

**Title: Emotional Support Messages Following a
Cancer Diagnosis**

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Background and Significance

Social support messages are an important part of close relationships (Cutrona & Suhr, 1992); however, recipients perceive some supportive messages to be unhelpful or unwanted (Floyd & Ray, 2017). In general, emotional support messages are viewed as a particularly useful form of support in the months following a cancer diagnosis (Arora et al., 2007). There are instances, though, of cancer patients viewing some emotional support messages negatively (Ray & Veluscek, 2017, 2018). Much of the prior research looking at peoples' reactions to emotional support messages have done so by looking for differences between high, moderate, and low-quality messages (High & Dillard, 2012), and have not considered the possibility that some offers of emotional support may contain both positive statements of empathy and caring and also negative statements of criticism and blame. Therefore, the present study investigates how cancer patients rate emotional support messages that consist of different percentages of positive and negative statements. Additionally, prior research has shown that some messages may be retained in memory for years after they are communicated (Knapp, Stohl, & Reardon, 1981), and some of these memorable messages can be classified as supportive messages (Wang, 2012). However, minimal research has focused on what is specifically remembered from supportive messages, particularly if those messages are composed of both positive and negative statements. Research by Ray and Veluscek (2017) has shown, though, that cancer patients can readily recall both positive and negative support messages received in the year after initial diagnosis and that receiving negative messages sometimes led to re-evaluating whether future updates would be shared with the supporter. Furthermore, the well-supported propensity for humans to pay greater attention and give more processing to negative information than positive information (Baumeister, 2001), would suggest that negative portions of ambivalent support messages would have a stronger influence on the recipient, particularly in terms of what is recalled (Bless, Hamilton, & Mackie, 1992; Finkenauer & Rimé, 1998). The present study tests this negativity bias and the findings will illuminate how cancer patients process, perceive, and recall emotional support messages that have both positive and negative components. To test the possible effects of negative portions of messages, 18 message conditions have been developed (see list provided under Participation heading). This results in a nested factorial design in which you have 5

message conditions (0, 20, 40, 60, or 80 percent negativity), 2 conditions based on the placement of the negative portions (beginning or end), and 2 versions of each message condition to allow for the messages to be analyzed as random factors. A 5x2x2 design typically yields 20 cells; however, when there is 0% negative portions of a message, it is unnecessary to consider the placement of the negative portions that do not exist. This results in 18 conditions as opposed to 20 conditions.

Study Purpose/Objective

To understand how cancer patients react to and recall emotional support messages that contain different percentages of positive statements of empathy and caring and also negative statements of criticism and blame.

Study Aims

Aim #1: To determine how cancer patients rate emotional support messages that consist of differing percentages of negative statements (0, 20, 40, 60, or 80 percent) and messages in which those negative portions occur at either the beginning or end of the supportive message.

Aim #2: To determine what portions of emotional support messages that consist of differing percentages of negative and positive statements cancer patients recall in the minutes after reading a message, and whether the placement of the negative portions at either the beginning or end of the message also affects recall.

Hypotheses & Research Questions

Hypotheses 1-4 and Research Questions 1-4 address Study Aim #1.

H1: Cancer patients' ratings of message effectiveness differ based on the percentage of the support message that is negative.

RQ1: How, if at all, do cancer patients' ratings of message effectiveness differ depending on whether negative portions of messages occur at the beginning or end of the entire message?

H2: Cancer patients' ratings of supporter competence differ based on the percentage of the support message that is negative.

RQ2: How, if at all, do cancer patients' ratings of supporter competence differ depending on whether negative portions of messages occur at the beginning or end of the entire message?

H3: Cancer patients' likelihood of seeking support from a supporter in the future differs based on the percentage of the support message that is negative.

RQ3: How, if at all, do cancer patients' likelihood of seeking support from a supporter in the future differ depending on whether negative portions of messages occur at the beginning or end of the entire message?

H4: Cancer patients' self-reports of emotional improvement after receiving a support message differs based on the percentage of the support message that is negative.

RQ4: How, if at all, do cancer patients' self-reports of emotional improvement after receiving a support message differ depending on whether negative portions of messages occur at the beginning or end of the entire message?

Hypotheses 5-7 address Study Aim #2.

H5: Cancer patients recall negative portions of supportive messages more frequently than they recall positive portions of supportive messages.

H6: As the percentage of negative portions of a supportive message increases, cancer patients likelihood to recall negative portions of supportive messages also increases.

H7: The number of negative words recalled from the supportive messages by cancer patients differ depending on the percentage of the message that is negative.

Methods

This is a cross-sectional, observational survey study. Data will be collected through a mass email disseminated through the online survey platform Qualtrics.

Recruitment and Eligibility

800 participants will be recruited from Moffitt TCC-consented patients who have agreed to be contacted for future research.

Inclusion Criteria: Living patients, 18 years of age or older, diagnosis of breast, prostate, thoracic, or digestive cancer in the past 3 years, consent to the Moffitt TCC protocol and indication of their willingness to be contacted for future research by including an email contact, and ability to read and write fluently in English.

A random selection of at least 800 patients who fit inclusion criteria will be drawn by Moffitt Collaborative Data Services. An invitation to participate in the current study will be sent to participants via an email disseminated through the online survey host Qualtrics. The contact list of email recipients will be uploaded into the Qualtrics system and the email will be sent from Dr. Colter Ray (study team member). If a potential participant were to choose to reply to this email with questions about the study or for any other reason, these replies would be sent to Dr. Colter Ray, who would be tasked with responding to the potential participant's message. The invitation will include a description of the study and a link to the study survey.

Consent Process

Because participation will occur solely online and consists only of an online questionnaire, the research team requests a waiver for written consent. Instead, we request that consent can be given by having participants read an informed consent statement on the opening page of the online questionnaire. Clicking to the next page and beginning survey would signify consenting to participate.

Participation

Participating in the study consists of taking an online questionnaire. The questionnaire begins with self-reported demographic questions (biological sex, age, ethnicity, time since initial cancer diagnosis, cancer site). Next, the participant is asked to think of someone they know well but who they did not directly disclose the news of their cancer diagnosis. Then, the participant is told to imagine receiving a written message of support from this person in the days after initially being diagnosed with cancer. The participant then reads one of 18 different emotional support messages randomly assigned through the Qualtrics survey system. These 18 messages are each 100 words long and systematically vary in how much of the message is composed of negative statements of criticism and positive statements of caring. The 18 message conditions are part of a 5x2x2 nested factorial design and are as follows:

- Two messages composed of only positive statements (0% negative).
- Two messages in which the last 20% of the message consists of negative statements of criticism.
- Two message in which the first 20% of the message consists of negative statements of criticism.
- Two messages in which the last 40% of the message consists of negative statements of criticism.
- Two message in which the first 40% of the message consists of negative statements of criticism.
- Two messages in which the last 60% of the message consists of negative statements of criticism.
- Two message in which the first 60% of the message consists of negative statements of criticism.
- Two messages in which the last 80% of the message consists of negative statements of criticism.
- Two message in which the first 80% of the message consists of negative statements of criticism.

The participants then answer a series of closed ended scales regarding quality of the support message, the supporter's competence, the amount of emotional improvement they experienced after reading the message, and the likelihood to seek support from the person they chose earlier

in the survey in the future. Participants also answer an open-ended question in which they are asked what specific phrases or sentences they recall from the support message they read.

During pilot tests of the questionnaire, the average time to complete was 7.5 minutes. Three weekly reminders will be sent by email to those who have not completed the survey to encourage participation. Those who opt out will not be contacted with follow-up emails. The recruitment emails will include a link that can be clicked to opt out of the recruitment process for the study.

See Appendix A for the questionnaire and Appendix B for the message conditions.

Planned Analyses

The number of participants was determined through power analyses performed by the statistical software program G*POWER. The suggested sample size provided by G*POWER was 479. Specifically, this was determined by conducting an *a priori* analysis with an effect size (f) of .25, alpha error probability of .05, power ($1 - \beta$ error probability) of .95, and 18 groups, which is the total number of message conditions listed above. Importantly, a power analysis using these same parameters but for an ANCOVA also yielded a suggested samples size of 479.

Statistical analyses will consist of 5x2x2 nested factorial ANOVA models. The first study aim will be tested through 4 ANOVA models that will test for differences between participants who received the different messages in terms of 1) perceived message effectiveness, 2) perceptions of supporter competence, 3) likelihood to seek support from the supporter in the future, and 4) self-reports of emotional improvement. Depending on the correlations among the dependent variables, a MANOVA may be used instead of an ANOVA to test the first aim of the study. Similarly, if significant covariates (such as age or times since diagnosis) are found, the ANOVA/MANOVA could become an ANCOVA or MANCOVA. To test the second aim of the study, a chi-square analysis will test to see if participants recall negative portions of messages more frequently than positive portions of messages depending on which message they received (i.e., dependent on the position and percentage of the negative message portions). The second aim will also be tested using ANOVA models to determine if significant differences occurred in the number of negative words that were recalled across the 18 messages received (i.e., dependent on the position and percentage of the negative message portions). The software program LIWC (Linguistic Inquiry and Word Count) will be used determine the number of negative words recalled by the participants in their open-ended responses.

Potential Benefits

There are no benefits for being in this study; however, by joining this research study, the participant is helping to provide information which may help science and society.

Potential Risks

Because of the personal nature of the questions to be asked, the participant might reflect on unpleasant memories while completing the questionnaire. Although not expected to occur, it is

possible that a breach of confidentiality could occur if the computer on which the data file is stored is compromised or otherwise hacked or illegally accessed.

Compensation, Benefits, and Risks

At the end of the questionnaire, participants will be given the option to click a link to a separate Qualtrics survey where they can provide an email address to enter a lottery for one of five \$50 Visa e-Gift Cards. By having participants provide their email in a separate Qualtrics survey, the personal identifiable email data will be kept separate from the study data. The data from the Qualtrics survey will be stored in a password protected encrypted folder behind a university firewall that only the study team can access. The data for the drawings will be destroyed after the drawings have been conducted. The drawings will be conducted immediately following the end of data collection, which is expected to conclude by the end of 2019. The drawing will be conducted by a member of the research team, Dr. Colter Ray of the School of Communication at San Diego State University. A total of five \$50 Visa e-Gift Cards will be given away. No participant will be able to win more than one of the five gift cards. The chances of winning a prize is approximately 1 in 120. The winner will be notified immediately by email in a message that also includes the instructions for activating their Visa e-Gift card.

The researchers expect the study to indirectly benefit society by generating new knowledge about emotional support following a cancer diagnosis. Individual participants are not expected to benefit either directly or indirectly from participating.

Participants will experience minimal if any risk at all. Because of the personal nature of some questions to be asked, the participant may reflect on unpleasant memories while completing the questionnaire. To protect their data, participants will be encouraged to do the questionnaire from a trusted, personal computer. The only other foreseeable potential risk is loss of privacy/breach of confidentiality if the data were to be accessed illegally by someone other than the research team. The safeguards against this possibility are discussed below.

Data Storage

The data will not be made available to members outside of the research team and will never be presented or published in such a way to identify a single participant. The SPSS dataset generated by Qualtrics and used for the statistical analyses will be deidentified.

Data will be saved in a password protected encrypted folder behind a university firewall that only the study team can access. Any data transfer will be done using encrypted, secure channels.

Data will be destroyed 5 years after the end of data collection

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