

Laboratory-derived, Coded Communicative Behaviors
among Individuals with Cancer and their Caregiving Partners

by

Blair Kirsten Puleo

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Approved April 2020 by the
Graduate Supervisory Committee:

Shelby Langer, Co-Chair
Frank Dillon, Co-Chair
Michael Todd
Brian Baucom
Lisa Spanierman

ARIZONA STATE UNIVERSITY

May 2020

ABSTRACT

Effective communication plays a major role in the psychological adjustment and quality of the relationship of couples coping with cancer, yet only a few communicative behaviors have been examined in the context of a cancer diagnosis and treatment. This study sought to expand the extant literature by describing a wider range of communicative behaviors (beyond the frequently researched withdraw, disclosure/holding back, and avoidance behaviors) through an observable measure, as previous research has relied heavily on self-report. Couples (134 cancer patients and their caregiving partners) were video-taped discussing a cancer-related concern in the laboratory. Discussions were coded separately for patients and caregivers using the Asymmetrical Behavioral Coding System which captures 22 communicative behaviors. These behaviors contribute to four higher-level scales: positive approach, negative approach, positive avoidance, and negative avoidance. Area under the curve was calculated to describe each factor. The most frequently observed behavior was positive approach, followed by negative avoidance, negative approach, and positive avoidance. Paired samples t-test analyses examining the factors by moderating variables revealed that women engaged in more positive approach behaviors than did men; men engaged in more avoidant behaviors (both positive and negative) than did women; and caregivers engaged in more avoidant behaviors (both positive and negative) than did patients. Findings are consistent with prior research in the field and suggest consideration of tailoring possible future interventions. Further investigation is needed to assess possible interactional effects to ultimately help couples better communicate about the challenges associated with cancer treatment and recovery.

TABLE OF CONTENTS

| | Page |
|---|------|
| LIST OF TABLES | iv |
| LIST OF FIGURES | v |
| CHAPTER | |
| 1 INTRODUCTION | 1 |
| Couple Communication in the Non-Medical Context | 4 |
| Positive Communication | 4 |
| Negative Communication | 4 |
| Gender Differences | 6 |
| Couple Communication in the Medical Context | 7 |
| Cancer | 7 |
| Role Differences | 7 |
| Gender Differences | 9 |
| Current Study | 9 |
| Aim 1 | 11 |
| Aim 2 | 11 |
| Hypothesis 1... .. | 11 |
| Hypothesis 2... .. | 11 |
| 2 METHODS | 12 |
| Participants..... | 12 |
| Design and Procedure | 12 |
| Measures | 14 |

| CHAPTER | Page |
|---|------|
| Demographics | 14 |
| Patient Medical Characteristics..... | 14 |
| Dyadic Adjustment Scale..... | 14 |
| Observational Coding | 15 |
| Statistical Analysis..... | 16 |
| 3 RESULTS | 18 |
| Participant Characteristics | 18 |
| Topics Selected for Discussion..... | 19 |
| ABCS Factor AUC Values | 19 |
| Correlations among Key Variables..... | 20 |
| AUC Values as a Function of Gender | 20 |
| AUC Values as a Function of Role..... | 21 |
| 4 DISCUSSION..... | 22 |
| Limitations and Future Directions | 25 |
| REFERENCES | 29 |
| APPENDIX | |
| A BEHAVIORAL CODES WITHIN FACTORS..... | 47 |
| B UNIVERSITY APPROVAL FOR HUMAN SUBJECTS TESTING..... | 53 |

LIST OF TABLES

| Table | Page |
|---|------|
| 1. Cancer Conversation Topics..... | 34 |
| 2. ABCS Factors, Sub-codes, and Examples | 35 |
| 3. Demographic and Medical Characteristics of the Sample | 36 |
| 4. Factor Score Reliabilities and Skewness, Means and Standard Deviations for Area Under the Curve (AUC) Values of the ABCS Factors | 38 |
| 5. Correlations..... | 39 |
| 6. ABCS Factor AUC Values as a Function of Gender (Male vs. Female)..... | 40 |
| 7. ABCS Factor AUC Values as a Function of Role (Patient vs. Caregiver) | 41 |

LIST OF FIGURES

| Figure | Page |
|---|------|
| 1. Area Under the Curve (AUC) Values for ABCS Factors | 42 |
| 2. Positive Approach AUC Values by Gender and Role | 43 |
| 3. Positive Avoidance AUC Values by Gender and Role..... | 44 |
| 4. Negative Approach AUC Values by Gender and Role..... | 45 |
| 5. Negative Avoidance AUC Values by Gender and Role | 46 |

CHAPTER 1

INTRODUCTION

Accumulating evidence suggests that effective communication is critical for building and maintaining healthy romantic relationships. Communication involves connecting with others by sharing information or resources, seeking support or comfort, forming alliances, conveying emotion, and/or affecting some change in their environment (Wiley, 2007). Communication is both verbal (linguistic content) and nonverbal (facial expressions, bodily movements, tone and prosody). Interactional patterns may vary as a function of individual difference factors and/or context. For example, women are known to be more emotionally expressive than men and when individuals are faced with extreme stressors, positive dynamics become strained and negative dynamics become exacerbated (Fischer & LaFrance, 2015; Wiley, 2007; Gottman & Krokoff, 1989; Payne & Sabourin, 1990).

Cancer is conceptualized as an extreme stressor. Scholars have found that effective communication plays a major role in the psychological adjustment and quality of the relationship of couples coping with cancer, yet only a few communicative behaviors have been looked at (i.e., withdraw, disclosure/holding back, and avoidance) (Baucom et al., 2012; Manne et al., 2006). Extending this work, the purpose of the current study is to capture a wider range of the communicative behaviors enacted among couples coping with cancer. Particularly, this study employs a novel behavioral coding system to identify communicative behaviors through an observable measure. Prior work in this area has for the most part chiefly looked at these behaviors through self-report, and

of the few studies that have looked at both, results indicate that self-report and observer ratings of communication are only weakly associated (Lepore & Revenson, 2007; Porter et al., 2012; Margolin, et al., 1985; Matthews, et al., 1996; Pistrang et al., 1997; Pistrang et al., 1999). Observable measures of communication can provide clinically relevant data, in other words, practical importance of treatment effects, that could not be obtained through self-report. For instance, a recent study highlighted the need to conduct more observational studies of couples' communication in cancer as their observational design produced finer distinctions than their self-report measures (Bakhsaie et al., 2019).

This current study is a part of a larger study (R01 CA201179-01A1) that aims to assess communication through a multi-method approach including: (a) self-report questionnaires collected at multiple time points over one year; (b) ecological momentary assessments (EMA) sampling participant reports in real time; and (c) laboratory-based couple conversations yielding observable measures of communication behavior and vocal indices of emotional arousal (fundamental frequency). Its goals are to identify mechanisms by which communication is associated with adjustment and understanding these mechanisms will inform design of psychosocial interventions to support patients, caregivers, and couples. All in all, this research has translational potential to produce meaningful, applicable results like potentially improving couple's communication to optimize patient and caregiving partner well-being in the context of cancer treatment and recovery. Particularly, translating these basic science discoveries (e.g., observable communication behavior patterns) into practice (e.g., interventions aimed at changing maladaptive to adaptive communication behavior patterns) may help expand the repertoire of supportive care options available to oncology providers. This sub-study aims

to help build the foundation for achieving that long-term goal of implementing effective change.

To obtain a broader yet funneled picture of couple communication patterns, our literature review categorizes studies in terms of couple communication both in and outside of the medical context. In other words, studies that examined couple communication with the presence of a health malady as the focus and studies that examined couple communication more generally yet pulling from community and therapeutic contexts (e.g., healthy couples and distressed couples). Patterns reported across the couple communication literature must be considered in light of the context in which the behaviors are examined (e.g., sample and setting). Samples have been both community-based and clinic-based and have ranged from newlyweds to those in a long-term marriage, from those adjusting to parenthood to those adjusting to cancer, and from healthy non-distressed couples to divorcing couples (Gottman et al., 2015; Carstensen et al., 1995; Wilson & Gottman, 2002; Manne et al., 2006; Wiley, 2007; Gottman & Krokoff, 1989). Behaviors, moreover, have been observed in a variety of different methodological contexts, e.g., in the context of a laboratory-based conversation in which couples are asked to discuss a point of conflict or a shared topic related to the health malady, and in the context of interventions in which couples are trained to solve problems or share their thoughts and feelings (Leo et al., 2019; Bakhshaie et al., 2019; Porter et al., 2012). Consequently, these couple conversations varied in occurrence, e.g., after being asked to discuss a particular topic, manipulated/primed by a previously filled out related questionnaire, or taught from training workshops (Bakhshaie, et al., 2019; Porter et al. 2012). No studies, if very few, have looked at naturally unfolding couple

communication without a qualifier. Therefore, it is important to consider sources of variability in couples research when interpreting findings.

Couple Communication in the Non-Medical Context

An extensive literature on relationship-distressed couples has described a much wider array of behaviors: criticism, defensiveness, hostility, stubbornness, stonewalling, contempt, escalation, repair, put downs, disclosure, demand/withdraw, validation, interfering, collaboration, complaints and compliments.

Positive Communication

Good communication and problem-solving skills are critical for relationship success. Researchers agree that for communication between two partners to be effective, it needs to be clear, soft, safe and positive. Clear communication is the sense of definitively conveying one's need for connection (Driver & Gottman, 2004; Wiley, 2007). Soft communication is the tone utilized with some added humor (Driver & Gottman, 2004; Gottman, 1993). Safe communication is creating a nonjudgmental space for mutual care and understanding (Coyne & Smith, 1994). Positive communication is illustrated through supporting one another in daily interactions (Driver & Gottman, 2004). The more individuals engage in these communication patterns, the more likely they are to experience positive outcomes (i.e., better relationship satisfaction) in their relationships (Driver & Gottman, 2004).

Negative Communication

Conflicts are normal. However, when negative patterns such as escalation, withdrawal, negative interpretations, and putdowns in communication become the norm, couples'

transition from being adjusted to distressed couples (Gottman, 1994).

Communication in distressed relationships involves more mutual avoidance of problem discussions, more demand/ withdraw patterns, more defensiveness/ whining/ stubbornness/ hostility, more verbal aggression, and overall heightened levels of conflict (Christensen & Shenk, 1991; Gottman & Krokoff, 1989; Payne & Sabourin, 1990; Gottman et al., 2015; Gottman & Levenson, 1992; Notarius & Markman, 1989). Four consistently used communication behaviors that have been found to predict relationship dissolution are criticism, contempt, defensiveness, and stonewalling (Gottman, 1994). Criticism is different than offering a critique or voicing a complaint or concern. Criticizing one's partner is attacking their character at the core (e.g., "You're selfish"). Contempt is a communication behavior used to disrespect, mock, or ridicule another (e.g., "Cry me a river"). Defensiveness is when one feels unjustly accused and so they look for excuses to make their past behavior acceptable (e.g., "I had to work late"). Stonewalling is when one simply stops responding to their partner. They have already withdrawn and are shut down, so now they engage in evasive behaviors to avoid their partner (e.g., looking at their phone or putting headphones in).

Couples may engage in strategies to try and move the conversation from conflict to resolution, termed repair behaviors (Gottman et al., 2015). Examples of repair pattern attempts are humor, affection, self-disclosure, expressing understanding, empathy, taking responsibility, and 'we're okay' statements; these have been shown to deescalate tension (Gottman et al., 2015). The failure of these attempts is an accurate marker of an

unsatisfactory relationship moving forward (Gottman et al., 2015). For instance, all repair attempts (among both satisfied and dissatisfied couples) usually have two components – 1) a negative affective nonverbal component (facial expressions, bodily movements, tone and prosody) and 2) a metacommunication content component (linguistic component) (Wilson & Gottman, 2002). However, dissatisfied couples usually attend primarily to the negative affective component over the repair content itself (Wilson & Gottman, 2002). Therefore, once dissatisfied couples enter a negative state together, it is incredibly difficult for them to get out of that cycle. This general resolution system is ineffective until the couples' emotional state is regulated.

Gender Differences

Among healthy mixed-gender couples, there are differences in how men and women communicate. Women tend to be more verbally and emotionally expressive than men (Fischer & LaFrance, 2015). Additionally, they are more likely to offer and expect verbal support paired with eye contact as they are more attuned to their partners' non-verbal cues (Kendall & Tannen, 2001). On the other hand, men on average tend to be over-stimulated by this kind of communication and withdraw (Gottman & Krokoff, 1989). These differences are largely explained by the societal norms expected of their gender (Simon & Nath, 2004).

The gender differences described above tend to be stronger among distressed versus non-distressed couples. For instance, women on average are more demanding as compared to men; they also utilize more destructive conflict behaviors (e.g., argumentativeness) and negative speech (Christensen & Shenk, 1991; Payne & Sabourin,

1990; Oggins et al., 1993). Additionally, women are more likely to raise issues to their partner and have a higher tolerance for conflict while experiencing the full range of emotions (e.g., negative emotion, anger, joy, contempt, whining and sadness) (Ball et al., 1995; Carstensen et al., 1995). Men, on the other hand, lean more towards withdrawing and engaging in conflict avoidant behavior which allows them to control the depth of the conversation (Christensen & Shenk, 1991; Oggins et al., 1993; Ball et al., 1995). They tend to be more stubborn and defensive, while experiencing a more neutral affect despite being more verbally aggressive (Payne & Sabourin, 1990; Carstensen et al., 1995).

Couple Communication in the Medical Context

In contrast to the extensive literature on relationship-distress couples, most of the psychological research within the medical literature has focused on a few communication behaviors: withdraw, disclosure/holding back, and avoidance.

Cancer

We focus here on couples coping with cancer. Cancer is the second leading cause of death in the United States (Siegel et al., 2020). One in two men and one in three women will die from cancer in their lifetime (Siegel et al., 2020). Fortunately, mortality rates have steadily declined since 1991 due to reductions in known behavioral risk factors (e.g., smoking) and improvements in treatments (Siegel et al., 2020). Nevertheless, investment in research to further advance supportive care treatments would undoubtedly accelerate progress against cancer and psychosocial support for survivors and caregivers.

Role Differences

Even in the context of satisfying relationships, many couples have trouble communicating about cancer-related issues (Pistrang & Barker, 1995). Among patients and caregivers, there is a common misconception that it is harmful to the patient to discuss any negative aspects of the cancer (i.e., holding back from disclosure). In turn, caregivers feel they need to cheer up the patient which consequently leads to mutual avoidance of sensitive issues such as sexual function and disease progression and death (Peters-Golden, 1982; Porter et al., 2005). Patients are often overwhelmed by medical decisions, treatment side effects and emotional distress (Northouse et al., 2000). They experience emotional distress in terms of anxiety, depression, and fears and worries about disease progression and death (Syrjala & Yi, 2014). They report fatigue, pain, cognitive impairment and sexual dysfunction from the disease and treatment-related side-effects (Bower, 2008). These problems limit the patients' ability to perform home and workplace responsibilities, and therefore impact the caregiving partner (Syrjala et al., 2004; Zebrack, 2000). Caregivers are overwhelmed with these additional demands, on top of providing support for their partner and dealing with their own fears and worries about the disease (Northouse et al., 2000). Some caregivers even report more distress than patients (Langer et al., 2003; Given & Given, 1992).

Adaptive, constructive communication behaviors include open discussions of cancer-related concerns and the ability to listen and respond supportively to ones' partners' disclosure. Maladaptive, destructive communication behaviors include holding back from disclosures and avoiding or responding negatively to ones' partners' disclosure (Traa et al., 2015). A dyadic coping mechanism termed protective buffering, defined as "hiding concerns from one's partner, denying worries, concealing discouraging

information, and yielding in order to avoid disagreement” has been associated with lower relationship satisfaction (Langer et al., 2009; Hagedoorn et al., 2000, p. 275).

Specifically, caregivers buffered patients more than patients buffered caregivers and the more one buffered, the lower their own relationship satisfaction (Langer et al., 2009).

Similarly, holding back has been associated with lower relationship satisfaction among both patients and partners (Langer et al., 2018). These effects were both intrapersonal and interpersonal, meaning that when either individual held back, both they themselves and their partner patient and the partner reported lower relationship satisfaction (Langer et al., 2018).

Gender Differences

Most of the research around gender differences in communication in this context has been confounded by role. In other words, much of the work in this area has recruited sex-specific cancers such as breast cancer and prostate cancer and involved opposite-sex couples. Hence in studies of these samples, all patients tend to be one sex and the caregivers, another. It is therefore difficult to tease apart effects of role from gender and vice versa. These issues aside, findings by in large show that men fail to share emotional reactions to cancer-related issues and assume understanding of their caregiving partners concerns/worries (Porter et al., 2005; Lim et al., 2016). In contrast, male caregivers are more likely to initiate communication about cancer-related issues (Lim et al., 2016).

Current Study

This investigation aimed to extend the couple communication in cancer literature by examining not only disclosure and avoidant behaviors such as holding back and

protective buffering but also a wider range of both positive and negative communication behaviors.

A key limitation of the extant literature on couple communication in cancer is that researchers have relied almost exclusively on self-report rather than on observable measures of communication. While informative, self-report measures of communication have weaknesses. Participants may exaggerate their responses, be too embarrassed to reveal the full extent of a given behavior, respond in a socially desirable manner, or respond defensively (John & Robbins, 1994; Couch & Keniston, 1960; Cronback, 1946; Nisbett & Wilson, 1977). In addition, self-report and observational indicators of communication may not be concordant. In one study, observational ratings of communication in the context of couple-based intervention sessions indicated that self-report and observer ratings of communication were weakly associated (Porter et al., 2012). Furthermore, another research study highlighted that observational measures hold promise for more sensitively and objectively measuring behaviors related to how couples' emotional disclosures about cancer influence their cancer-related cognitive processing than self-report within couples' communication in cancer (Bakhshaie et al., 2019). This particular study is similar in set-up to this larger study as it had six trained researchers code both patient/spouse affective expressions in 3-min increments of a concern or disagreement topic discussion experienced by couples coping with cancer (e.g., death, side-effects, treatment). Using the SPAFF Coding System, specifically observed behaviors were both negative (anger, belligerence, contempt, criticism, defensiveness, disgust, domineering, fear/tension, sadness, stonewalling, threats, and whining) and positive (affection, enthusiasm, humor, interest, and validation) (Gottman et

al., 1996; Bakhshaie et al., 2019). This study differs from our larger study in that the coding systems capture different components of couple communication. For instance, the SPAFF assesses affective expression during the discussions, whereas the Asymmetric Behavior Coding System (ABCS) that we use in our study assesses behavioral functionality during the discussions. Additionally, the recruited participants in this study varied in cancer type (e.g., head and neck cancer vs. breast, colon, rectal, or lung cancer).

The overall goal of the present study was to describe a wide variety of communicative behaviors among individuals with cancer and their caregiving partners using observable methods. This study employed function-oriented behavioral coding to capture specific communicative behaviors in couple conversations within the context of cancer focusing on these research aims:

Aim 1

To describe the communicative behaviors observed among individuals with cancer and their caregiving spouses/ partners.

Aim 2

To examine the aforementioned communicative behaviors as a function of gender (male vs. female) and role (patient vs. caregiver).

Hypothesis 1. Women will engage in more approach behaviors (both positive and negative) than men.

Hypothesis 2. Caregivers will engage in more avoidant behaviors (both positive and negative) than patients.

CHAPTER 2

METHODS

Participants

Participants were from a larger ongoing study funded by the National Cancer Institute (R01 CA201179; MPIs Shelby Langer and Laura Porter). Inclusion criteria for patients were: age 18 or older; stage II-IV breast, colon, rectal, or lung cancer; currently receiving or having received a form of systemic therapy; within 2 years of diagnosis of current stage; life expectancy of at least 6 months per providing oncologist; ability to speak and comprehend English; and being married or in a committed, cohabiting relationship with someone of the same or opposite sex. Patients with cognitive impairment prohibiting completion of study assessments were excluded. Inclusion criteria for caregivers were: age 18 or older; ability to speak and comprehend English; and being married to or in a committed, cohabiting relationship with the patient. Participants were recruited at the level of the dyad from two sites, the Duke Cancer Institute in Durham, N.C. and the Seattle Cancer Care Alliance in Seattle, WA.

Design and Procedure

Patients identified as meeting initial medical inclusion criteria per medical records were sent a study brochure and letter signed by their provider introducing the study and informing them that they would be contacted by a research team member via phone (with opt-out details). Further eligibility screening took place during the initial phone contact, at which point the study purpose, procedures, risks and benefits were fully described, culminating with a decision about willingness to participate.

The design of the study was longitudinal. After providing informed consent, participants were asked to complete three activities over the course of a year: (1) questionnaires at baseline and at three subsequent 4-month intervals; (2) at baseline, a laboratory-based couple conversation about the cancer experience; and (3) also at baseline (following the conversation), smartphone-based ecological momentary assessments twice daily for 14 days. The present study uses data from the baseline questionnaire and couple conversation.

At the baseline visit, couples were asked to converse for 15 minutes about the cancer experience. These conversations are audio- and video-recorded. To assist participants in selecting topics of discussion for these conversations, they were given a list of cancer-related issues known to be relevant based on past research (see Table 1). Patients and caregivers independently selected three topics on the list that they were interested in discussing with their partner. The experimenter then looked for overlap in the two sets of choices. If overlap existed, the couple was asked to discuss the overlapping topic (if more than one topic overlapped, they were asked to select one of the overlapping topics together to discuss). If no overlap existed, the experimenter instructed the couple to pick one of the six topics initially chosen.

Laboratory-derived couple conversations were coded from video-recordings of the conversations using the Asymmetric Behavior Coding System (ABCS). Six students were trained in the system and independently conducted coding, two from Arizona State University (one graduate student, the author of the present thesis, and one undergraduate student) and four from the University of Utah (one graduate student and three

undergraduate students). All coders engaged in an intensive training under the direction of Dr. Brian Baucom, co-developer of the ABCS and consultant on the larger project.

Measures

Demographics

A standard self-report measure was used to assess age, gender, race, ethnicity, educational status, and income.

Patient Medical Characteristics

Medical records were extracted to determine patient diagnosis and stage of disease.

Dyadic Adjustment Scale

The Dyadic Adjustment Scale (DAS; Spanier, 1976) measures four dimensions of relationship quality (consensus, satisfaction, cohesion, and affectional expression) in addition to total adjustment. We focus here on the 10-item satisfaction subscale. Example items include, “How often do you discuss, or have you considered divorce, separation, or terminating your relationship,” “How frequently do you kiss your partner,” and “Which best describes the degree of happiness, all things considered, of your relationship?” Response scales vary; some range from 0-4 (0 = never, 4 = every day); others range from 0-5 (0 = never, 5 = all the time); and one ranges from 0-6 (0 = extremely unhappy, 6 = perfect). Summary scores for the satisfaction subscale have a theoretical range of 0 to 50, with higher values indicative of greater satisfaction. The measure has well-established content, criterion, and construct validity (Spanier, 1976; Spanier & Cole, 1974; Locke &

Wallace, 1959). Internal consistency (Cronbach's coefficient alpha) based on the present sample was 0.80 for patients and 0.76 for caregivers.

Observational Coding

The Asymmetric Behavior Coding System (ABCS) is a 22-item coding scheme used to rate an individual as he or she is interacting with his or her partner during a discussion about their thoughts and feelings related to cancer. Items were drawn from two commonly used coding systems frequently employed in observational couples research: the Couples Interaction Rating System-Revised (CIRS-S; Heavey, Gill, & Christensen, 2002) and the Specific Affect Coding System (SPAFF; Coan & Gottman, 2007). The ABCS solely emphasizes the behavioral functional, not affective, aspects of these interactions (Leo et al., 2019). In other words, the system focuses on the communicative verbal action and not the emotional component (e.g., crying), despite them often being paired together. The system is sensitive to change over the course of a conversation as it assesses positive and negative, approach and avoidance behaviors enacted during couple interactions (see Table 2 and Appendix A).

Each 15-minute conversation was rated in five, 3-minute segments. Coders made separate judgments for each of the 22 behavior codes per segment. This was done separately for patients and caregivers. The order of which partner was rated first was randomized. After undergoing training, a team of six coders met weekly while coding to discuss any discrepancies in coding and to prevent coder drift. Behaviors were rated on a 1-7 Likert-type scale, with 1 being little to no presence of the behavior and 7 being the strong and/or frequent presence of the behavior (e.g., 0 = not at all disclosing, 7 = highly

disclosing). Previous exploratory factor analysis aggregated the 22-codes into four factor codes based on scree plots and eigenvalues exceeding 1: positive approach (6 items: maintaining/deepening, disclosure, validation, collaboration, intimacy building, and justification), negative approach (7 items: blame, belligerence, contempt, domineering, emotional protests, defensiveness, and pressures for change), positive avoidance (4 items: accommodation, tough love, minimization, and reassurance), and negative avoidance (5 items: withdraws, avoidance, stonewalling, submit, and controlling the conversations) (Leo et al., 2019). Using this factor structure, inter-rater reliabilities and internal reliabilities of the scales were consistently high (see Table 4).

Statistical Analysis

ABCS data were managed as follows. Factor scores were created by first averaging all behavior codes that occurred during a given segment per factor scale, dyad member, and coder. The values created in this first step were then averaged across all coders who rated a given dyad member and conversation. Area under the curve (AUC) with respect to ground was then calculated for each dyad member and factor using the trapezoidal formula.

Area under the curve values (AUC) capture repeated behaviors over time and express, as a joint function of intensity and duration, the total amount of that behavior observed as one single score, while taking into account the fact that behaviors may start and finish, change over time, and plateau. This index has been commonly used in the cortisol literature (Pruessner et al., 2003) as a measure of cumulative cortisol exposure. Given the 3-minute increments across the 15-minute conversations, AUC scores have a

theoretical range from 15 (minimum observed behavior) to 105 (maximum observed behaviors).

To describe the factors and illustrate the distribution of AUC, a histogram of each factor was plotted. The mean and standard deviation were also reported. This was repeated for each factor separately as a function of gender (men and women) and role (patients and caregivers). This culminated in the creation of four graphs collapsed across the aforementioned moderators (one for positive approach, one for positive avoidance, one for negative approach, and one for negative avoidance), and eight graphs per moderator (for each factor x the two levels of the dichotomous moderator). Two sets of dependent samples t-tests were conducted to examine how mean AUC values differ across roles (patient vs. caregiver) and gender (male vs. female).

CHAPTER 3

RESULTS

Participant Characteristics

The coding sample consisted of 134 couples ($N = 268$ individuals). Demographic and clinical characteristics are summarized in Table 3. Participants were, on average, 54 years old ($SD = 13$ years). The majority of participants self-identified as White in race (86%) and Non-Hispanic in ethnicity (95%). The patient sample was 64% women and 34% men. Given the enrollment of mostly opposite-sex couples (96%), gender composition of the caregiver sample was reversed (i.e., 64% men). Ninety-three percent of couples were married; 7% were partnered and cohabiting. With respect to education, 68% of the sample was college-educated (having earned a four-year college degree). Income was distributed as follows: 15% reporting a household income \leq \$60,000, 23% reporting a household income between \$60,000 and \$99,999, and 61% reporting a household income of \$100,000 or greater. Couples were generally satisfied in their relationship as their average satisfaction subscale score was 39.9 ($SD = 5.1$) out of 50. This is similar to the married couples' mean satisfaction score of 40.5 ($SD = 7.2$) reported by the DAS developer and significantly contrasts with the divorced couples' mean satisfaction score of 22.2 ($SD = 10.3$) (Spanier, 1976). It is also on par with other reports of relationship satisfaction among couples coping with cancer (Langer et al., 2003). Clinically, the most frequent cancer diagnosis was breast cancer (23%), followed by rectal (11%), colon (10%) and lung (6%). Note that the larger study did not enroll lung

cancer patients from the start. Stage was well-distributed across stages II, III and IV. For more detail on demographic and medical characteristics, see Table 3.

Topics Selected for Discussion

As described above, couples were asked to select a topic for discussion. Table 1 lists these topics in order of frequency. The most frequently chosen topic was fears or worries about disease progression or death (18%), followed by plans for the future (18%), disruptions to life caused by the cancer diagnosis and treatment (15%), reaction to the diagnosis (10%), and managing treatment side effects (9%). Other, less frequently chosen topics are listed in Table 1.

ABCS Factor AUC Values

Although same-sex couples were not excluded from our study generally, we excluded them from our gender analyses as gender is not a distinguishing feature for those couples and needs to be in order to run those analyses. Therefore, we conducted our gender comparisons with 129 opposite-sex couples.

To address Aim 1, Figure 1 presents means and distributions of AUC values for each of the ABCS factors. Based on these values, the most frequently occurring behavior was positive approach ($M = 45.27$, $SD = 7.17$), followed by negative avoidance ($M = 30.10$, $SD = 10.02$), negative approach ($M = 20.50$, $SD = 6.95$), and positive avoidance ($M = 20.03$, $SD = 6.01$). The plots in Figure 1 and the skewness values listed in Table 4, show that the distributions for positive approach and negative avoidance were relatively symmetrical. In contrast, the distributions for positive avoidance and negative approach were positively skewed.

Correlations among Key Variables

Table 5 displays a correlation matrix of key study variables: gender, role, and AUC values for the four ABCS factors. In what follows, we highlight statistically significant associations of interest. Gender was associated with three of the ABCS factors such that positive approach behavior was greater among women and avoidance behavior (both positive and negative) was greater among men. Role was associated with two of the factors such that both positive and negative avoidance was greater among caregivers. With respect to inter-correlations among the ABCS factors, positive approach was positively associated with positive avoidance. Similarly, negative approach was positively associated with negative avoidance. Positive avoidance was also positively associated with negative approach, and positive approach was inversely associated with negative avoidance.

AUC Values as a Function of Gender

We now turn to examination of AUC values as a function of gender and role (Aim 2). Table 6 and panels A and B of Figures 2-5 present mean AUC values for the factors as a function of gender (male vs. female), results of dependent samples t-tests of gender differences in AUC values for each of the four factors, and histograms of AUC values by gender. Significant gender differences were found for three of the four factors, positive approach, positive avoidance, and negative avoidance, such that women exhibited more positive approach behaviors (e.g., maintaining/deepening, disclosure, validation, collaboration, intimacy building, and justification), and men exhibited more avoidance behaviors, both positive and negative, which is in line with prediction. Counter to

prediction, men and women did not differ significantly with respect to negative approach behavior.

AUC Values as a Function of Role

Table 7 and panels C and D of Figures 2-5 present results of dependent samples t-tests of role (patient vs. caregiver) differences in AUC values for each of the four factors and histograms of AUC values by role. Significant role differences were found for two of the factors, positive avoidance and negative avoidance. In line with hypotheses, caregivers displayed more of both types of avoidant behaviors (negative [e.g., withdrawal, avoidance, stonewalling, submit, and controlling the conversation] and positive [e.g., accommodation, tough love, minimization, and reassurance]) as compared to patients.

CHAPTER 4

DISCUSSION

This study examined a range of communicative behaviors among individuals with cancer and their caregiving spouses/ partners using objective methods. A function-oriented behavioral coding system captured individual behaviors within the context of a laboratory-based couple conversation about cancer. Aim 1 was to describe the communicative behaviors observed among individuals with cancer and their caregiving spouses/ partners. Borrowing from the cortisol literature, we used area under the curve to describe the totality of behaviors observed across the 15-minute interaction. Based on mean AUC values, positive approach behaviors were the most frequently observed (e.g., maintaining/deepening, disclosure, validation, collaboration, intimacy building, and justification), followed by negative avoidance (e.g., withdrawal, avoidance, stonewalling, submit, and controlling the conversation), negative approach (e.g., blame, belligerence, contempt, domineering, emotional protests, defensiveness, and pressures for change), and positive avoidance (e.g., accommodation, tough love, minimization, and reassurance). Histograms and skewness values further characterized the distributions of AUC values for these higher-order ABCS factors. While the distribution of AUC values for positive approach and negative avoidance were relatively symmetrical, that for negative approach and positive avoidance were asymmetrical, specifically, right-tailed, indicating that the majority of participants displayed very little of these behaviors.

The fact that the most frequently observed behaviors were characterized by positive approach and the least frequently observed behaviors were characterized by

negative approach paints an overall quite positive picture of the dynamics of the couples in this sample. Positive approach behaviors are thought to be adaptive and negative approach behaviors, maladaptive (Driver & Gottman, 2004). This is in contrast to behaviors typically reported in the distressed couples literature (Gottman, 1994).

The fact that we saw a moderate degree of negative avoidance behaviors (e.g., withdrawal and avoidance) is in many ways commensurate with work indicating that both patients and caregivers hold back from disclosing cancer-related concerns to their caregiving partner (Peters-Golden, 1982; Porter et al., 2005). This mutual avoidance may be due to the misconception that it is harmful to discuss any negative aspects of the cancer. Therefore, interventions designed to facilitate disclosure might help alleviate distress.

Aim 2 was to examine the ABCS communicative behaviors as a function of gender (male vs. female) and role (patient vs. caregiver). With respect to gender, we found that women engaged in more positive approach behaviors than men, and men engaged in more avoidant behaviors (both positive and negative) than women. This finding is consistent with couple communication across healthy couples in the non-medical context, distressed couples in the non-medical context, and couples in the medical context. Within healthy couple communication in the non-medical context, women tend to be more verbally and emotionally expressive than men, and men tend to withdraw (Fischer & LaFrance, 2015; Gottman & Krokoff, 1989). Within distressed couple communication in the non-medical context, women tend to be more demanding and raise issues, while men tend to engage in conflict avoidant behavior and withdraw

(Christensen & Shenk, 1991; Payne & Sabourin, 1990; Oggins et al., 1993; Ball et al., 1995; Carstensen et al., 1995). Within couples in the medical context, men failed to share emotional reactions to cancer-related issues and assume understanding of their partners' concerns/worries (Porter et al., 2005; Lim et al., 2016).

For role, we found that caregivers engaged in more avoidant behavior (both positive and negative) than patients. This finding is consistent with literature in the medical context in that caregivers feel they need to cheer up the patient which consequently leads to mutual avoidance of sensitive issues such as sexual function and disease progression and death (Peters-Golden, 1982, Porter et al., 2005; Bakhshaie et al., 2019). However, it is important to note that in this study, the most frequently chosen conversation topic was fears or worries about disease progression or death. In that sense, then, couples in this sample did not shy away from difficult topics. Potentially, this might be due to the fact that couples in this study were prompted to select a topic individually first, then the experimenter looked for overlapping topic choices. This structure gave couples the opportunity to discuss the sensitive issues that they both want to talk about individually but might be hesitant to initiate the conversation. Furthermore, when compared to the similar study conducted Bakhshaie and colleagues (2019), their sample relegating to their conversations to less sensitive topics (e.g., side-effects, role changes, and medical/financial problems). The fact that caregivers engaged in more avoidant behavior may be in part explained by gender differences in avoidant behavior. Sixty-four percent of caregivers were male. To some extent, then, role is confounded by gender. This is due to the high number of breast cancer patients enrolled in the study relative to the other mixed-gender cancers. Other possible explanations that may account for this

finding are that someone in a caregiver role might be avoidant because they are intently focused on their numerous medical and logistical care responsibilities, to the exclusion of the patient's emotional needs, and/ or want to avoid the personal upset feelings that can arise from talking about a difficult issue.

Limitations and Future Directions

This investigation aimed to extend the couple communication in cancer literature by examining a wider range of both positive and negative communication behaviors through observable measures of communication. Promising findings showed that this sample mainly engaged in positive approach communication behaviors which are indicative of overall adjustment. Interactional patterns may vary as a function of individual difference factors and/or context. This work helps build the foundation to better understanding couples within this context.

Our findings regarding the moderating effects of gender and role warrant further research and consideration. We did not conduct analyses to examine the potential interaction of these variables. Therefore, we cannot say, for example, that male caregivers are in particular need of intervention. Instead, further work is needed to fully understand the main and interactive effects of these variables on communicative behavior. It may make sense, in designing future intervention studies, to target couples for which one or both members report relationship dissatisfaction based on the DAS.

While much attention has been given to facilitating disclosure, it is important to note that disclosure per se may not be adaptive and that holding back is not the converse of disclosure (Porter et al., 2005). It may be important to work with a single dyad

member alone first to explore motivations for avoidance, then move to couple-based settings where couples are trained in adaptive communication skills (open sharing of thoughts and feelings, responsive listening, and joint problem-solving).

Future studies could explore how couples coping with cancer engage in other supportive behaviors beyond communication (i.e., household chores, etc.). Since prior research has shown that women tend to more verbally expressive than men, it might behoove researchers to investigate what other behaviors these caregivers might be engaging in that could be brought more into awareness, like perhaps more explicit behaviors (e.g., driving to appointments, helping run errands, completing household chores, etc.) Secondly, researchers could behaviorally code couples' communication behaviors both before and after intervention to see the effectiveness of the proposed intervention and how behaviors change. Thirdly, it would be interesting to potentially connect couple communication behaviors to clinical outcomes within this population (i.e., morbidity, mortality, and even bereavement among caregivers in the case of patient death). Fourthly, while we have a record of the topic selected for discussion, we did not examine coded behaviors with relation to chosen topic, nor did we track whether or not the topic changed. Fifthly, additionally noting length of time since diagnosis is worth exploration in future studies as couples who were recently diagnosed compared to those dealing with it for nearly two years would likely communicate differently about the cancer due to their adjustment stage. Lastly, future research could examine associations between SES and financial distress and communicative behaviors.

This study had many strengths, including an observational design, observable assessment of couple communication behavior, a large sample of couples from a vulnerable population, and a multi-site study that afforded participants from different demographic areas of the country. Our findings highlight the need to conduct more observational studies of couples' communication in cancer.

The study also had some limitations. Our sample was predominantly white, middle class, and well educated; findings should be validated with samples characterized by broader racial/ethnic diversity, SES distribution, and lower educational attainment. Furthermore, the researchers and coders are relatively privileged compared to the general population. Therefore, the design, implementation, and data collection were attained through a particular lens and need to be considered when generalizing these results; generalizability is limited. While we did not restrict participation to opposite-sex couples; the number of same-sex couples precluded separate analysis of that subsample. We therefore do not know whether or not patterns for these couples might differ in important ways. Lastly, our sample was characterized by patients and caregivers who reported, on average, relative satisfaction with their relationship. While this is common in studies of couples with cancer (Langer et al., 2003; Langer et al., 2009), this limits our ability to generalize the present findings to relationship-distressed couples.

In conclusion, this study contributes to the literature on couple-based interventions in cancer by highlighting communication behavior patterns (e.g., positive approach) engaged in by this vulnerable sample. It also highlights how these communication behavior patterns vary across gender (e.g., women engage in more

positive approach behaviors and men engage in more negative avoidant behaviors) and role (caregivers engage in both positive and negative avoidant behaviors). These findings add to the mounting literature in couples research suggesting that patients and caregivers affect one another's adjustment. Further research on how couples communicate with one another can inform the design of supportive care interventions to facilitate patient and partner adaptation to the cancer experience.

REFERENCES

- Badr, H., & Taylor, C. L. (2006). Social constraints and spousal communication in lung cancer. *Psychooncology*, *15*, 673–683.
- Bakhshaie, J., Bonnen, M., Joshua, A., Sandulache, V., & Badr, H. (2019). Emotional disclosure and cognitive processing in couples coping with head and neck cancer. *Journal of Behavioral Medicine*, <https://doi.org/10.1007/s10865-019-00094-5>.
- Ball, J., Cowan, P. & Cowan, C. P. (1995). Who's got the power? Gender differences in partners' perceptions of influence during marital problem-solving discussions. *Family Process*, *43*(3), 303-322.
- Baucom, D. H., Porter, L. S., Kirby, J. S., & Hudepohl, J. (2012). Couple-based interventions for medical problems. *Behavior Therapy*, *43*(1), 61-76.
- Bower, J. (2008). Behavioral symptoms in breast cancer patients and survivors: fatigue, insomnia, depression, and cognitive disturbance. *Journal of Clinical Oncology*, *26*(5), 768-777.
- Carstensen, L. J., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior of long-term marriage. *Psychology and Aging*, *10*(1), 140-149.
- Christensen, A. & Shenk, J. L. (1991). Communication, conflict, and psychological distance in nondistressed, clinic, and divorcing couples. *Journal of Consulting and Clinical Psychology*, *59*, 3, 458-463.
- Coan, J. A., & Gottman, J. M. (2007). The Specific Affect Coding System (SPAFF). In J. Coan & J. Allen (Eds.), *Handbook of emotion elicitation and assessment* (pp. 267–285). New York: Oxford University Press
- Couch, A. S., & Keniston, K. (1960). Yesayers and naysayers: Agreeing response set as a personality variable. *Journal of Abnormal and Social Psychology*, *60*, 151-174.
- Coyne, J. C. & Smith, D. A. (1994). Couples coping with myocardial infarction: Contextual perspective on patient self-efficacy. *Journal of Family Psychology*, *8*, 1-13.
- Cronbach, L. J. (1946). Response set and test design. *Educational and Psychological Measurement*, *6*, 475-494.
- Driver, J. & Gottman, J. M. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. *Family Process*, *43*(3), 301-314.
- Fischer, A., & LaFrance, M. (2015). What drives the smile and the tear: Why women are more emotionally expressive than men. *Emotion Review*, *7*(1), 22-29.

- Given, B., & Given, C. (1992). Patient and family caregiver reaction to new and recurrent breast cancer. *Journal of the American Medical Women's Association*, 47(5), 201-206.
- Gottman, J. M. (1993). The roles of conflict engagement, escalation, and avoidance in marital interaction: A longitudinal view of five types of couples. *Journal of Consulting and Clinical Psychology*, 61(1), 6-15.
- Gottman, J. M. (1994). *What predicts divorce?* Hillsdale, N.J.: Erlbaum.
- Gottman, J. M., Driver, J., & Tabares, A. (2015). Repair during marital conflict in newlyweds: How couples move from attack-defend to collaboration. *Journal of Family Psychotherapy*, 26(2), 85-108.
- Gottman, J. M., & Krokoff, L. J. (1989). Marital Interaction and Satisfaction: A Longitudinal View. *Journal of Consulting and Clinical Psychology*, 57(1), 47-52.
- Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology*, 63(2), 221-233.
- John, O., & Robbins, R. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology*, 66, 206–219.
- Hagedoorn, M. T., Kuijer, R. G., Buunk, B. P., DeJong, G. M., Wobbes, T., & Sanderman, R. (2000). Marital satisfaction in patients with cancer: Does support from intimate partners benefit those who need it most? *Health Psychology*, 19(3), 274-282.
- Heavey, C. L., Gill, D. S. & Christensen, A. Unpublished manuscript. University of California, Los Angeles. 1996. The couples interaction rating system.
- Kendall, S. & Tannen, D. (2001). Discourse and Gender. In Schiffrin, D., Tannen, D., and Hamilton, H. (Eds.), *The Handbook of Discourse Analysis* (pp. 548-567). Oxford, UK: Blackwell Publishers.
- Langer, S., Abrams, J., & Syrjala, K. (2003). Caregiver and patient marital satisfaction and affect following hematopoietic stem cell transplantation: a prospective, longitudinal investigation. *Psychooncology*, 12, 239-253.
- Langer, S. L., Brown, J. D., & Syrjala, K. L. (2009). Intrapersonal and interpersonal consequences of protective buffering among cancer patients and caregivers. *Cancer*, 115(18 Suppl), 4311-4325.
- Langer, S.L., Romano, J.M., Todd, M., Strauman, T. J., Keefe, F.J., Syrjala, K.L., Bricker, J.B., Ghosh, N., Burns, J.W., Bolger, N., Puleo, B.K., Gralow, J.R., Shankaran, V., Westbrook, K., Zafar, Y.S., Porter, L.S. "Links Between Communication and Relationship Satisfaction Among Patients With Cancer and

- Their Spouses: Results of a Fourteen-Day Smartphone-Based Ecological Momentary Assessment Study.” *Frontiers in Psychology* 9 (January 2018): 1843-null.
- Leo, K., Leifker, F., Baucom, D.H., & Baucom, B.R.W. (2019). Conflict management and problem solving as relationship maintenance. B. Ogolsky & K. Monk (Eds.), *Relationship Maintenance: Theory, Process, and Context*. New York, NY: Cambridge University Press.
- Lepore, S. J., & Revenson, T. A. (2007). Social constraints on disclosure and adjustment to cancer. *Social and Personality Psychology Compass*, 1(1), 313-333.
- Lim, J., Park, M., & Shon, E. S. (2015). Gender and role differences in couples communication during cancer survivorship. *Cancer Nursing*, 38(3), 51-60.
- Locke, H. J. & Wallace, K. M. (1959). Short marital adjustment and prediction tests: their reliability and validity. *Marriage and Family Living*, 21(August), 251-255.
- Manne, S., Ostroff, J., Rini, C., Fox, K., Goldstein, L., & Grana, G. (2004). The interpersonal process model of intimacy: The role of self-disclosure, partner disclosure, and partner responsiveness in interactions between breast cancer patients and their partners. *Journal of Family Psychology*, 18, 589–599.
- Manne, S. L., Ostroff, J. S., Norton, T. R., Fox, K., Goldstein, L., & Grana, G. (2006). Cancer-related relationship communication in couples coping with early stage breast cancer. *Psychooncology*, 15, 234–247.
- Margolin, G., Hattem, D., John, R. S., & Yost, K. (1985). Perceptual agreement between spouses and outside observers when coding themselves and a stranger dyad. *Behavioral Assessment*, 7(3), 235-247.
- Matthews, L., Wickrama, K., & Conger, R. (1996). Predicting marital instability from spouse and observer reports of marital interaction. *Journal of Marriage and Family*, 58(3), 641-655.
- Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231-259.
- Northouse, L. L., Mood, D., Templin, T., Mellon, S., & George, T. (2000). Couples' patterns of adjustment to colon cancer. *Social Science and Medicine*, 50(2), 271-284.
- Notarius, C. I. & Johnson, J. S. (1982). Emotional expression in husbands and wives. *Journal of Marriage and Family*, 44(2), 483-389.
- Oggins, J., Leber, D., & Veroff, J. (1993) Race and gender differences in black and white newlyweds' perceptions of sexual and marital relationships. *Journal of Sex Research*, 30, 152-160.

- Payne, M. J. & Sabourin, T. C. (1990). Argumentative skill deficiency and its relationship to quality of marriage. *Communication Research Reports*, 7(2), 121-124.
- Peters-Golden, H. (1982). Breast cancer: varied perceptions of social support in the illness experience. *Social Science and Medicine*, 16(4), 483-491.
- Pistrang, N., & Barker, C. (1995). The partner relationship in psychological response to breast cancer. *Social Science and Medicine*, 40(6), 789-797.
- Pistrang, N., Barker, C., & Rutter, C. (1997). Social support as conversation: analysing breast cancer patients' interactions with their partners. *Social Science and Medicine*, 45(5), 773-782.
- Pistrang, N., Clare, L., & Baker, C. (1999). The helping process in couples during recovery from heart attack: a single case study. *British Journal of Medical Psychology*, 72(227-237).
- Porter, L. S., Baucom, D. H., Keefe, F. J., & Patterson, E. S. (2012). Reactions to a partner-assisted emotional disclosure intervention: direct observation and self-report of patient and partner communication. *Journal of Marital and Family Therapy*, 38(Suppl 1), 284-295.
- Porter, L. S., Keefe, F. J., Hurwitz, H., & Faber, M. (2005). Disclosure between patients with gastrointestinal cancer and their spouses. *Psychooncology*, 14(12), 1030-1042.
- Pruessner, J. C., Kirschbaum, C., Meinlschmid, G., & Hellhammer, D. H. (2003). Two formulas for computation of the area under the curve represent measures of total hormone concentration versus time-dependent change. *Psychoneuroendocrinology*, 28(7), 916-931
- Siegel, R. L., Miller, K. D., & Jemal, A. (2020). Cancer statistics, 2020. *CA: A Cancer Journal for Clinicians*, 70(1), 7-30.
- Simon, R. W., & Nath, L. E. (2004). Gender and emotion in the United States: Do men and women differ in self-reports of feelings and expressive behavior? *American Journal of Sociology*, 109(5), 1137-1176.
- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and Family*. 38(1), 15-28.
- Spanier, G. B. & Cole, C. L. (1974). Toward clarification and investigation of marital adjustment. Revision of a paper presented at the National Counseling on Family Relations, Toronto, October 1974.

- Syrjala, K. L., Langer, S. L., Abrams, J. R., Storer, B., Sanders, J. E., Flowers, M. E., & Martin, P. J. (2004). Recovery and long-term function after hematopoietic cell transplantation for leukemia or lymphoma. *Journal of the American Medical Association, 291*(19), 2335-2343.
- Syrjala, K. L., & Yi, J. C. (2014). Overview of psychosocial issues in the adult cancer survivor. *UpToDate*. Waltham, MA: Wolters Kluwer Health.
- Traa, M., De Vries, J., Bodenmann, G., & Den Ouden, B. (2015). Dyadic coping and relationship functioning in couples coping with cancer: A systematic review. *British Journal of Health Psychology, 20*(1), 85-114.
- Wiley, A. R. (2007). Connecting as a couple: Communication skills for healthy relationships. *The Forum for Family and Consumer Issues, 12*(1).
- Wilson, B. J., & Gottman, J. M. (2002). Marital conflict, repair, and parenting. *Handbook of Parenting Volume 4 Social Conditions and Applied Parenting, 226*.
- Zebrack, B. (2000). Cancer survivor identity and quality of life. *Cancer Practice, 8*(5), 238-242.

TABLES

Table 1

| <i>Cancer Conversation Topics</i> | <i>n (%)</i> |
|---|--------------|
| Fears or worries about disease progression or death | 24 (18.3) |
| Plans for the future | 23 (17.6) |
| Disruptions to your life caused by the cancer diagnosis & treatment | 19 (14.5) |
| Your reaction to the diagnosis | 13 (9.9) |
| Managing treatment side effects | 12 (9.2) |
| Maintaining a sex life | 8 (6.1) |
| Financial concerns | 7 (5.3) |
| Talking with children about the cancer | 6 (4.6) |
| Communicating with friends or family members about the cancer | 5 (3.8) |
| Completing household tasks | 4 (3.1) |
| Dealing with changed in your/your partner's physical appearance | 3 (3.0) |
| Having to give up or cut back from work or other important activities | 2 (1.3) |
| Managing cancer treatments | 1 (0.8) |
| Dealing with medical staff | 1 (0.8) |
| Completing daily activities | 1 (0.8) |
| Concerns about the quality of medical care | 1 (0.8) |
| Concerns about your partner's response to the illness | 1 (0.8) |
| Being hospitalized | 0 (0.0) |
| Getting support from friends and family | 0 (0.0) |

Table 2

ABCS Factors, Sub-codes, and Examples

| | |
|------------------------------|--|
| Positive Approach | |
| Maintaining/Deepening | “Tell me more” |
| Disclosure | “This is what I am thinking/feeling” |
| Validation | “I hear you and I understand” |
| Collaboration | “Here’s what we can do to fix X” |
| Intimacy Building | “I want to be closer/more connected to you” |
| Justification | “Here’s why I did what I did” |
| Positive Avoidance | |
| Accommodation | “Never mind, we don’t have to talk about it” |
| Tough Love | Holding accountable without judgment |
| Minimization | “We’ve got this because it’s not a big deal” |
| Reassurance | “We’ve got this because we can handle it” |
| Negative Approach | |
| Blame | “It’s your fault” |
| Belligerence | Taunting |
| Contempt | “I don’t value you” |
| Domineering | “This is what you think/feel” |
| Emotional Protests | Whining |
| Defensiveness | “It wasn’t my fault” |
| Pressures for Change | “You need to do this” |
| Negative Avoidance | |
| Withdrawal | “I don’t want to be here” |
| Avoidance | “I don’t want to talk about this” |
| Stonewalling | The kind of things you do on a bus |
| Submit | “Fine, whatever you want” |
| Controlling the Conversation | “I’m talking right now” |

Table 3

Demographic and Medical Characteristics of the Sample

| Characteristic | Patient | Caregiver | Total Sample |
|--|---------------|---------------|---------------|
| <i>N</i> | 134 | 134 | 268 |
| Age, <i>M</i> (<i>SD</i>) | 53.61 (12.89) | 54.08 (13.87) | 53.85 (13.37) |
| Sex, <i>n</i> (%) | | | |
| Male | 45 (33.6) | 86 (64.2) | 131 (48.9) |
| Female | 89 (66.4) | 48 (35.8) | 137 (51.1) |
| Race, <i>n</i> (%) | | | |
| American Indian/Alaska Native | 1 (0.7) | 0 (0.0) | 1 (0.4) |
| Asian | 6 (4.5) | 4 (3.0) | 10 (3.7) |
| Native Hawaiian/ OPI | 1 (0.7) | 0 (0.0) | 1 (0.7) |
| Black or African American | 4 (3.0) | 4 (3.0) | 8 (3.0) |
| White | 115 (85.8) | 116 (86.6) | 231 (86.3) |
| More than one race | 7 (5.2) | 9 (6.7) | 16 (6.0) |
| Ethnicity, <i>n</i> (%) | | | |
| Non-Hispanic | 126 (94.0) | 129 (96.3) | 255 (95.1) |
| Hispanic | 8 (6.0) | 4 (3.0) | 12 (4.5) |
| Unknown | 0 (0.0) | 1 (0.7) | 1 (0.7) |
| Educational Status, <i>n</i> (%) | | | |
| High school degree or GED | 12 (9.0) | 14 (10.4) | 26 (9.7) |
| Some college or technical school | 36 (26.9) | 25 (18.7) | 61 (22.8) |
| 4-year college degree | 39 (29.1) | 50 (37.3) | 89 (33.2) |
| Post-baccalaureate degree | 47 (35.1) | 45 (33.6) | 92 (34.3) |
| Marital Status, <i>n</i> (%) | | | |
| Married | 125 (93.3) | 125 (93.3) | 250 (93.3) |
| Not married, living with partner | 9 (6.7) | 9 (6.7) | 18 (6.7) |
| Unknown | 0 (0.0) | 0 (0.0) | 0 (0.) |
| Household Income, <i>n</i> (%) | | | |
| <20k | 5 (3.7) | 5 (3.7) | 10 (3.7) |
| \$20-39.9k | 2 (1.5) | 2 (1.5) | 4 (1.5) |
| \$40-59.9k | 14 (10.4) | 13 (9.7) | 27 (10.1) |
| \$60-79.9k | 14 (10.4) | 15 (11.2) | 29 (10.8) |
| \$80-99.9k | 15 (11.2) | 17 (12.7) | 32 (11.9) |
| \$100-120.9k | 21 (15.7) | 24 (17.9) | 45 (16.8) |
| \$121k+ | 62 (46.3) | 57 (42.5) | 119 (44.4) |
| Missing | 1 (0.7) | 1 (0.7) | 2 (0.7) |
| Children Under the age of 18, <i>n</i> (%) | 46 (34.3) | 47 (35.1) | 93 (34.7) |

Table 3 Continued

Demographic and Medical Characteristics of the Sample

| Characteristic | Patient | Caregiver | Total Sample |
|--|--------------|--------------|--------------|
| Gender Composition of Couple | | | |
| Same-sex male | --- | --- | 1 (0.7) |
| Same-sex female | --- | --- | 4 (3.0) |
| Opposite-sex | --- | --- | 129 (96.2) |
| Relationship Satisfaction, <i>M (SD)</i> | 40.11 (5.10) | 39.71 (5.17) | 39.91 (5.13) |
| Diagnosis, <i>n (%)</i> | | | |
| Breast | 62 (23.1) | - | - |
| Colon | 26 (9.7) | - | - |
| Rectal | 30 (11.2) | - | - |
| Lung | 16 (6.0) | - | - |
| Stage, <i>n (%)</i> | | | |
| II | 41 (15.3) | - | - |
| III | 45 (16.8) | - | - |
| IV | 48 (17.9) | - | - |

Table 4

Factor Score Reliabilities and Skewness, Means and Standard Deviations for Area Under the Curve (AUC) Values of the ABCS Factors

| Factor | α | ICC | Skewness | $M (SD)$ |
|--------------------|----------|------|----------|---------------|
| Positive Approach | 0.84 | 0.94 | .60 | 45.27 (7.17) |
| Positive Avoidance | 0.78 | 0.82 | 2.07 | 20.03 (6.01) |
| Negative Approach | 0.93 | 0.99 | 2.23 | 20.50 (6.95) |
| Negative Avoidance | 0.92 | 0.94 | .48 | 30.10 (10.02) |

Table 5

Correlations

| | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------------|---|--------|------|-------|-------|--------|
| 1. Gender (1M, 2F) | – | -.32** | .14* | -.13* | .01 | -.24** |
| 2. Role (1PT, 2CG) | | – | -.05 | .17** | .01 | .13* |
| 3. Positive Approach | | | – | .13* | .06 | -.22** |
| 4. Positive Avoidance | | | | – | .24** | .10 |
| 5. Negative Approach | | | | | – | .30** |
| 6. Negative Avoidance | | | | | | – |

Note. * $p < .05$, ** $p < .01$. M = male; F = female. PT = patient; CG = caregiver. Factor values are AUC values. $N = 258$; Positive Approach: $M = 45.27$, $SD = 7.17$; Positive Avoidance: $M = 20.03$, $SD = 6.01$; Negative Approach: $M = 20.50$, $SD = 6.95$; Negative Avoidance: $M = 30.10$, $SD = 10.02$.

Table 6

ABCS Factor AUC Values as a Function of Gender (Male vs. Female)

| | Gender | <i>M</i> | <i>SD</i> | <i>t</i> | <i>df</i> | <i>p</i> |
|-----------------------|--------|----------|-----------|----------|-----------|----------|
| 1. Positive Approach | M | 44.27 | 6.73 | -2.44 | 128 | .016* |
| | F | 46.26 | 7.48 | | | |
| 2. Positive Avoidance | M | 20.78 | 6.65 | 2.02 | 128 | .046* |
| | F | 19.28 | 5.22 | | | |
| 3. Negative Approach | M | 20.44 | 6.61 | -.18 | 128 | .861 |
| | F | 20.56 | 7.29 | | | |
| 4. Negative Avoidance | M | 32.50 | 10.43 | 4.40 | 128 | .000** |
| | F | 27.70 | 9.01 | | | |

Note. M = male; F = female. Analyses excluded same-sex couples ($n = 5$). * $p < .05$, ** $p < .01$.

Table 7

ABCS Factor AUC Values as a Function of Role (Patient vs. Caregiver)

| | Role | <i>M</i> | <i>SD</i> | <i>t</i> | <i>df</i> | <i>p</i> |
|-----------------------|------|----------|-----------|----------|-----------|----------|
| 1. Positive Approach | PT | 45.87 | 7.48 | 1.19 | 133 | .235 |
| | CG | 44.89 | 6.74 | | | |
| 2. Positive Avoidance | PT | 18.93 | 4.97 | -3.06 | 133 | .003** |
| | CG | 21.12 | 6.65 | | | |
| 3. Negative Approach | PT | 20.29 | 6.79 | -0.50 | 133 | .621 |
| | CG | 20.63 | 6.97 | | | |
| 4. Negative Avoidance | PT | 28.67 | 9.04 | -2.49 | 133 | .014* |
| | CG | 31.46 | 10.75 | | | |

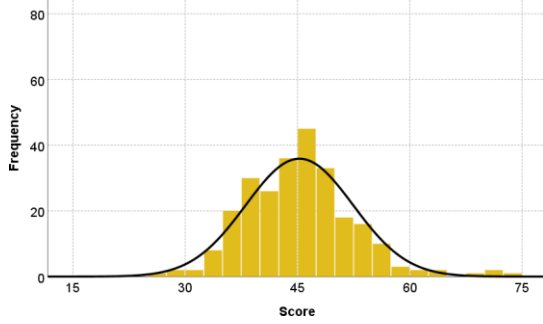
Note. PT = patient; CG = caregiver. * $p < .05$, ** $p < .01$.

FIGURES

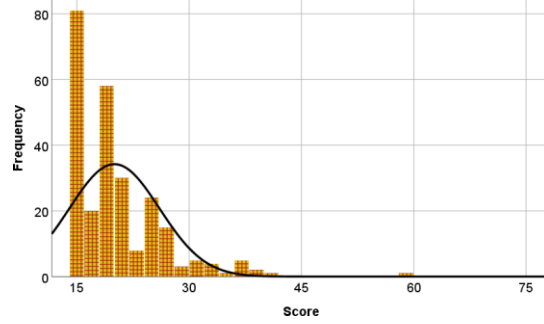
Figure 1

Area Under the Curve (AUC) Values for ABCS Factors

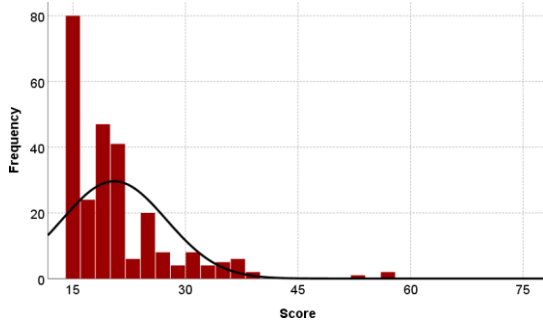
A. Positive Approach



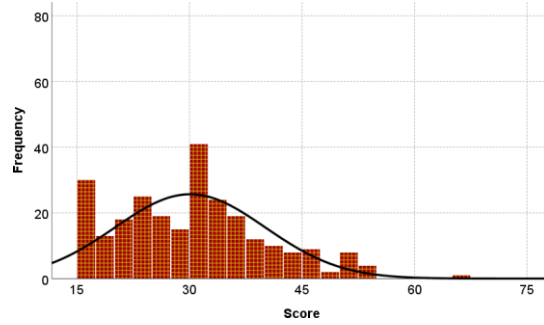
B. Positive Avoidance



C. Negative Approach



D. Negative Avoidance

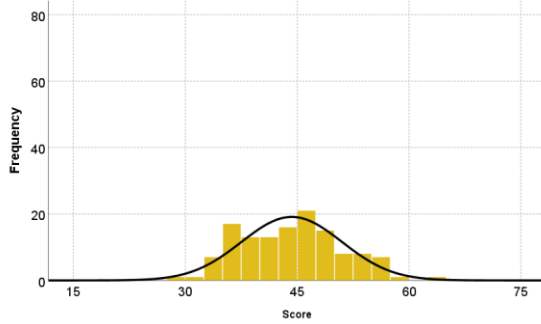


Note. Panel A: $M = 45.27$, $SD = 7.17$, $N = 129$; Panel B: $M = 20.03$, $SD = 6.01$, $N = 129$; Panel C: $M = 20.50$, $SD = 6.95$, $N = 129$; Panel D: $M = 30.10$, $SD = 10.02$, $N = 129$.

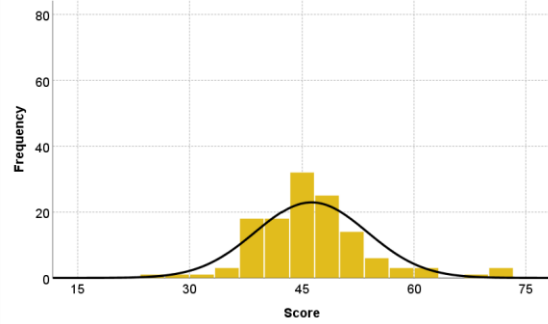
Figure 2

Positive Approach AUC Values by Gender and Role

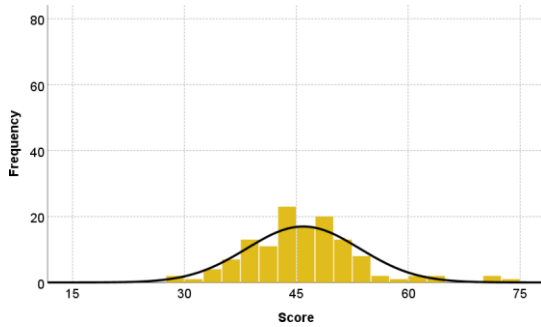
A. Male



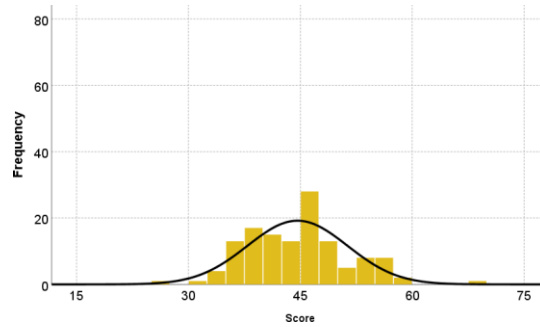
B. Female*



C. Patient



D. Caregiver

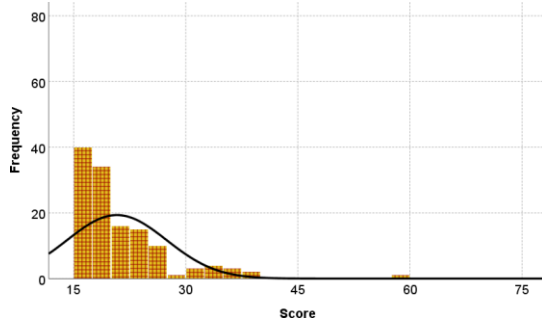


Note. * $p < .05$, ** $p < .01$. Panel A: $M = 44.27$, $SD = 6.73$, $N = 129$. Panel B: $M = 46.26$, $SD = 7.48$, $N = 129$. Panel C: $M = 45.92$, $SD = 7.58$, $N = 129$. Panel D: $M = 44.61$, $SD = 6.70$, $N = 129$.

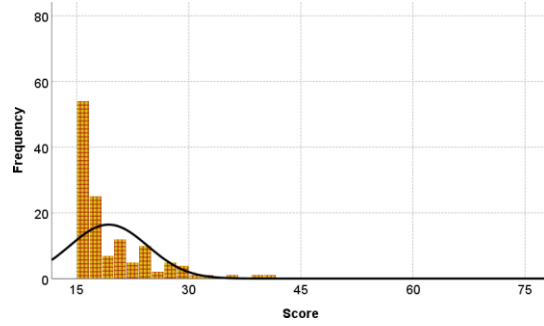
Figure 3

Positive Avoidance AUC Values by Gender and Role

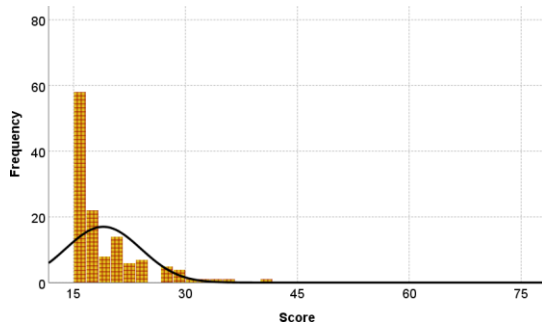
A. Male



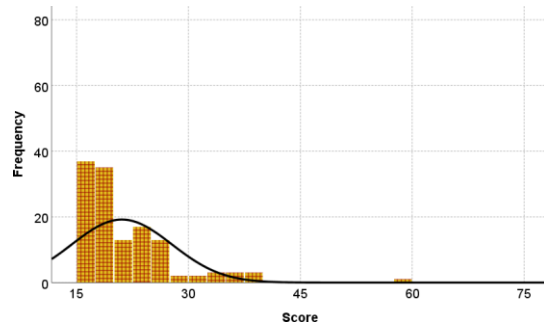
B. Female



C. Patient



D. Caregiver**

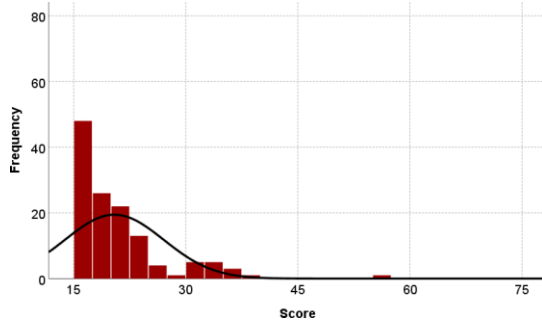


Note. * $p < .05$, ** $p < .01$. Panel A: $M = 20.78$, $SD = 6.65$, $N = 129$. Panel B: $M = 19.28$, $SD = 5.22$, $N = 129$. Panel C: $M = 18.98$, $SD = 5.05$, $N = 129$. Panel D: $M = 21.07$, $SD = 6.70$, $N = 129$.

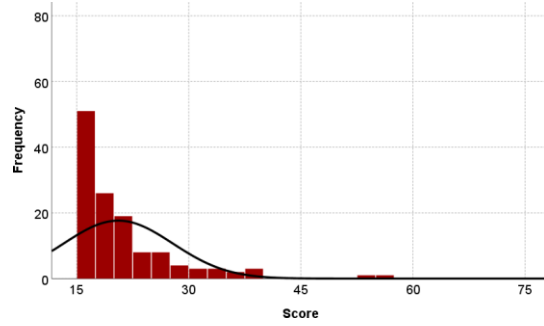
Figure 4

Negative Approach AUC Values by Gender and Role

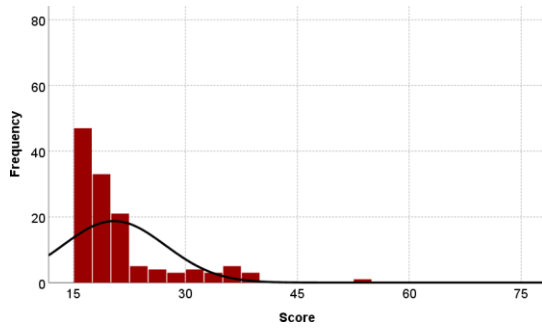
A. Male



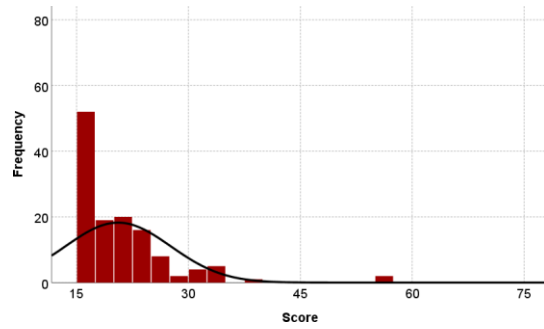
B. Female



C. Patient



D. Caregiver

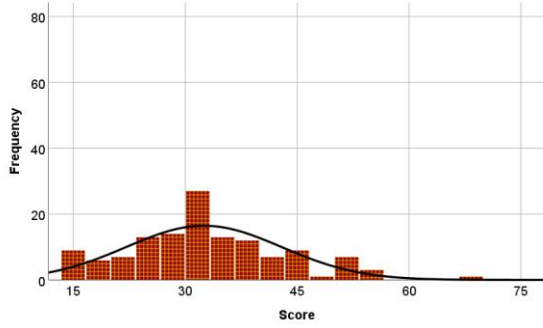


Note. * $p < .05$, ** $p < .01$. Panel A: $M = 20.44$, $SD = 6.61$, $N = 129$. Panel B: $M = 20.56$, $SD = 7.29$, $N = 129$. Panel C: $M = 20.43$, $SD = 6.87$, $N = 129$. Panel D: $M = 20.57$, $SD = 7.05$, $N = 129$.

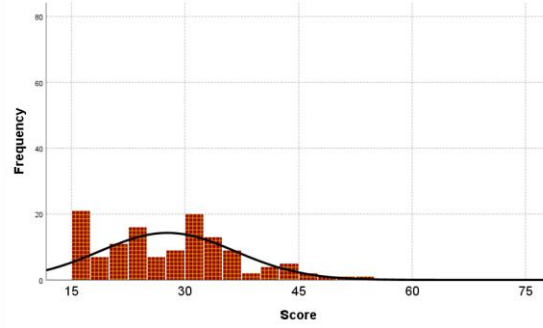
Figure 5

Negative Avoidance AUC Values by Gender and Role

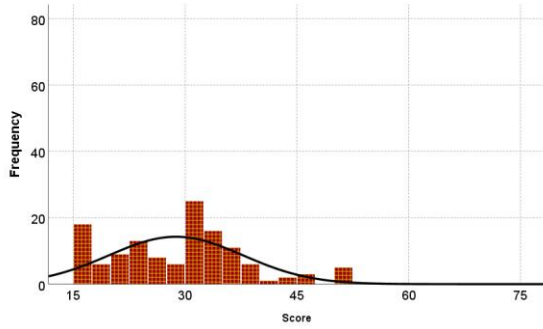
A. Male**



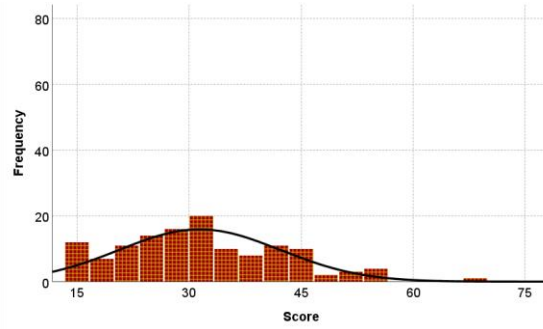
B. Female



C. Patient



D. Caregiver*



Note. * $p < .05$, ** $p < .01$. Panel A: $M = 32.50$, $SD = 10.43$, $N = 129$. Panel B: $M = 27.70$, $SD = 9.01$, $N = 129$. Panel C: $M = 28.77$, $SD = 9.02$, $N = 129$. Panel D: $M = 31.42$, $SD = 10.80$, $N = 129$.

APPENDIX A
BEHAVIORAL CODES WITHIN FACTORS

Positive Approach

| | |
|-----------------------|--|
| Maintaining/Deepening | Behavior that conveys that the partner is engaged and involved in the conversation, approaching, and interested. Active and reflective listening (i.e., paraphrasing what the other person said), backchannels (e.g., head nods, saying ‘um hmm,’ ‘un huh,’ etc.), asking for clarification, continuing the other partner’s point or sentiment and asking the other partner to say more/elaborate on what they are saying. |
| Disclosure | Occurs when a participant discusses her/his own thoughts and/or feelings independent of whether it is a positive or negative thought/feeling and whether s/he seems to feel happy or upset while talking about his/her thoughts/feelings. |
| Validation | Signals that the individual is listening to his/her partner’s request and showing concern and/or empathy of the partner’s point of view and/or feelings. |
| Collaboration | Behaviors that involve working with the partner to achieve resolution. Individuals may collaborate by agreeing to requests (e.g., I think that’s a good idea, let’s do it!) as well as by providing instrumental support (e.g., I can cook dinner this week so you can have more time to work). |
| Intimacy Building | Functions to increase closeness between partners (building the “us” in the relationship). The partners may build intimacy through affection, reflection, and/or downward social comparison. |
| Justification | Functions to provide descriptive information about the issues and circumstances involved in what the partner is thinking, feeling, and/or doing. Individuals may justify why she/he has not been able to meet the demands and/or requests of partners. Individuals may discuss their circumstances (e.g., “work has been really busy lately but it should quiet down soon” or “I’m really stressed out about my mother, I can’t think of anything else”) as well as provide alternate points of view (e.g., “I did not realize you meant that, I thought it was this instead...”) to justify their position. |

Positive Avoidance

| | |
|---------------|---|
| Accommodation | This behavior is intended to lessen the distress of the partner <i>in the moment</i> . The individual may accommodate his/her partner by enabling the partner's behaviors (e.g., if partner is anxious in social situations, the individual may support the partner's decision to stay at home). The individual may also change, reduce, or increase their own behaviors in order to lessen the distress of the other partner even though it might not be the most helpful for the relationship or the individual (e.g., washing hands multiple time to lessen distress of partner with germ phobia). These changes could include avoiding topics they know upset their partner (e.g., "I know you don't want to talk about that because it upsets you, so let's move on) or biting their tongue/tiptoeing around issues. |
| Tough Love | Often constructive and beneficial in the long-term for the relationship as it helps to promote change. However, these behaviors are often hard for the receiving partner to process in the moment. Individuals may show tough love by holding the partner accountable (e.g., correcting partner if the individual thinks that the partner is at fault), expressing a difference of opinion from the partner as well as showing negative emotions (e.g., anger) that convey the intensity of the individual's experience during the interaction. |
| Minimization | A behavior that reduces the intensity of a situation, circumstance, thought, and/or feeling. It can be exhibited in the context of minimizing one's own feelings (e.g., "...but now that I think more about it, it's not such a big deal) or the partner's feelings (e.g., "Oh, come on. It's really not that bad"). Minimization can be overt (e.g., "you're exaggerating") or implied (e.g., "well, it could be worse") and can be used with positive (e.g., "let's not get too excited") or negative (e.g., "I guess that would be alright") statements. |
| Reassurance | A behavior that conveys to the other partner that either the individual or the couple has what is needed to effectively handle whatever is being discussed without trying to minimize concerns as stated. |

Negative Approach

| | |
|--------------------|--|
| Blame | Blames, accuses, or criticizes the partner, uses critical sarcasm; makes character assassinations such as “you’re a real jackass,” “all you do is eat,” or “why are you such a jerk about it?” Explicit blaming statements (e.g. “you made me do it” or “you prevent me from doing it”), in which the partner is the causal agent for the problem or the subject’s reactions, warrant a high score. |
| Belligerence | Individual tries to “get a rise” out of partner through provocation of anger. The belligerent speaker is, in a sense, looking for a fight. Individuals may use taunting questions and/or interpersonal terrorism. |
| Contempt | The function of contemptuous behavior is to belittle, hurt, or humiliate. Contempt is a statement made from a superior position to the partner, such as correcting an angry person’s grammar that deliberately and forthrightly communicates an icy lack of respect, often cruelty. Individuals may use sarcasm, mockery, insults, and/or hostile humor. |
| Domineering | The function of domineering behavior is to exert and demonstrate control over one’s partner or a conversation. Domineering behaviors attempt to impose compliance on the partner’s responses or behaviors. Individuals may manifest this behavior in the forms of invalidation, lecturing & patronizing, low-balling, incessant speech, and/or glowering. |
| Emotional Protests | Individuals may engage in a whiny protest and/or self-victimization. |
| Defensiveness | Functions to deflect responsibility or blame. It communicates a kind of innocent victimhood or righteous indignation (e.g., as a counterattack), implying that whatever thing being discussed is not the individual’s fault. Defensive individuals can engage in defending themselves or friends and loved one who may be under attack by their partners. Defensive behavior may be manifested in the “yes-but”, cross-complaining, minimization, excuses, and/or aggressive defenses. |

Pressures of Change Requests, demands, nags, manipulates, seduces, or otherwise pressures for change in the other partner. This pressure can be either positive or negative (critical or complimenting and supportive). This pressure can be implicit as well as explicit. In other words, it need not be as explicit as “I want you to play with our son.” It must, however, carry in it an implicit should statement, which clearly indicates what the partner “should” be doing. Examples include “You never play with our son,” and “If you spent more time at home, our child would probably not act out as much at school.” These statements both carry implicit “shoulds” that the parent should carry out his/her parental duties by spending more time with their child.

Negative Avoidance

Withdrawal More passive than avoidance and generally non-verbal. Acting in ways that suggest the individual is emotionally and/or psychologically withdrawn from the discussion. Generally speaking, how much does the person seem to be withdrawn from their partner and the discussion? Withdraws, becomes silent, refuses to discuss a particular topic, looks away, refuses to argue or fight about the issue, does not actively defend self, pulls back, retreats, disengages from the discussion, does not offer solutions or assist in the discussion, does not respond to the partner, does not follow or pay attention to what the partner says.

Avoidance More active than withdraws, using energy to avoid. Any behavior that serves to avoid engaging in the discussion. Generally speaking, how much is the person trying to avoid discussing the issue at hand rather than actively engaging in the discussion? Includes minimizing the importance of the problem being discussed, denying the existence of the problem, shifting the focus or changing the topic of the discussion away from the problem, purposefully being vague or making ambiguous comments about the problem to obscure the discussion or confuse the partner, hesitating, diverting attention, or delaying the discussion.

Stonewalling Functions to communicate an unwillingness to listen or respond to partner. Stonewalling behavior includes active away behavior, no back channels, and/or monitoring gaze.

Submit

This behavior serves to avoid or put an end to a prolonged discussion. The individual is quick to agree to demands and criticisms of his or her partner by nodding at everything the partner is saying, does not engage in any defensive behavior and seems to accept the criticism or insults thrown their way by his/her partner. Although, the individual will tend to use affirmative words such as "I agree," or "yes," they appear to be checked out and disengaged from the conversation. The aim of agreeing is not to improve the problem but to stop the conversation from continuing.

Controlling the Conversation More passive than domineering, generally does not involve specific behaviors, and at times non-verbal. Individual controls the majority of the conversation, does not give the chance for partner to give input/speak during the discussion, and/or may interrupt partner when he/she is speaking.

APPENDIX B
UNIVERSITY APPROVAL FOR HUMAN SUBJECTS TESTING



APPROVAL:CONTINUATION

[Shelby Langer](#)
[EDSON: Research Faculty and Staff](#)
 602/496-0823
 Shelby.Langer@asu.edu

Dear [Shelby Langer](#):

On 7/18/2019 the ASU IRB reviewed the following protocol:

| | |
|---------------------|--|
| Type of Review: | Continuing Review |
| Title: | Couple Communication in Cancer: A Multi-Method Examination |
| Investigator: | Shelby Langer |
| IRB ID: | STUDY00004773 |
| Category of review: | (6) Voice, video, digital, or image recordings, (7)(b) Social science methods, (7)(a) Behavioral research |
| Funding: | Name: HHS-NIH: National Cancer Institute (NCI) |
| Grant Title: | None |
| Grant ID: | None |
| Documents Reviewed: | <ul style="list-style-type: none"> • protocol 010319.docx, Category: IRB Protocol; • ABCS manual 121718.pdf, Category: Other (to reflect anything not captured above); • PATIENT consent 012319.pdf, Category: Consent Form; • external team members, Category: Other (to reflect anything not captured above); • RATS manual 121718.pdf, Category: Other (to reflect anything not captured above); • brochure 070618.pdf, Category: Recruitment Materials; • recruitment letter 070618.pdf, Category: Recruitment Materials; • measures 082618.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • PARTNER consent 012319.pdf, Category: Consent |

| | |
|--|---|
| | Form; • pilot flyer 122116.pdf, Category: Recruitment Materials; • pilot phone script 021417.pdf, Category: Consent Form; |
|--|---|

The IRB approved the protocol from 7/18/2019 to 7/17/2020 inclusive. Three weeks before 7/17/2020 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 7/17/2020 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:

Bin Suh
Rachel Hagan
Shelby Langer
Blair Puleo
Michael Todd