35 minutes after this moment, respectively. The researcher will then have the participant work on a third iteration of the six-item anxiety scale.

Next, the participant will work on a final set of survey questions—answering electronically through the survey site Qualtrics using the computer at which they are seated. While the participant is answering these questions, the researcher may need to interrupt for the second and third saliva collections, depending on how long it takes the

participant to work on the survey. At the time of the third saliva collection (35 minutes after finishing recording the message), the participant will also have their blood pressure taken one final time and also fill out a fourth iteration of the six-item anxiety scale.

After all three rounds of saliva collection have occurred and the participant has finished the electronic survey they began after recording his or her message, the person will have completed the laboratory portion of participation. The researcher will ask the person if they are participating to receive extra credit in a course, and if so, will note the name of the instructor and course number. Participants who are not students participating for extra credit will be asked if they would like to be compensated with a \$20 electronic gift card to Amazon.com, and if so, they will be asked to provide an email address to which this e-gift card can be sent. Finally, the participant will be debriefed and told the true purpose of the study was to see if a brief planning period prior to recording a support message affected the quality of the message and their stress reaction to recording the message.

8 (continued) Procedures for Part Two of Study

Cancer survivors will be recruited through cancer-related organizations and charities, and through Colter Ray's personal network, and their participation will take place entirely online. Following an introduction page, the second page of the questionnaire contains all the necessary information regarding the study and participant rights to obtain informed consent. The third page of the study will have an embedded video (one of the videos recorded by the participants in the first portion of this study). The remaining pages of the questionnaire have Likert style questions pertaining to the video they watched on the third page of the questionnaire. The entire questionnaire, including watching the video will take approximately 15 minutes to complete. At the end of the survey, participants are provided a link to a separate survey page where the participants can provide an email address so they can receive a \$5 Amazon e-gift card for participating.

Whereas each cancer survivor recruited will only watch and rate one video, the four trained coders will watch every video recorded in the laboratory sessions and will code for the laboratory participants' nonverbal immediacy behaviors.

Withdrawal of Participants

Describe anticipated circumstances under which participants will be withdrawn from the research without their consent. Describe procedures that will be followed when participants withdraw from the research, including partial withdrawal from procedures with continued data collection.

Participants in part one of the study will be presented an electronic informed consent form prior to beginning the prescreening survey that will include a statement that they can stop participating in the prescreening survey at any time without negative consequences occurring. Additionally, those who answer the prescreening questions that disqualify them from participating will be sent to a separate page of the online survey in which they are told they do not qualify for participation, and thanks them for their time.

For the laboratory session, upon arrival at the Health Communication Laboratory, participants will be asked whether they have not engaged in any of the disqualifying behaviors in the prior 60 minutes (drinking caffeine or alcohol, exercising, brushing their teeth, using nicotine or tobacco, or eating). Those who have not followed these instructions will be told they cannot participate at that time and will be offered the opportunity to reschedule their laboratory session for a different day and/or time.

Participants can withdraw from the study at any time. Any participants who decide to withdraw voluntarily from the study (partially or fully) will have their data destroyed and erased. This will be stated in the informed consent form that they will receive upon arrival at the Health Communication Laboratory the day of their laboratory session.

Participants in part two of the study will be notified in the electronic informed consent form at the start of the questionnaire that they can end their participation in the questionnaire for any reason and at any time, without penalty.

<p>9 Risks to Participants List the reasonably foreseeable risks, discomforts, hazards, or inconveniences to the participants related the participants' participation in the research. Include as may be useful for the IRB's consideration, the probability, magnitude, duration, and reversibility of the risks. Consider physical, psychological, social, legal, and economic risks. Reference this information when appropriate.</p> <ul style="list-style-type: none"> • If applicable, indicate which procedures may have risks to an embryo or fetus should the participant be or become pregnant. • If applicable, describe risks to others who are not subjects.
<p>For Part One of the Study Possibility of Very Minimal Risk: It is possible that participants may experience minor, short-lived (less than 10 minutes) psychological anxiety due to being asked to record an emotional support message. In the debrief form, the number for ASU Counseling Services and the 24-Hour Crisis Hotline are provided.</p> <p>For Part Two of the Study There is no risk for participating in this part of the study.</p>
<p>10 Potential Benefits to Participants Realistically describe the potential benefits that individual subjects may experience from taking part in the research. Include the probability, magnitude, and duration of the potential benefits. Indicate if there is no direct benefit. Do not include compensation or benefits to society or others.</p>
<p>There is no expected direct benefit for participating in any part of this study.</p>
<p>11 Setting Describe the sites or locations where your research team will conduct the research.</p> <ul style="list-style-type: none"> • Identify where research procedures will be performed. • For research conducted outside of the ASU describe: <ul style="list-style-type: none"> ○ Site-specific regulations or customs affecting the research. ○ Local scientific and ethical review structures in place.
<p>The laboratory sessions occur in the Health Communication Laboratory in Stauffer Hall Room A-349 on the Tempe Campus of Arizona State University.</p>
<p>12 Multi-Site Research If this is a multi-site study where you are the lead investigator, describe the processes you will use to ensure communication among sites, such as:</p> <ul style="list-style-type: none"> • Each site has the most current version of the protocol, consent document, and HIPAA authorization. • Required approvals have been obtained at each site (including approval by the site's IRB of record). • Describe processes you will use to communicate with participating sites. • Participating sites will safeguard data as required by local information security policies. • Local site investigators conduct the study appropriately.
<p>N/A</p>

13 Resources Available

Describe the qualifications (e.g., training, experience, oversight) of you and your staff as required to perform your roles. When applicable describe knowledge of the local study sites, culture, and society. Provide enough information to convince the IRB that you have qualified staff for the proposed research.

Describe other resources available to conduct the research: For example, as appropriate:

- Describe your facilities.
- Describe the availability of medical or psychological resources that participants might need as a result of any anticipated consequences of the human research.
- Describe your process to ensure that all persons assisting with the research are adequately informed about the protocol, the research procedures, and their duties and functions.

Room 349 in Stauffer Hall is designed as a space for health communication research, and it contains everything necessary to conduct the proposed study.

A debriefing form that will be given to participants after the protocol contains information about both medical and psychological services available to students at ASU.

Each laboratory session can be conducted by one researcher. In August, those who will be running lab sessions (Colter, Nikki, Alaina, and Dayna) will go through a protocol training led by Colter to ensure each person knows the laboratory protocol and how to appropriately recruit participants. This will include each person engaging in multiple practice runs to ensure that the four people running sessions are well familiar with their duties and functions. Dr. Kory Floyd, professor, and former director of research in the Hugh Downs School of Human Communication (now a professor at UA), will Skype in to this training session and guide the team through practicing saliva collection methods, which he has included in multiple studies he conducted while at ASU.

14 Prior Approvals

Describe any approvals that will be obtained prior to commencing the research. (E.g., school, external site, funding agency, laboratory, radiation safety, or biosafety approval.)

N/A

15 Data Management and Confidentiality

Describe the data analysis plan, including procedures for statistical analysis.

Describe the steps that will be taken to secure the data during storage, use, and transmission.

- Training, authorization of access, password protection, encryption, physical controls, certificates of confidentiality, and separation of identifiers and data

Describe how data and any specimens will be handled:

- What personal identifiers will be included in that data or associated with the specimens?
- Where and how data or specimens will be stored?
- How long the data or specimens will be stored?
- Who will have access to the data or specimens?
- Who is responsible for receipt or transmission of the data or specimens?
- How will data and specimens be transported?
- If data or specimens will be banked for future use, describe where the specimens will be stored, how long they will be stored, how the specimens will be accessed, and who will have access to the specimens.
- Describe the procedures to release data or specimens, including: the process to request a release, approvals required for release, who can obtain data or specimens, and the data to be provided with specimens.

The research team (i.e., individuals listed on this IRB application) will have access to the data collected. Additionally, salivary samples will be sent to the Institute for Interdisciplinary Salivary Bioscience Research (IISBR) at the University of California-Irvine for analysis. The salivary samples will be labeled using custom barcoded labels that will not include any identifying information such as participants' names (more information in second to last paragraph below). Following analysis of the saliva samples, the samples will be destroyed by the ISBR at UC-Irvine. No other individuals or entities will have access to individual participants' data.

Survey data will be collected through surveys created on the survey web site Qualtrics. After data collection is complete, survey data will be downloaded and kept electronically on a secure cloud drive hosted by Google.

Videos of the participants' planning behaviors and videos of the recorded emotional support messages will also be uploaded and kept on a secure cloud drive hosted by Google. Once videos have been uploaded to the cloud, the original files will be deleted from the hard drive of the computer on which they were recorded. In addition to the research team having access to these videos, during part two of the study, each video will be viewed by 1-3 cancer survivors. Each of the 1-3 people recruited to view each video will only be able to see the video one time and will not be able to share the video with anyone else. Each video will also be viewed by four trained coders who will be coding the participants' nonverbal behaviors in the video recording. These trained coders will have the ability to watch these videos more than once.

Salivary samples will be labeled with label stickers on the salvettes that display information about each sample. The label will include "Ray Diss; Participant #.Sample #" (ex: RayDiss 14.2). Prior to sending the salivary samples to UC-Irvine for analysis, the salivary samples will be stored in cryogenic storage boxes and kept frozen in a freezer located in the Health Communication Laboratory in Stauffer Hall at ASU's Tempe Campus. This lab remains locked at all times and only the primary researcher (Colter Ray) and the front office of the Hugh Downs School of Human Communication have a key to access this laboratory.

Data (except for the saliva samples discussed above that will be destroyed by the IISBR at UC-I after analysis) will be kept for 2 years from the end of data collection and then deleted from the cloud server hosting the information.

16 Safety Monitoring

This is required when research involves more than Minimal Risk to participants. The plan might include establishing a data monitoring committee and a plan for reporting data monitoring committee findings to the IRB and the sponsor. Describe:

- The plan to periodically evaluate the data collected regarding both harms and benefits to determine whether participants remain safe.
- What data are reviewed, including safety data, untoward events, and efficacy data?
- How the safety information will be collected (e.g., with case report forms, at study visits, by telephone calls with participants).
- Who will review the data?

N/A

17 Consent Process

Describe the process and procedures process you will use to obtain consent. Include a description of:

- Who will be responsible for consenting participants?
- Where will the consent process take place?
- How will consent be obtained?
- If participants who do not speak English will be enrolled, describe the process to ensure that the oral and/or written information provided to those participants will be in that language. Indicate the language that will be used by those obtaining consent. Translated consent forms should be submitted after the English is approved.

For Part One of the Study

Immediately following the welcome page of the online prescreening survey, participants will be presented an electronic informed consent form. This form will include an overview of the prescreening survey’s purpose and nature. Participant rights, such as the right to stop participation at any time during the prescreening survey, will also be explained on this form, along with contact information for whom the person can contact if they have concerns or questions about participating in the prescreening survey. If the participant consents to participate, they will indicate this by clicking a “Forward Arrow” button, which will take them to the first page of survey questions.

Upon arriving at the Health Communication Laboratory in Stauffer Hall, the potential participant will be greeted and given a printed copy of an informed consent form. This form will include an overview of the study and the procedures the participant will be part of if they choose to participate.

Participant rights, such as the right to stop participation at any time during the laboratory session, will also be explained on this form, along with contact information for whom the person can contact if they have concerns or questions about participating in the laboratory session. If the participant consents to participate, they will indicate this by printing their name and signing and dating the informed consent form. The member of the research team will then also print his or her own name and sign and date the form so that the records show which member of the research team oversaw the consent process. Forms will only be provided in English since the ability to speak, read, and think in English are among the inclusion criteria for participation.

For Part Two of the Study

For cancer survivors who are watching the videos, there is an electronic informed consent form directly following the welcome page of their online questionnaire. This form will include an overview of the survey’s purpose and nature. Participant rights, such as the right to stop participation at any time during the survey, will also be explained on this form, along with contact information for whom the person can contact if they have concerns or questions about participating in the prescreening survey. If the participant consents to participate, they will indicate this by clicking a “Forward Arrow” button, which will take them to the next page of the survey.

18 Investigational New Drug or Devices

If the drug is investigational (has an IND) or the device has an IDE or a claim of abbreviated IDE (non-significant risk device), include the following information:

- Identify the hold of the IND/IDE/Abbreviated IDE.
- Explain procedures followed to comply with FDA sponsor requirements for the following:

FDA Regulation	Applicable to:		
	IND Studies	IDE studies	Abbreviated IDE studies
21 CFR 11	X	X	
21 CFR 54	X	X	
21 CFR 210	X		
21 CFR 211	X		
21 CFR 312	X		
21 CFR 812		X	X
21 CFR 820		X	

N/A

19 CITI

Provide the date that the members of the research team have taken the CITI training for human participants. This training must be taken within the last 4 years. Additional information can be found at: <http://researchintegrity.asu.edu/training/humans>

Colter D. Ray – September 3, 2014
Dr. Paul Mongeau – August 11, 2013
Dr. Ashley Randall – December 6, 2013
Nikki Truscelli – September 15, 2016
Alaina Veluscek – September 10, 2015
Dayna Kloeber – May 19, 2017
Emi Hashi – January 14, 2015
Anna Marie Campbell – May 25, 2017
Rosalie Fisher – November 16, 2016
Cristopher Tietsort – September 1, 2017

APPROVAL: EXPEDITED REVIEW

Paul Mongeau
 Human Communication, Hugh Downs School of
 480/965-3773 Paul.Mongeau@asu.edu

Dear Paul Mongeau:

On 6/1/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Personality, Physiology, and Emotional Support Messages
Investigator:	Paul Mongeau
IRB ID:	STUDY00006321
Category of review:	(6) Voice, video, digital, or image recordings, (3) Noninvasive biological specimens, (7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: Graduate College (GRAD)
Grant Title:	
Grant ID:	
Documents Reviewed:	Recruitment Script - MTurk Raters of Messages.pdf, Category: Recruitment Materials; Salimetrics SalivaBio Saliva Collection Protocol.pdf, Category: Technical materials/diagrams; Email After Prescreening Survey.pdf, Category: Recruitment Materials; Paul Mongeau CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); Ray Disseration HRP-503b, Category: IRB Protocol; Recruitment Script - Non-student Participants - ASU Staff and Social Networks.pdf, Category: Recruitment Materials; Dayna Kloeber CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); Informed Consent Form Prescreening Survey.pdf, Category: Consent Form; Ray Dissertation Post-Exposure Survey.pdf, Category: Measures (Survey questions/Interview questions /interview

	<p>guides/focus group questions); • Colter Ray CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); Scenario.pdf, Category: Participant materials (specific directions for them); Debriefing Sheet.pdf, Category: Participant materials (specific directions for them); Informed Consent Form Laboratory Procedures.pdf, Category: Consent Form; Informed Consent Form MTurk Cancer Survivors Rating Videos.pdf, Category: Consent Form; Participant Email for Amazon Gift Card.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Instructions for Writing Distraction Condition.pdf, Category: Participant materials (specific directions for them); Instructions for Planning Condition.pdf, Category: Participant materials (specific directions for them); • Ray Dissertation Prescreening Survey.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); Laboratory Session Reminder.pdf, Category: Recruitment Materials; Recruitment Script - Student Participants for Extra Credit.pdf, Category: Recruitment Materials; • STAI-SF6 T2 Before Recording.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Waiting Period Instructions.pdf, Category: Participant materials (specific directions for them); • Ashley Randall CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); • Alaina Veluscek CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); Participant Laboratory Check-In Form.pdf, Category: Other (to reflect anything not captured above);</p>
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	<p>STAI-SF6 T3 After Recording.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); GPSA Research Grant Program Notification - Spring 2017.pdf, Category: Sponsor Attachment; Ray Dissertation Pre-Exposure Survey.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • STAI-SF6 T1 Baseline.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); Laboratory Session Information Sheet.pdf, Category: Other (to reflect anything not captured above); • Nikki Truscelli CITI Report IRB.pdf, Category: Other (to reflect anything not captured above); Ray Dissertation Cancer Survivor Ratings of Support Message Video.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</p>
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The IRB approved the protocol from 6/1/2017 to 5/31/2018 inclusive. Three weeks before 5/31/2018 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure. If continuing review approval is not granted before the expiration date of 5/31/2018 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB. In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,
 IRB Administrator

cc: Colter Ray
 Alaina Veluscek
 Colter Ray
 Nikki Truscelli
 Dayna Kloeber
 Ashley Randall

MODIFICATION #1 APPROVAL: EXPEDITED REVIEW

Paul Mongeau
Human Communication, Hugh Downs School of
480/965-3773 Paul.Mongeau@asu.edu

Dear Paul Mongeau:

On 7/22/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	Personality, Physiology, and Emotional Support Messages
Investigator:	Paul Mongeau
IRB ID:	STUDY00006321
Category of review:	(mm) Minor modification
Funding:	Name: Graduate College (GRAD)
Grant Title:	None
Grant ID:	None

The IRB approved the protocol from 6/1/2017 to 5/31/2018 inclusive. Three weeks before 5/31/2018 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 5/31/2018 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Colter Ray
Alaina Veluscek
Emi Hashi
Colter Ray
Anna-Marie Campbell
Nikki Truscelli
Rosalie Fisher
Dayna Kloeber
Ashley Randall

MODIFICATION #2 APPROVAL

Paul Mongeau
Human Communication, Hugh Downs School of
480/965-3773

Paul.Mongeau@asu.edu Dear

Paul Mongeau:

On 9/1/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	Personality, Physiology, and Emotional Support Messages
Investigator:	Paul Mongeau
IRB ID:	STUDY00006321
Funding:	Name: Graduate College (GRAD)
Grant Title:	None
Grant ID:	None

The IRB approved the modification.

When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Colter Ray
Alaina Veluscek
Emi Hashi
Colter Ray
Anna-Marie Campbell
Nikki Truscelli
Rosalie Fisher
Dayna Kloeber
Ashley Randall

MODIFICATION #3 APPROVAL

Paul Mongeau
Human Communication, Hugh Downs School of
480/965-3773 Paul.Mongeau@asu.edu

Dear Paul Mongeau:

On 12/4/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Modification
Title:	Personality, Physiology, and Emotional Support Messages
Investigator:	Paul Mongeau
IRB ID:	STUDY00006321
Funding:	Name: Graduate College (GRAD)
Grant Title:	None
Grant ID:	None

The IRB approved the modification.

When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Colter Ray
Alaina Veluscek
Rosalie Fisher
Colter Ray
Nikki Truscelli
Cristopher Tietsort
Anna-Marie Campbell
Dayna Kloeber
Emi Hashi
Ashley Randall

APPENDIX B

LABORATORY SESSION RECRUITMENT SCRIPT

I am a graduate student under the direction of Professor Paul Mongeau of the Hugh Downs School of Human Communication at Arizona State University. I am conducting a research study to explore how individuals' personality traits and communication style affects how they communicate emotional support and how their bodies react to communicating support.

I am recruiting individuals to fill out an online questionnaire, which will take approximately 15 minutes, and then take part in a laboratory procedure, which will take approximately 60 minutes. The questionnaire will ask about your personality and some of your prior communication experiences. The laboratory procedure will involve various tasks such as filling out questionnaires and writing, planning, and recording messages. During the laboratory session, we will also monitor your heart rate and collect saliva samples to measure a specific hormone we believe to be released when communicating certain messages.

Your participation in this study is voluntary. Those who participate will receive extra credit as determined by the instructor for the course from which you were told about this study. If you have any questions concerning the research study, please call Dr. Paul Mongeau at (480) 965-5095.

To participate, please visit the website below. You will fill out the questionnaire first, and then you will be emailed with instructions on scheduling your visit to the lab.

<https://tinyurl.com/personalitymessages>

APPENDIX C

LABORATORY PARTICIPANT PRESCREENING SURVEY

Dissertation Prescreening Survey

Thank you for your interest in taking part in a study about emotional support messages. Information about the study, including your rights as a participant, is provided on the next page.

Dear Participant,

I am a professor in the school of human communication at Arizona State University. Along with my graduate student, I am conducting a research study to examine emotional support messages. I am inviting your participation, which involves filling out this questionnaire and submitting your responses electronically and then scheduling a visit to the communication laboratory in Stauffer Hall on the ASU Tempe campus. The questions in this questionnaire will ask you about your personality, your relationships, and your health, as well as your prior experience with providing emotional support messages. Filling out the questionnaire will take approximately 15 minutes.

Your participation in this study is voluntary. You can skip any questions if you wish. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. To participate in this study you must be 18 years of age or older and fluent in English.

There are no foreseeable risks in filling out the questionnaire. You will receive more information later about the laboratory component of the study so you can decide whether you want to take part in that component.

Everything you say in this questionnaire will be completely confidential. You will be asked to provide your name and email address only for the purpose of scheduling your visit to the laboratory. The results of the study may be used in presentations or publications but only the combined results from all participants will be used. Your individual data will never be singled out and no information about your identity will ever be used.

If you have any questions concerning the research study, please feel free to contact me at Paul.Mongeau@asu.edu.

If you have any questions about your rights as a participant in this research or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance at 480-965-6788.

Clicking the forward arrow button at the bottom right of this page and moving forward to the first page of questions will signify your consent to participating in the questionnaire

portion of the study. You will receive another informed consent form to read when you participate in the laboratory portion of the study.

Sincerely,
Paul Mongeau, PhD
Colter Ray, MA

What is your sex?

- Male
- Female
- Other

What is your age (in years)?

How would you describe your ethnic background? (Please check all that apply)

- Asian/Pacific Islander
 - Black/African-American
 - Hispanic/Latino(a)
 - Native American/Alaskan Native
 - White/Caucasian
 - Other (Please Specify)
-

What is the highest degree or level of school you have completed? If currently enrolled, what is the highest degree you have received?

- Some high school, no diploma
- High school diploma or equivalent (e.g. GED)
- Some college credit, no degree
- Associate degree
- Bachelor's degree
- Master's degree
- Professional degree (e.g., JD, MD, or DDS)
- Doctorate degree (e.g., PhD or EdD)

If currently enrolled in college, what is your major? (Leave blank if not enrolled).

Are you currently diagnosed with **any** of the following conditions: Autoimmune immune disorders (e.g., HIV or AIDS), cancer, cardiovascular disease, chronic high blood pressure, endocrine disease, epilepsy, hepatitis, kidney disease, liver disease, rheumatic disorders, or type 1 diabetes?

Yes

No

Are you currently pregnant or breastfeeding?

Yes

No

In the past 6 months have you taken a steroid or used a steroid cream such as prednisone or hydrocortisone?

Yes

No

Because the laboratory portion of this study involves collecting saliva for analysis of cortisol levels, and because cortisol levels are affected by certain conditions or life situations you have reported, we unfortunately cannot include you as a participant in this study.

If you believe you have reached this page in error, please contact Colter Ray at cdray2@asu.edu

The statements below are about your prior experience (in general) providing emotional support to people you know. Please indicate your level of agreement or disagreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, and Strongly Agree).

1. I have had a lot of experience providing emotional support to people.
2. On many occasions, I have communicated empathy to people who are stressed.
3. I have little experience communicating emotional support to people dealing with difficult situations.
4. There have been multiple instances where I've expressed emotional support to people who are feeling down.
5. Expressing concern and caring to people I know would be a new experience for me.
6. Telling people I know who are going through a tough time that I care about them is something I've done before.
7. I have rarely communicated emotional support to people I know.
8. I have hardly ever communicated love and caring to people I know who are going through negative life events.
9. Many people I know would say I have communicated emotional support to them in the past.
10. Being emotionally supportive is a frequent way I try to help people I know who are in need.
11. In the past, when people I know are sad, I have tried to brighten their day with messages of concern and caring.
12. I make deliberate efforts to convey emotional support to people.

The statements below are about your confidence in providing emotional support. Please indicate your level of agreement or disagreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, and Strongly Agree).

1. In the past, my emotional support messages have been successful.
2. In the past, when I communicate emotional support, the other person feels better.
3. In the past, I have not been very effective at communicating emotional support.
4. Based on past experiences, I am better at communicating emotional support than the average person.
5. In general, I am good at saying the right thing to make people feel better.
6. In general, I am confident in my abilities to be emotionally supportive.
7. In general, I am unsure of my ability to provide high quality emotional support.
8. In general, the average person is better than me at communicating emotional support
9. I would be good at saying the right thing to make **people with cancer** feel better.
10. I am confident in my abilities to be emotionally supportive to **people with cancer**.
11. I am unsure of my ability to provide high-quality emotional support to **people with cancer**.
12. The average person is better than me at communicating emotional support to **people with cancer**.

Have you ever communicated emotional support to someone diagnosed with cancer?

- Yes
- No
-

The statements below are about how much prior experience you have communicating emotional support to **people with cancer**. Please indicate your level of agreement or disagreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, and Strongly Agree).

1. On many occasions, I have communicated empathy to someone with cancer.
2. I have little experience communicating emotional support to someone diagnosed with cancer.
3. There have been multiple instances where I have expressed emotional support to someone I know with cancer.
4. I have hardly ever communicated love and caring to someone I know with cancer.
5. Expressing concern and caring to someone with cancer would be a new experience for me.
6. Telling someone I know with cancer that I care about them is something I've done frequently.
7. I have rarely communicated love and caring to someone I know with cancer.
8. Someone I know with cancer would say I have communicated emotional support to them in the past.
9. Being emotionally supportive is a frequent way I try to help someone I know who has cancer.
10. In the past, when someone I know with cancer is sad, I have tried to brighten their day with messages of concern and caring.
11. I have made deliberate efforts to convey emotional support to someone I know with cancer.
12. In the past, my emotional support messages to people with cancer have been successful.
13. In the past, when I communicate emotional support to people with cancer, the other person feels better.
14. In the past, I have not been very effective at communicating emotional support to people with cancer.
15. Based on past experiences, I am better at communicating emotional support to people with cancer than the average person.

The statements below are about **meeting a stranger at a social gathering**. Please indicate the degree to which each statement applies to you. (Answer choices: Strongly Disagree, Disagree, Mildly Disagree, Mildly Agree, Agree, Strongly Agree).

1. I am nervous when talking.
2. I know what to say.
3. I wait too long to say what I want to say.
4. I organize my thoughts when talking.
5. I stumble over my words.
6. I remember what I want to say when talking.
7. I am relaxed when talking.
8. I am unaware of what I say.
9. I say things at the time I want to say them.
10. My thoughts are disorganized
11. I clearly say what I want to say.
12. I forget what I want to say when talking.
13. I feel tense when talking.
14. I know what to discuss.
15. I hesitate too long to say what I want to say.
16. I arrange my thoughts when talking.
17. I muddle my words.
18. I recall what I want to say when talking.
19. I am comfortable when talking.
20. I am unfamiliar with what to say.
21. I say things when I want to say them.
22. My thoughts are jumbled.
23. I fluently say what I want to say.
24. I lose sight of what I want to say when talking.

Please indicate your level of agreement or disagreement with each statement below.
(Answer choices: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree).

1. I dislike participating in group discussions.
2. Generally, I am comfortable while participating in group discussions.
3. I am tense and nervous while participating in group discussions.
4. I like to get involved in group discussions.
5. Engaging in group discussion with new people makes me tense and nervous.
6. I am calm and relaxed while participating in group discussions.
7. Generally, I am nervous when I have to participate in a meeting.
8. Usually, I am comfortable when I have to participate in a meeting.
9. I am very calm and relaxed when I am called upon to express an opinion at a meeting.
10. I am afraid to express myself at meetings.
11. Communicating at meetings usually makes me uncomfortable.
12. I am very relaxed when answering questions at a meeting.
13. While participating in a conversation with a new acquaintance, I feel very nervous.
14. I have no fear of speaking up in conversations.
15. Ordinarily, I am very tense and nervous in conversations.
16. Ordinarily, I am very calm and relaxed in conversations.
17. While conversing with a new acquaintance, I feel very relaxed.
18. I'm afraid to speak up in conversations.
19. I have no fear of giving a speech.
20. Certain parts of my body feel very tense and rigid while giving a speech.
21. I feel very relaxed while giving a speech.
22. My thoughts become confused and jumbled when I am giving a speech.
23. I face the prospect of giving a speech with confidence.
24. While giving a speech, I get so nervous I forget facts I really know.

Here are a number of personality traits that may or may not apply to you. Please select the number for each statement that indicates the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other. (Answer choices: Disagree Strongly, Disagree Moderately, Disagree a Little, Neither Agree Nor Disagree, Agree a Little, Agree Moderately, Agree Strongly).

1. Extroverted, Enthusiastic
2. Critical, quarrelsome
3. Dependable, self-disciplined
4. Anxious, easily upset
5. Open to new experiences, complex
6. Reserved, quiet
7. Sympathetic, warm
8. Disorganized, careless
9. Calm, emotionally stable
10. Conventional, uncreative

These statements are about how you interact with others. For each statement, circle the response that best reflects YOUR communication with others. (Answer choices: Almost Never, Seldom, Sometimes, Often, Almost Always).

1. I allow friends to see who I really am.
2. I can put myself in others' shoes.
3. I am comfortable in social situations.
4. When I've been wronged, I confront the person who wronged me.
5. My conversations are pretty one-sided.
6. My conversations are characterized by smooth shifts from one topic to the next.
7. My friends can tell when I'm happy or sad.
8. My communication is usually descriptive, not evaluative.
9. My friends truly believe that I care about them.
10. I accomplish my communication goals.

Please indicate the extent to which each statement below is true or false for you **in general**. (Answer choices: Certainly, Always False; Generally False; Somewhat False, but with Exception; Somewhat True, but with Exception; Generally True; Certainly, Always True).

1. In social situations, I have the ability to alter my behavior if I feel that something else is called for.
2. I am often able to read people's true emotions correctly through their eyes.
3. I have the ability to control the way I come across to people, depending on the impression I wish to give them.
4. In conversations, I am sensitive to even the slightest change in the facial expression of the person I am conversing with.
5. My powers of intuition are quite good when it comes to understanding others' emotions and motives.
6. I can usually tell when others consider a joke to be in bad taste, even though they may laugh convincingly.
7. When I feel that the image I am portraying isn't working, I can readily change it to something that does.
8. I can usually tell when I've said something inappropriate by reading it in the listener's eyes.
9. I have trouble changing my behavior to suit different people and different situations.
10. I have found that I can adjust my behaviors to meet the requirements of any situation I find myself in.
11. If someone is lying to me, I usually know it at once from that person's manner of expression.
12. Even when it might be to my advantage, I have difficulty putting up a good front.
13. Once I know what the situation calls for, it's easy for me to regulate my actions accordingly.

Please indicate how well each statement below describes you **in general**. (Answer choices: Does Not Describe Me at All, Does Not Describe Me Well, Neutral, Describes Me Somewhat, Describes Me Very Well).

1. I often have tender, concerned feelings for people less fortunate than me.
2. I really get involved with the feelings of characters in a novel.
3. In emergency situations, I feel apprehensive and ill-at-ease.
4. I try to look at everybody's side of a disagreement before I make a decision.
5. When I see someone being taken advantage of, I feel kind of protective toward them.
6. I sometimes try to understand my friends better by imagining how things look from their perspective.
7. After seeing a play or movie, I have felt as though I were one of the characters.
8. Being in a tense emotional situation scares me.
9. When I see someone being treated unfairly, I feel very much pity for them.
10. I would describe myself as a pretty soft-hearted person.
11. When I watch a good movie, I can very easily put myself in the place of a leading character.
12. I tend to lose control during emergencies.
13. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.
14. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.
15. When I see someone who badly needs help in an emergency, I go to pieces.
16. Before criticizing somebody, I try to imagine how I would feel if I were in their place.

This is the end of the questionnaire. Thank you for filling it out -- your participation is appreciated. Below, we ask you to provide a working email address so that we may contact you in the coming days about scheduling the laboratory portion of the study.

What is your first and last name? (Ex: Paul Smith)

Please enter your email address (one that you use and check regularly):

For verification, please re-enter your email address:

APPENDIX D

LABORATORY SESSION INFORMED CONSENT FORM

Title of research study: Personality, Physiology, and Emotional Support

Investigators: Paul Mongeau, PhD & Colter Ray, MA, Hugh Downs School of

Human Communication, Arizona State University

Why am I being invited to take part in a research study?

We invite you to take part in a research study because you may be interested to learn about the connection between personality, physiology, and emotional support messages. To participate in this study, you must be 18 years of age or older and fluent in English.

Why is this research being done?

We are interested to see how a person's personality traits affect the emotional support messages they communicate and how their body reacts to communicating supportive messages. This information may be useful to people who provide emotional support to people experiencing stressful life events.

How long will the research last?

We expect that individuals will spend approximately 65-75 minutes participating in the proposed activities.

How many people will be studied?

We expect about 150 people will participate in this research study.

What happens if I say yes, I want to be in this research?

It is up to you to decide whether or not to participate. If you agree to take part, we will begin by asking you to sit quietly and relax for fifteen minutes. During this time, we will monitor your heart rate and blood pressure and at the end of this time we will collect a saliva sample that will later be analyzed for the hormone cortisol. We will then ask you to perform two tasks: a writing task and a speaking task. Following both tasks, we will ask you to participate in a survey and then collect two additional saliva samples. We will finish by giving you some information about the study and its goals. All procedures will take place in the room where you are seated now, Stauffer Hall A-349.

What happens if I say yes, but I change my mind later?

You can leave the research at any time. Doing so will not be held against you in any way.

Is there any way being in this study could be bad for me?

Because this study includes a writing and speaking task, it is possible you will experience some psychological stress. This is likely to be short-term discomfort only and should not last long effects.

Will being in this study help me any way?

We cannot promise any benefits to you or from your taking part in this research. However, possible benefits include learning more about your own communication and learning about the research process.

What happens to the information collected for the research?

Efforts will be made to limit the use and disclosure of your personal information, including research study records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization. Otherwise, only the research team will have access to your information.

Any video recorded messages you record today may be sent to between one and three cancer survivors recruited through the Amazon crowdsourcing service Mechanical Turk (MTurk), and also to four trained coders, for a one-time viewing. These cancer survivors will view your video one time and then fill out a questionnaire about your message. The cancer survivors will only have access your video within the survey they are filling out (the video is embedded in the questionnaire) and the survey can only be taken once per person. The coders may watch your video multiple times for the sake of studying your nonverbal behaviors.

Salivary samples collected today will be stored in a freezer kept in this laboratory in tubes that are discretely labeled. For example, if you are participant #6, your three saliva samples will be stored in three separate tubes labeled “RayDiss 6.1, RayDiss, 6.2, and RayDiss 6.3.” Once data collection has ended, all participants’ saliva samples will be sent to the Institute for Interdisciplinary Salivary Bioscience Research (IISBR) at the University of California – Irvine, where your saliva will be analyzed for levels of the hormone cortisol. After the samples are analyzed, the IISBR will destroy the samples. Electronic data from questionnaires, recordings of your writing task, video recorded messages, and electronic copies of physiological data will be stored on a password protected server that is only accessible to the research team. Two years after the end of data collection, the data will be destroyed.

What else do I need to know?

If you agree to take part in the laboratory portion of this research study, you will receive a \$20 Amazon gift card for your time and effort. If you are an undergraduate student at

ASU in a class whose instructor has agreed to offer extra credit for your participation in this study, you may instead opt to receive extra credit instead of the Amazon gift card. Your course instructor determines the amount of extra credit that is appropriate to give. Your extra credit is for participation, so even if you withdraw from the study early, you will still receive your extra credit. If you agree to participate in the study, then consent does not waive any of your legal rights.

Who can I talk to?

If you have questions, concerns, or complaints, contact Dr. Paul Mongeau at Paul.Mongeau@asu.edu

This research has been reviewed and approved by the Bioscience IRB (“IRB”). You may talk to them at (480) 965-6788 or research.integrity@asu.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Your signature documents your permission to take part in this research.

_____ Signature of participant	_____ Date
_____ Printed name of participant	
_____ Signature of person obtaining consent	_____ Date
_____ Printed name of person obtaining consent	

APPENDIX E
LABORATORY SESSION FORM

Today's Date: ___/___/___ Time session began: _____ AM PM

Participant Sex: M F

Researcher(s) present: Colter Nikki Alaina Dayna Rosalie Anna Marie Emi Cris

Ask participant: "In the past 60 minutes, have you exercised, smoked cigarettes, used nicotine, brushed your teeth, consumed alcohol, consumed caffeine, or eaten?"

Yes (Invite to Reschedule Online) No

Cardiovascular Measurements

Baseline T1 BP: _____ over _____; Heart Rate: _____

Baseline T2: BP: _____ over _____; Heart Rate: _____

Baseline T3: BP: _____ over _____; Heart Rate: _____

After Planning/Writing: BP: _____ over _____; Heart Rate: _____

After Recording: BP: _____ over _____; Heart Rate: _____

20 Minutes After Recording Ends: BP: _____ over _____; Heart Rate: _____

Salivary Cortisol Timing

Time (t) when Participant Finishes Recording Message: _____

Take Cortisol 2 at _____ (t + 20) Take cortisol 3 at _____ (t + 35)

Participant Extra Credit: Course _____ Instructor _____

Please note any difficulties with today's session in the space below.

APPENDIX F

LABORATORY SESSION RELAXATION PERIOD INSTRUCTIONS

Relaxation Period

For the next 15 minutes, we would like you to sit quietly and relax. During this time, we ask that you not use your phone, consume food or liquids, or engage in any other activities. Please simply sit quietly and relax. We will be back with you shortly.

APPENDIX G

STAI-6

Self-Evaluation Questionnaire

Read each statement and circle the most appropriate number to the right of the statement to indicate how you feel **right now, at this moment**. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at All	Somewhat	Moderately	Very Much
1. I feel calm	1	2	3	4
2. I am tense	1	2	3	4
3. I feel upset	1	2	3	4
4. I am relaxed	1	2	3	4
5. I feel content	1	2	3	4
6. I am worried	1	2	3	4

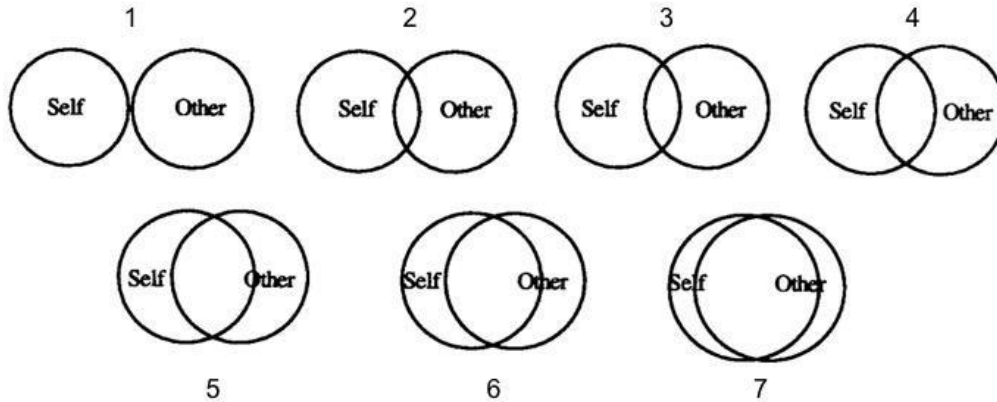
APPENDIX H

LABORATORY PARTICIPANT PRE-EXPOSURE SURVEY

Dissertation Pre-Exposure Survey

For this survey, choose a close friend of the opposite sex who you would likely provide an emotional support message to if they found out bad news. This should not be a family member. Please write this friend's initials in the space below and answer the following questions with this person in mind.

Which pair of circles in the picture below best describes the closeness of your relationship to the person you chose above?



Think about the friend you chose above. Considering what you put into your friendship and what you get out of it, then compare this to what your friend puts into the friendship and what he or she gets out of it ... how does your friendship "stack up"?

- I am getting a much better deal than my friend
- I am getting a somewhat better deal
- I am getting a slightly better deal
- We are both getting an equally good, or bad, deal
- My friend is getting a slightly better deal
- My friend is getting a somewhat better deal
- My friend is getting a much better deal than I am

The statements below are about your prior experiences providing emotional support to the friend you chose above. Please indicate your level of agreement or disagreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, Strongly Agree).

1. I have had a lot of experience providing emotional support to this person.
2. On many occasions, I have communicated empathy this person when he or she is stressed.
3. I have little experience communicating emotional support to this person when he or she is dealing with difficult situations.
4. There have been multiple instances where I've expressed emotional support to this person when he or she is feeling down.
5. Expressing concern and caring to this person would be a new experience for me.
6. Telling this person that I care about them when they are going through a tough time is something I've done before.
7. I have rarely communicated emotional support to this person.
8. I have hardly ever communicated love and caring to this person when he or she is going through negative life events.
9. This person would say I have communicated emotional support to him or her in the past.
10. Being emotionally supportive is a frequent way I try to help this person.
11. In the past, when this person is sad, I have tried to brighten his or her day with messages of concern and caring.
12. I have made deliberate efforts to convey emotional support to this person.

APPENDIX I

LABORATORY SESSION HYPOTHETICAL SCENARIO

In a few minutes, you will be recording a support message for the friend you identified on the survey you just completed. Please think of this person and keep him or her in mind as you read the following scenario.

Scenario

Suppose that your friend was diagnosed with a serious form of cancer this week and you just learned this news from someone else. You have not yet talked to your friend about this diagnosis and your friend has not mentioned it to you yet. It appears, however, that your friend is sharing the news with others and is open to receiving support from friends.

When you are done reading this page, please let the researcher know.

APPENDIX J

LABORATORY PARTICIPANT POST-EXPOSURE SURVEY

Dissertation Post-Exposure Survey

Approximately how many minutes did you spend planning the emotional support message you just recorded?

Think about the message you just recorded and indicate your level of agreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, Strongly Agree).

1. In most ways the message I recorded was close to ideal.
2. The message I recorded was excellent.
3. I am satisfied with the message I recorded
4. I communicated the important things I wanted to say in my recorded message.
5. If I could redo my recorded message, I would change almost nothing.

In the space below please list all the specific goals you hoped to achieve when recording your emotional support message. If you did not have any specific goals, please write N/A.

Think about the message you just recorded. Rate your message by choosing one circle per pair of adjectives. The closer the circle is to the word, the more you feel the message you recorded is described by the word. (Answer choices were 7 scale points placed between each set of opposing words)

1.	Helpful	Hurtful
2.	Knowledgeable	Ignorant
3.	Generous	Selfish
4.	Useful	Useless
5.	Supportive	Unsupportive
6.	Encouraging	Discouraging
7.	Comforting	Distressing
8.	Reassuring	Upsetting
9.	Sensitive	Insensitive
10.	Compassionate	Heartless
11.	Understanding	Misunderstanding
12.	Considerate	Inconsiderate
13.	Self-Centered	Other-Centered
14.	Invalidates	Validates
15.	Judges	Empathizes
16.	Disregards	Acknowledges
17.	Unconcerned	Concerned

Still thinking about the message you recorded, please indicate your level of agreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, Strongly Agree).

1. My friend would feel more optimistic now that he or she has received my message.
2. My friend would understand the situation better now that he or she has received my message.
3. My message would make my friend feel better about himself or herself.
4. My friend would feel better after hearing my message.
5. Hearing this message would help my friend get his or her mind off of the cancer diagnosis.
6. My friend would feel like my message was putting him or her down.
7. My comments appropriate.
8. The way I talked would irritate the other person.
9. My message would make my friend feel like they cannot handle his or her own problems.
10. I seemed really concerned about my friend.
11. I was sensitive to my friend's needs and feelings in my message.
12. I was supportive.
13. I was sympathetic.
14. I ignored my friend's feelings.
15. I understood my friend's needs.
16. I was polite.
17. I showed I could easily put myself into my friend's shoes.
18. I was respectful.

Thinking about the message you recorded, why did you say what you said? Please be specific.

Just before recording your message, which task were you asked to perform?

- Write a detailed description of all the things I had done since waking up this morning.
- Use the time to plan the message you were about to record.

Think about **how you used the planning period** you were given just prior to recording your message and indicate your level of agreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, Strongly Agree).

1. In most ways my use of the planning period was ideal.
2. My use of the planning period was excellent.
3. I am satisfied with my use of the planning period
4. I planned the important things I wanted to say during the planning period.
5. If I could redo the planning period, I would change almost nothing.

The statements below are about your confidence in providing emotional support. Please indicate your level of agreement or disagreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, Strongly Agree).

1. In the past, my emotional support messages have been successful.
2. In the past, when I communicate emotional support, the other person feels better.
3. In the past, I have not been very effective at communicating emotional support.
4. Based on past experiences, I am better at communicating emotional support than the average person.
5. In general, I am good at saying the right thing to make people feel better.
6. In general, I am confident in my abilities to be emotionally supportive.
7. In general, I am unsure of my ability to provide high quality emotional support.
8. In general, the average person is better than me at communicating emotional support
9. I would be good at saying the right thing to make **people with cancer** feel better.
10. I am confident in my abilities to be emotionally supportive to **people with cancer**.
11. I am unsure of my ability to provide high-quality emotional support to **people with cancer**.
12. The average person is better than me at communicating emotional support to **people with cancer**.

If this situation was real and your friend was actually diagnosed with the cancer described in the hypothetical scenario, what is the likelihood you would actually communicate emotional support to this person?

Not Likely At All

Not Likely

Somewhat Likely

Likely

Very Likely

APPENDIX K

LABORATORY PARTICIPANT DEBRIEF FORM

PERSONALITY, PHYSIOLOGY, & EMOTIONAL SUPPORT MESSAGES
at Arizona State University

Thank You for Taking Part

We appreciate your participation in this study about personality traits and emotional support. You have now finished the laboratory session, so your participation for today is complete. The purpose of this sheet is to give you some information about the purposes of the study. *Please keep this information to yourself and do not share it with others who may also be in the study.*

The online questionnaire you filled out before your laboratory session measured your various personality traits and some prior communication experiences, and we are interested to see how (if at all) these things affected the emotional support message you recorded and your body's stress response to recording this message.

What we did not mention before is that we are also interested in whether having time to plan your message affected the message you recorded.

Some participants had time to plan their message and others did not. Whether you had time to plan was determined randomly as part of the study procedure.

Over the next several months, we will be analyzing the data to see whether planning affected the quality of the emotional support message communicated in the recorded message, as well as the potential for planning to influence your nonverbal behaviors and experiences of anxiety levels before and during the recording of your message.

If you are interested in learning more about the results of the study once they are determined, please send a note to the study's director, Dr. Paul Mongeau. His email address is:

Paul.Mongeau@asu.edu

Again, thank you for your participation in this important study. Please keep this handout as a reference. If you have any questions about the study, don't hesitate to contact Mr. Ray at the e-mail address listed above, or by telephone at (480) 965-5095.

For confidential, personal counseling and crisis services, please contact ASU Counseling Services at 480-965-6146. After hours, call the ASU crisis hotline at 480-921-1006, or dial 911 in an emergency.

Again, please remember not to share this information with any other students who may also be in the study.

APPENDIX L
CANCER PATIENTS' SURVEYS

Emotional Support Message

Thank you for your interest in taking part in a study about emotional support messages. Information about the study, including your rights as a participant, is provided on the next page.

Dear Participant,

I am a professor in the school of human communication at Arizona State University in the United States. Along with my graduate student, I am conducting a research study to examine how cancer patients and survivors rate emotional support messages. I am inviting your participation, which will involve watching a previously recorded emotional support message and filling out this questionnaire and submitting your responses electronically. Your participation would take approximately 10 minutes.

Your participation in this study is voluntary. You can skip any questions if you wish. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. To participate in this study, you must have been diagnosed with cancer at some point in your life, currently be 18 years of age or older, and fluent in English. Participants will receive a payment of \$5.00 (US) in the form of an Amazon e-gift card mailed to an email address you can provide at the end of the survey.

Your participation in this study would help researchers to understand better what aspects of emotional support messages are viewed positively by people with cancer and cancer survivors. If you feel uncomfortable about any of the questions you are asked, you can feel free to skip those questions. There are no other foreseeable risks of your participation. There will be no attempt to tie any of your answers to your IP address.

Everything you say in this questionnaire will be completely confidential. Besides an email address for receiving the e-gift card, you will never be asked to provide your name or any other identifying information; however, you will be asked some questions about your cancer diagnosis. The results of the study may be used in presentations or publications but only the combined results from all participants will be used. Your individual data will never be singled out and no information about your identity will ever be used.

If you have any questions concerning the research study, please feel free to contact me at: Paul.Mongeau@asu.edu. If you have any questions about your rights as a participant in this research or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board through the ASU Office of Research Integrity and Assurance, at 480-965-6788.

Filling out this questionnaire will be considered as signifying your consent to participate.

Sincerely,

Paul Mongeau, PhD

Colter D. Ray, MA

Are you 18 years of age or older?

Yes

No

Participation in this study is limited to those who are 18 years of age or older.

Have you been diagnosed with cancer at some point in your life?

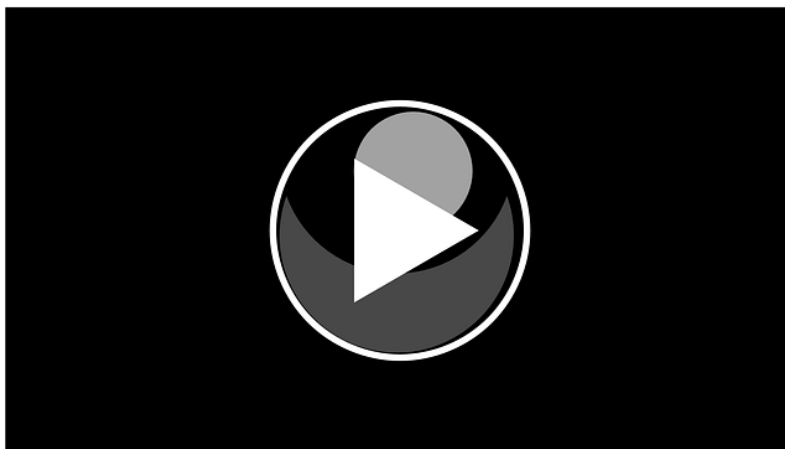
Yes

No

Participation in this study is limited to those who have been diagnosed with cancer at some point in their life.

First, please let us know how long ago you were *initially* diagnosed with cancer? Please be specific.

Below is an emotional support message that has been recorded for a person who has been diagnosed with cancer. Imagine you are the person receiving this message. When you are ready, please watch the video. Then, on the following pages, please answer the questions about how you rate the message.



Rate the message you just watched by choosing one circle per each pair of adjectives. The closer the circle is to the word, the more you feel the message you viewed is described by the word. (Answer choices were 7 scale points placed between each set of opposing words)

1. Helpful Hurtful
2. Knowledgeable Ignorant
3. Generous Selfish
4. Useful Useless
5. Supportive Unsupportive
6. Encouraging Discouraging
7. Comforting Distressing
8. Reassuring Upsetting
- 9 Sensitive Insensitive
10. Compassionate Heartless
11. Understanding Misunderstanding
12. Considerate Inconsiderate
13. Self-Centered Other-Centered
14. Invalidates Validates
15. Judges Empathizes
16. Disregards Acknowledges
17. Unconcerned Concerned

Still thinking about the message you viewed, imagine you are the person receiving this message and please indicate your level of agreement with each statement below. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, and Strongly Agree).

1. I feel more optimistic now that I have received this person's message.
2. I understand the situation better now that I have received this person's message.
3. This person made me feel better about myself.
4. I feel better after hearing this person's message.
5. Hearing this message about my cancer diagnosis helped me get my mind off of it.
6. I felt the person was putting me down.
7. The person's comments were appropriate.
8. The way the person talked irritated me.
9. This person doesn't seem to think I can handle my own problems.
10. This person seemed really concerned about me.

Imagine you are the person receiving this message, then indicate your level of agreement with each statement about the person in the video. (Answer choices: Strongly Disagree, Disagree, Somewhat Disagree, Neither Agree Nor Disagree, Somewhat Agree, Agree, and Strongly Agree).

1. The person was sensitive to my needs and feelings in their message.
2. The person was supportive.
3. The person was sympathetic.
4. The person ignored my feelings.
5. The person understood me.
6. The person was polite.
7. The person could easily put himself or herself into another person's shoes.
8. The person was respectful.

Think about the person you viewed in the video, indicate your level of agreement with each statement.

	Not at All	Somewhat	Moderately	Very Much
1. The person appeared calm	1	2	3	4
2. The person was tense	1	2	3	4
3. The person appeared upset	1	2	3	4
4. The person was relaxed	1	2	3	4
5. The person appeared content	1	2	3	4
6. The person was worried	1	2	3	4

What is your sex?

- Male
- Female
- Other

What is your age (in years)?

How would you describe your ethnic background? (Please check all that apply)

- Asian/Pacific Islander
 - Black/African-American
 - Hispanic/Latino(a)
 - Native American/Alaskan Native
 - White/Caucasian
 - Other (Please Specify)
-

What is the highest degree or level of school you have completed? If currently enrolled, what is the highest degree you have received?

- Some high school, no diploma
- High school diploma or equivalent (e.g. GED)
- Some college credit, no degree
- Associate degree
- Bachelor's degree
- Master's degree
- Professional degree (e.g., JD, MD, or DDS)
- Doctorate degree (e.g., PhD or EdD)

When were you *initially* diagnosed with cancer? (Ex: mm/dd/yyyy)

What type of cancer were you diagnosed with?

What stage was your cancer diagnosed at initially?

What treatments did you participate in to address your cancer?

To be compensated for your time and effort, please follow the link below to a page where you can provide an email address to which we can send you an Amazon e-gift card.
Thank you!

https://asu.co1.qualtrics.com/jfe/form/SV_cOwipv5D9ohqFVP

Thank you for participating in my survey on cancer and supportive messages. You can enter your information below to receive a \$5 Amazon e-gift card. Only those participants who were provided a unique survey link directly from the researcher will be compensated.

If someone other than the researcher provided you a link to this survey, you will not receive a gift card. If you have concerns or issues, please email Colter Ray at cdray2@asu.edu

Thanks!

In order to compensate you for your time and effort, please provide an email address below where we can email you an Amazon e-gift card. Thank you!

What is your first and last name?

APPENDIX M
CANCER PATIENTS' RECRUITMENT SCRIPT

Rating an Emotional Support Message for a Cancer Patient

We are conducting an academic survey about emotional support messages recorded for people diagnosed with cancer. We need to understand your opinion about an emotional support message. Select the link below to watch the recorded message and complete the survey. At the end of the survey, you will be directed to a separate webpage where you can enter an email to which a \$5 Amazon e-gift card will be sent as compensation. The survey would take about 10 minutes.

APPENDIX N

BUDGET

Item	Cost (\$USD)	Quantity	Total
Salivary Collection Swabs and Tubes (50pk)	\$86.00	4	\$344.00
Second Order of Saliva Swabs	\$109.00	1	\$109.00
Salivary Tube Bar-Coded Labels	\$0.10	300	\$30.00
Shipping Collection Supplies to Scottsdale	\$19.00	1	\$19.00
Partial Cost of Cortisol Assay Kits (1 of 3)	\$1,498.00	1	\$1,498.00
SUBTOTAL - GPSA EXPENSES			\$2,000.00
Partial Cost of Cortisol Assay Kits (2 of 3)	\$500.00	1	\$500.00
SUBTOTAL - GRADUATE COLLEGE EXPENSES			\$500.00
Partial Cost of Cortisol Assay Kits (3 of 3)	\$466.34	1	\$466.34
Cancer Patient Participant Compensation	\$5.00	100	\$500.00
Cortisol Analysis Labor & Fee	\$6.22	300	\$1,866.00
FedEx Next Day (10AM) Shipping	\$456.00	1	\$456.00
Dry Ice for Transporting Saliva to IISBR	\$15.00	1	\$15.00
Logitech Camera	\$65.00	1	\$65.00
Freezer	\$98.60	1	\$98.60
Digital Thermometer	\$5.69	1	\$5.69
Digital Clock	\$39.99	1	\$39.99
Folders, Envelopes, Office Supplies	\$7.98	1	\$7.98
SUBTOTAL - HDSHC EXPENSES			\$3,520.60
TOTAL COST OF STUDY			\$6,020.60

APPENDIX O

CODING FORMS FOR NONVERBAL IMMEDIACY BEHAVIORS

Nonverbal Coding Sheet (Direct Gaze, Concern, & Anxiety)

Direct Gaze: directly gazing into the camera.

Overall, how much was the use of direct gaze by the participant?

Absent 1 2 3 4 5 6 7 Continuous

Concern: Demonstrating worry and caring for the well-being of the person being addressed.

Overall, how much concern did the participant show the person being addressed in the message?

Hardly Any Concern 1 2 3 4 5 6 7 A Great Deal of Concern

Anxiety: appearing uneasy or nervous while recording the message.

Overall, how much anxiety did the person recording the message appear to be experiencing?

Hardly Any Anxiety 1 2 3 4 5 6 7 A Great Deal of Anxiety

Nonverbal Coding Sheet (Fluency & Pitch)

Vocal fluency: extent to which a message is delivered without pauses, filler words, false starts, or corrections

Overall, how fluid was the delivery of this message?

Completely Disfluent 1 2 3 4 5 6 7 **Completely Fluent**

Pitch variation: Changes in highness or lowness of the sound of one's voice throughout the course of the recording

Overall, how much pitch variation occurred in the delivery of this message?

No Pitch Variety 1 2 3 4 5 6 7 **A Great Deal of Pitch Variety**