Correlates and Predictors of Emotion Language and
Well-Being in Stressful and Traumatic Contexts

by

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DEDICATION

To my participants, who bravely shared their stories for this research.

ACKNOWLEDGEMENTS

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ABSTRACT

In three studies, I examined associations between emotional expression (through language) and well-being as people reflected on stressful and life-changing situations. Previous research suggests that emotional expression is only helpful for some people, and the primary goal of the current research was to contribute to literature that examines when and under what circumstances expression of emotion is related to positive outcomes for individuals.

The Linguistic Inquiry and Word Count Program (LIWC; Pennebaker, Booth, Boyd, & Francis, 2015) was used in each study to text analyze participants' narratives about experiences of childhood sexual abuse (Study 1), bereavement (Study 2), and the transition to parenthood (Study 3). I focused on the two broad LIWC word categories associated with emotionality: positive emotion (e.g., happy, laugh) and negative emotion (e.g., sad, angry).

Study 1 examined associations between indicators of mental health and positive and negative emotion words in the trauma narratives of 55 survivors of childhood sexual abuse. Participants who used more positive and negative emotion language had better psychological outcomes, *especially* when the abuse was more severe.

Study 2 investigated expressions of positive emotion words in discussions between 39 parentally bereaved children and their surviving caregivers. Children's use of positive emotion words in the discussion were unrelated to their own psychological outcomes; however, children were less likely to experience symptoms of anxiety, avoidant coping, and depression when their caregivers used more positive emotion words, *especially* after more time had passed since parental loss.

Study 3 tested dyadic and longitudinal associations between emotional expression and psychological and relational well-being in a sample of 29 expectant couples across the transition to parenthood. *Changes* (increases) in emotional expression over time were more consistently associated with husbands' and wives' postpartum outcomes compared with average levels of emotional expression. Results from Study 3 also demonstrated that emotional expression and health are tied in meaningful ways between romantic partners.

Overall, results from the current research point to individual and contextual factors that moderate the association between emotional expression and well-being. These findings have implications for tailored interventions that promote optimal outcomes when people discuss and reflect on emotional content.

CHAPTER 1: General Introduction

People often experience stressful events across the lifespan, including the death of a loved one, chronic illness, and exposure to violence or maltreatment (Ogle, Rubin, Berntsen, & Siegler, 2013). Stressful events can leave individuals with feelings of anxiety, depression, and a host of other painful emotions (Ehring & Quack, 2010; Lipovsky & Kilpatrick, 1992; Ozer, Best, Lipsey, & Weiss, 2003). As a way to process emotional pain, individuals are often encouraged to share their experiences by talking or writing about them (Pennebaker & Chung, 2007). Sharing experiences with others is thought to create and strengthen social bonds, help people manage stress, and reduce the negative emotions that arise from difficult life circumstances (Christophe & Rimé, 1997; Pennebaker, Zech, & Rimé, 2001; Smyth, Hockemeyer, Heron, Wonderlich, & Pennebaker, 2008).

A large body of research documents the mental and physical health benefits of emotional expression through written or spoken means (for a review, see Frattaroli, 2006; Smyth, Pennebaker, & Arigo, 2012). For instance, relative to a control condition, individuals who wrote about a recent motor vehicle accident experienced a significant reduction in posttraumatic stress symptoms, and these treatment effects were observable at a 6-month follow-up (Sloan, Marx, Bovin, Feinstein, & Gallagher, 2012). Other studies have similarly demonstrated the utility of emotional expression, including reduced pain and swelling among people who wrote about life with chronic illness (e.g., Broderick, Junghaenel, & Schwartz, 2005; Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg, 2006; Smyth, Stone, Hurewitz, & Kaell, 1999). Although many

people benefit from written disclosure, these forms of intervention do not always produce benefits for everyone, particularly those who have experienced highly emotional events.

Emotional disclosure treatments have been largely ineffective specifically for bereaved individuals and survivors of sexual trauma (e.g., Batten, Follette, Rasmussen Hall, & Palm, 2002; Bower, Kemeny, Taylor, & Fahey, 2003; Brown & Heimberg, 2001; Kearns, Edwards, Calhoun, & Gidycz, 2010; Range, Kovac, & Marion, 2000; Stroebe, Schut, & Stroebe, 2006; Stroebe, Stroebe, Schut, Zech, & van den Bout, 2002; Ullman, 2011). For example, women who wrote about their experiences with childhood sexual abuse for 20 minutes over the course of at least three days did not significantly differ in health care utilization, physical symptoms, or psychological distress compared to a control group who wrote about time management (Batten et al., 2002). In fact, participants in the experimental condition reported slightly *more* physical problems up to 12 weeks after the intervention, suggesting that in some cases, reflection may do more harm than good (see Sbarra, Boals, Mason, Larson, & Mehl, 2013).

Mechanisms Linking Emotional Disclosure to Positive Health Outcomes

The current state of literature is mixed as to when and under what circumstances emotional disclosure is helpful. Although some research documents the benefits of reflection for a wide range of people and circumstances (e.g., chronic illness; Broderick et al., 2005; Danoff-Burg et al., 2006; Sloan et al., 2012), other studies report null or even harmful effects of expression, particularly among people with more trauma experience (e.g., bereavement; Batten et al., 2002; Bonanno, Keltner, Holen, & Horowitz, 1995; Sbarra et al., 2013; Stroebe et al., 2006). Taken together, it appears that there are groups and conditions for which expression is more or less helpful. Smyth and colleagues recently noted the need for future research to examine

"boundary conditions" or factors that explain when and for whom emotional expressiveness is associated with positive health outcomes (Smyth & Pennebaker, 2008; Smyth et al., 2012).

A critical next step of disclosure research is to identify factors that *moderate* the relationship between emotional expression and positive outcomes, especially for people known to experience limited benefits of reflection. Research has begun to isolate factors that (to some extent) account for *within*-group differences in the effectiveness of emotional disclosure. Within a sample of people with fibromyalgia, for example, written disclosure promoted well-being *only* for more educated people and those with less social support (Junghaenel, Schwartz, & Broderick, 2008). On a broader level, Junghaenel et al. (2008)'s results identify a precise set of personal and situational conditions that influence the effectiveness of emotional expression, even among people who discuss similar experiences.

Emotion Language as a Pathway to Positive Health Outcomes

Differences in the types of emotion language included in written or spoken narratives have the potential to influence the success and efficacy of reflection. For example, in a sample of female survivors of sexual trauma, participants were asked to verbally recount their sexual assault for five minutes, following procedures used by Foa, Molnar, and Cashman (1995). Women who used more positive and negative emotion words in their trauma narratives reported lower overall severity of posttraumatic stress disorder (PTSD) and other trauma-related symptoms (Jaeger, Lindblom, Parker-Guilbert, & Zoellner, 2014). Increases in expressions of positive emotion (such as love and gratitude) have also been associated with resilience in the aftermath of major crises such as the attacks in the United States on September 11th (Fredrickson, Tugade, Waugh, & Larkin, 2003). Expression of positive and negative emotion when people

recall particularly stressful events, rather than simply talking or writing about the event, may be associated with positive health outcomes.

Why might expression of positive and negative emotions, as people reflect on difficult experiences, be associated with healthier outcomes? As a way to avoid the pain associated with a difficult experience, people often ignore both painful and pleasant emotions. Continued attempts to push emotions away may prevent people from processing and moving past their experiences (Batten, Follette, & Aban, 2001; Briere & Rickards, 2007; Park, Goodyer, & Teasdale, 2004; Tull, Jakupcak, McFadden, & Roemer, 2007). Using emotional language might be a way for people to confront and process—as opposed to avoid—emotions surrounding extremely stressful experiences.

Expressing positive emotion through language may be a way for people to reappraise their experiences in ways that make them feel more resilient and optimistic about the future (Fredrickson, 2001). Consistent with the broaden-and-build theory, which suggests that positive emotions expand people's awareness and promote new and creative behavior, when individuals see the good in bad situations, they are able to think more broadly and make sense of their experiences (Fredrickson & Branigan, 2005). Furthermore, expressions of positive emotion tend to draw support from others, which has implications for the types of social support people receive in times of stress. People may experience healthier outcomes if they are able to label and identify positive emotion as they discuss difficult and personal material.

In a similar vein, though perhaps counterintuitive, negative emotion language may be a way to acknowledge deep emotions that otherwise might be ignored (Slatcher & Pennebaker, 2005). Kircanski et al. (2012) notes that it may be most helpful to have people name negative emotions (e.g., saying "nervous" or "tense") when confronted with stressful material because the

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act of *affect labeling*, or simply putting one's feelings into words, can reduce the intensity of that emotion. Repeated expressions of negative emotion language may therefore allow people to express words such as *sad* and *angry*, without experiencing the physiological sensations that come along with that emotion (Sloan, Marx, & Epstein, 2005). Over time, negative emotions may become less painful, less threatening, and more manageable to process.

In summary, much previous research has pointed to the therapeutic effects of disclosing stressful experiences, such as writing about a recent car accident or chronic illness (for a review, see Frattaroli, 2006; Smyth, Pennebaker, & Arigo, 2012). The same beneficial effects of disclosure have not been demonstrated for people who have experienced more traumatic events, such as bereavement and childhood sexual abuse. More recent research, however, has found that when these individuals (survivors of bereavement and sexual trauma) specifically expressed emotions in their written or spoken narratives, disclosure was then associated with positive adjustment.

That people who have experienced more severe trauma benefit from disclosure when they include emotion words is in line with outcomes from more well-known and effective clinical practices, such as exposure and trauma narrative therapy. Exposure therapy guides individuals to directly confront their fears and anxieties (Foa & Kozak, 1986), and trauma narratives push people to vent strong emotions and organize their feelings around extremely stressful situations (Foa, Molnar, & Cashman, 1995). For trauma survivors, expressions of emotion through disclosure might accomplish a similar goal as exposure and trauma narrative therapies by encouraging people to reflect on and engage with their emotional responses to trauma.

The primary goal of the current studies was to examine potential moderators that elucidate the conditions for which use of emotion language in disclosure is most effective for

bereaved individuals and survivors of sexual trauma – two groups of people who have been shown to benefit from disclosure particularly when emotions are expressed.

Goals of the Current Research

The overarching goal of the current research was to examine associations between emotion word use and health-related outcomes in the narratives and free-responses of people who discussed traumatic, stressful, and challenging situations [1]. This dissertation is composed of three independent papers, each with separate introduction and discussion sections that together review the relevant literature on emotional expression and describe the significance of the research findings.

In each of the three studies, I use the Linguistic Inquiry and Word Count Program to text analyze participants' narratives or free responses (LIWC; Pennebaker, Booth, Boyd, & Francis, 2015). The LIWC is an extensively validated tool for analyzing natural language and provides over 80 different psychological and grammatical categories as a percentage of total words (Pennebaker, Boyd, Jordan, & Blackburn, 2015; Tausczik & Pennebaker, 2010). It has been used to assess emotion language in the narratives of survivors of sexual assault, bereavement, the transition to parenthood, and other emotionally charged events (e.g., Eggly et al., 2015; Jaeger et al., 2014; Pennebaker, Mehl, & Niederhoffer, 2003; Rude, Gortner, & Pennebaker, 2004). See Appendix for examples of emotion words included in the Linguistic Inquiry and Word Count Dictionary.

Moderators of expression of positive and negative emotion language. As mentioned, people may have more to gain from labeling positive and negative emotions as they reflect on stressful events, rather than simply talking or writing about the event. Nonetheless, more work needs to be done to determine the specific conditions under which expressing emotions is

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associated with optimal outcomes. The overarching goal of the current research was to examine individual differences and conditions that elucidate *how* and *why* expression of positive and negative emotion may help some people and not others. In Studies 1 and 2, I specifically focused on two groups of people who have been shown to experience beneficial effects from using emotion language to discuss their traumatic experiences – survivors of sexual trauma and recently bereaved individuals (e.g., Batten et al., 2002; Stroebe et al., 2002).

In Study 1, I examined whether *severity* of trauma moderated the relationship between emotional expression (through language) and mental health outcomes in survivors of childhood sexual abuse. People who have experienced more severe trauma are especially likely to attempt to avoid unwanted thoughts and emotions (Begotka, Woods, & Wetterneck, 2004; Bottoms, Najdowski, Epstein, & Badanek, 2012), and therefore may have more to gain from emotional expression. To the extent that severity of trauma moderates the relationship between emotional expression and healthier outcomes, my results could have major implications for *when* disclosure is helpful.

In Study 2, I examined whether *time* since trauma moderated the relationship between positive emotional expression and psychological functioning in parentally-bereaved children and their primary caregivers. Previous theory-building work suggests that too much positivity in the first few months of bereavement could lead people to feel that their reactions of sadness are unhealthy or abnormal, especially for children (Kaplow, Layne, & Pynoos, 2014). To the extent that time since trauma moderates the relationship between positive emotional expression and health, results from Study 2 could elucidate *when* throughout the healing process people benefit the most from disclosure.

Emotional expressiveness throughout major life changes and transitions. Another goal of the current research, which has received little to no attention in the emotion disclosure literature, is whether emotional expression is beneficial as people discuss less stressful and more positive experiences, such as the birth of a child, a marriage, or a new job. For example, the transition to parenthood is a time of happiness and excitement, but it is nevertheless an emotional stressor that can negatively impact expectant parents and their intimate relationships (e.g., Cowan & Cowan, 2000; Doss, Rhoades, Stanley, & Markman, 2009). Similar to other major life changes, the transition to parenthood can elicit both positive and negative thoughts and feelings. Expectant parents often feel excited about new parenthood and also experience the fears and worries that come along with major life transitions. Is expression of positive and negative emotions (e.g., joy and worry, respectively) connected to well-being as people reflect upon and discuss approaching life changes, such as the transition to parenthood?

There are broad reasons to expect that emotional expression is also helpful in periods of life transition. Generally, when people verbalize their feelings and emotions to others, they tend to report the experience as beneficial and comforting (Pennebaker et al., 2001), and sharing emotions with others is thought to facilitate social bonding, closeness, and support (Christophe & Rimé, 1997). Given that general displays of emotion are associated with psychological and social gains, expressions of emotion may contribute to psychological health and supportive relationships in periods of major life transition.

Building on this framework, in Study 3, I examined emotional expression in couples throughout the transition to parenthood – a major life event that elicits both positive and negative emotional states. The design of Study 3 also allowed me to examine research questions that have received little to no attention in the emotion literature. For example, what is the dyadic nature of

emotional expression, and are *changes* in emotional expression across time associated with positive outcomes for individuals and their romantic relationships?

Dyadic effects of emotional expressiveness. The emotion literature has begun to examine the effects of emotional expression on recipients (i.e., secondary social sharing of emotions, Christophe, Delelis, Antoine, & Nandrino, 2008). That is, how does a person feel after they listen to someone disclose emotions? Though it appears that people experience positive outcomes when they share their own emotions, the effects of emotional sharing on recipients or targets is less clear, especially in the case of intimate relationships. According to the theory of "social sharing of emotions," both people in the dyad should report benefits. When people share emotions in situations in which another person can provide emotional support, both parties report feeling closer and even decrease the physical distance between them (for a review, see Rimé, 2009).

Alternative research has suggested that emotions are contagious and that if one person expresses negative emotions, then the other person will feel negative emotions (Hatfield, Cacioppo, & Rapson, 1993). Theories that test the comparison process and self-evaluation maintenance model tend to show that people feel worse when confronted with another individuals' positive emotion. Positive emotional displays can be threatening to people if they do not feel the same way, especially towards situations that are self-relevant (Beach & Tesser, 1995; Tesser, Millar, & Moore, 1988). Taken together, it is unclear how recipients respond to emotional expression or how one person's emotional expression is associated with his or her partner's psychological or relational outcomes, especially in situations that are relevant to both people.

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In Study 3, because both couple members filled out measures of psychological and relational outcomes and responded to open-ended items that elicited emotions with regard to parenthood, I had the opportunity to examine the dyadic effects of emotional sharing. Based on the current mixed literature of the effects of emotional expression on recipients, and the lack of research on the dyadic associations of emotion between romantic partners, the research questions in Study 3 were largely exploratory.

Longitudinal and over-time effects of emotional expression. Additionally, much research on emotional expression has examined the way in which individuals' baseline levels or average expressions of emotion are associated with health outcomes. In Study 3, I examined whether over-time changes in emotional expression predicted individuals' outcomes. The longitudinal nature of Study 3 allowed me to evaluate couples' changes in emotional expression throughout the nine-month prenatal period, and how these changes were related to postpartum outcomes.

Real-world circumstances. A final goal of the current research was to examine emotional disclosure in situations that pose tangible strain to peoples' lives: sexual abuse (Study 1), bereavement (Study 2), and the transition to parenthood (Study 3). Moving from the context of a more individual experience (childhood sexual abuse) to a context that is more interpersonal (the transition to parenthood), I was able to gain a more well-rounded view of how emotional expression shapes outcomes not only for people, but also for their close and intimate relationships. Results from the current studies can help to elucidate healthier ways for people to share such emotional experiences.

Footnotes

1. Though I use the first-person voice throughout this dissertation, note that the data presented in these studies are part of larger projects with multiple collaborators.

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CHAPTER 2: (Study 1) Emotion language in trauma narratives is associated with better psychological adjustment among survivors of childhood sexual abuse

Many people experience a traumatic event at some point in their life, such as a serious injury, a life-threatening illness, or childhood exposure to violence or maltreatment (Ogle et al., 2013). Traumatic experiences can leave survivors with distressing emotions, feelings of anxiety, and other severe and long-lasting consequences (Ozer et al., 2003). As part of the healing process, traumatized individuals are often encouraged to confront their experiences by talking or writing about them (Pennebaker & Chung, 2007). A large body of research suggests that expressing stressful experiences through spoken or written language can have important mental and physical health benefits (see Smyth et al., 2012 for a review). For instance, talking or writing about stressors has been associated with reduced pain and swelling among people with rheumatoid arthritis or fibromyalgia (e.g., Broderick et al., 2005; Danoff-Burg et al., 2006; Smyth et al., 1999), decreases in posttraumatic stress symptoms following motor vehicle accidents (e.g., Sloan et al., 2012), and lower rumination and depressive symptoms among people with Major Depressive Disorder (e.g., Gortner et al., 2006; Krpan et al., 2013).

Although these forms of intervention can help people process painful emotions, they do not always produce benefits for traumatized individuals, particularly those who have experienced highly emotional events. Written emotional disclosure interventions, for example, have been largely ineffective for bereaved individuals (e.g., Bower et al., 2003; Range et al., 2000; Stroebe et al., 2006; Stroebe et al., 2002) and for survivors of sexual assault or abuse (e.g., Batten et al., 2002; Brown & Heimberg, 2001; Kearns et al., 2010; Ullman, 2011). Survivors of severe trauma,

such as childhood sexual abuse (CSA), may find it especially difficult to reflect on these emotionally charged experiences (Rothbaum et al., 1992), potentially making them more vulnerable to negative effects following disclosure or reflection. For example, women who wrote about their CSA experiences for 20 minutes over the course of at least three days did not significantly differ in health care utilization, physical symptoms, or psychological distress compared to a control group who wrote about time management (Batten et al., 2002). In fact, participants in the experimental condition reported slightly *more* physical problems up to 12 weeks after the intervention, suggesting that in some cases, reflection may even do more harm than good. How might survivors of CSA reflect on their abuse experiences in a more productive way, and why might some individuals benefit more than others from reflection?

The success and efficacy of reflection paradigms following trauma might be influenced by differences in the types of emotional expression included in written or spoken narratives. For example, in a sample of female survivors of sexual trauma, participants were asked to verbally recount their sexual assault for five minutes, following procedures used by Foa et al. (1995, p. 697). Women who used more positive and negative emotion words in their trauma narratives reported lower overall severity of posttraumatic stress disorder (PTSD) and other trauma-related symptoms (Jaeger et al., 2014). Expressing positive emotion through language may foster psychological well-being, such as resilience and optimism (Fredrickson, 2001). Likewise, using negative emotion language may be a way to acknowledge and express deep emotions that otherwise might be ignored (Slatcher & Pennebaker, 2005). Taken together, these findings suggest that expressing emotions (both positive and negative) when describing traumatic events, rather than simply talking or writing about the event, may be associated with positive psychological outcomes.

In the present study, we examined whether CSA survivors who use more positive and negative emotion words in their trauma narratives reported better psychological adjustment. We also tested whether abuse severity moderated this association, based on the assumption that emotion language might be especially beneficial for those who experienced severe abuse. Participants were 55 documented survivors of CSA who were prompted to discuss experiences of abuse and subsequent legal involvement that had occurred approximately 13 years earlier. We tested the hypotheses that: (1) greater use of positive and negative emotion words would be associated with fewer psychological problems, as reported by CSA survivors and their caregivers and, (2) abuse severity would moderate associations between emotion language and psychological functioning, such that these associations would be particularly evident among those who experienced more versus less severe abuse.

Emotional Responses to CSA

Survivors of CSA often experience negative emotions in response to their trauma, which may simply be too overwhelming to process (Ehring & Quack, 2010). The most common emotional responses to CSA are depression, anxiety, and anger (Lipovsky & Kilpatrick, 1992). As a way to avoid the pain associated with these emotions, people with a history of sexual abuse may push aside and ignore all emotion, both painful and pleasant, associated with people or topics related to the abuse and its aftermath. In fact, adult survivors of CSA report that emotional avoidance is one of the most common regulatory strategies that they use to cope with the trauma (Leitenberg et al., 1992). Although avoiding unwanted emotions may reduce stress in the short-term (Park et al., 2004), repeated psychological avoidance of the trauma may also prevent people from processing and analyzing their experiences, which may worsen psychological outcomes in the long-term (Batten et al., 2001; Briere & Rickards, 2007; Tull et al., 2007). As described next,

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using emotional language might be a way for survivors of CSA to confront and process—as opposed to avoid—emotions surrounding trauma.

Benefits of Confronting Emotions for Trauma Survivors

Although confronting one's emotions may be painful initially, this emotion regulation strategy may be adaptive in the long-term. For instance, interventions that facilitate or manipulate emotional expression (e.g., writing about a traumatic experience in an emotional way) have been found to enhance long-term psychological adjustment among survivors of traumatic life experiences, such as bereaved individuals and those with metastatic breast cancer (King & Miner, 2000; Pennebaker et al., 1997; Stanton et al., 2000). Furthermore, therapeutic techniques that encourage people to confront emotional material can improve psychological outcomes. People who experience severe anxieties, for example, often benefit from participating in exposure therapy, which exposes them to triggers related to their anxiety (Foa & Kozak, 1986). Kircanski et al. (2012) suggest that, in the process of exposure therapy, it may be most helpful to have people name negative emotions (e.g., nervous, tense) because the act of *affect labeling*, or simply putting one's feelings into words, can reduce the intensity of that emotion. This approach can help people address their emotions in relation to the trigger that otherwise might be too overwhelming to process.

Building on this work, using emotion language in a trauma narrative might accomplish a similar goal as exposure therapy and affect labeling by encouraging people to reflect on and engage with their emotional responses to the trauma. Moreover, given that people who have experienced severe trauma may be especially likely to attempt to avoid their traumatic memories (Bottoms et al., 2012), those who have experienced severe trauma may have the most to gain from the expression of emotion—both positive and negative—in their trauma narratives.

The Current Research

The goal of the current study was to determine whether using emotion language was associated with psychological adjustment among abuse survivors, particularly those who experienced severe abuse. Specifically, we examined the extent to which greater use of positive and negative emotion language in participants' abuse narratives was associated with fewer psychological symptoms, and whether these associations were moderated by abuse severity. We hypothesized that participants who used more emotion language in their abuse narratives, particularly those who experienced more severe abuse, would show better psychological outcomes. Given the correlational nature of our data, such associations could reflect the beneficial effects of emotion language on adjustment and/or the influence of adjustment on language usage. Nonetheless, establishing a link between emotion language and mental health outcomes could have important implications for understanding how people process and overcome unwanted thoughts and feelings in the aftermath of trauma.

We used the Linguistic Inquiry and Word Count Program (LIWC; Pennebaker et al., 2007) to analyze participants' abuse narratives. The LIWC is an extensively validated tool for analyzing natural language (Tausczik & Pennebaker, 2010). It has been used to assess emotion language in the narratives of survivors of sexual assault (e.g., Jaeger et al., 2014) and other emotionally charged traumas (e.g., bereavement; Pennebaker et al., 1997). In the current study, we focused on the two broad LIWC word categories associated with emotionality that have been extensively studied in previous research (Tausczik & Pennebaker, 2010): positive emotion (e.g., happy, laugh) and negative emotion (e.g., sad, angry).

Method

Participants

Participants were 55 young adults (49 women) who, as children, were part of a larger study of the long-term emotional effects of criminal prosecutions on CSA victims (Goodman et al., 1992). Between 1985 and 1987, Goodman et al. (1992) followed 218 children, ages 4 to 17 years, during their participation in CSA criminal cases. At that time, detailed information was collected from multiple sources (i.e., prosecutor files, non-offending caregivers, child victims) regarding characteristics of the abuse and the legal case. Approximately 13 years later ($M =$ 12.51, $SD = .73$), these former CSA survivors were relocated and interviewed about their experiences with and attitudes toward the legal system (Goodman et al., 2003; Quas et al., 2005). The data in the current report were obtained from a series of follow-up interviews conducted by Goodman et al. when participants were between 16 and 30 years old ($M = 23.60$, $SD = 3.79$); Interview transcripts were available for 55 participants from the original sample. Of these 55 individuals, 69% were Caucasian, 6% were Black or African American, 14% were Hispanic, and 11% were of mixed or other ethnicities.

For the subset of participants included in the present report, age when the abuse began ranged from 2 to 16 years ($M = 9.15$, $SD = 3.54$); age when the abuse ended ranged from 3 to 16 years ($M = 9.87$, $SD = 3.67$). The reported perpetrator of the abuse was classified as a parental figure (e.g., parent, stepparent; 29%) or a non-parental figure/person in a position of trust (e.g., teacher, relative, babysitter, stranger; 71%). Fifty-three percent of the cases involved penetration, 33% involved genital contact, and 14% involved non-genital contact. Abuse severity, indexed by a composite of abuse duration, extent of sexual activity, use of force, and extent of injury to the child, ranged from 2 to 9 (on a 12-point scale; $M = 5.07$, $SD = 1.90$). Forty-five percent of

children testified in court at least once. Another 33% went to court at least once but did not testify, and 22% did not go to court.

Procedure

All study procedures were approved by the Human Subjects Review Committees at the two universities that oversaw recruitment and participation, and a Certificate of Confidentiality was obtained from the National Institutes of Health. Of the original 218 participants, 174 (80% of the original sample) were relocated and interviewed at least once in one of the three phases (see Quas et al., 2005, for more detailed information about the follow-up study). Of the participants who were not interviewed, one was deceased, 33 were unlocatable, and nine refused to participate. One additional participant was determined to have experienced sexual acts that did not meet the legal definition of CSA (the perpetrator was not 4 years older than the child) and was not included in follow-up analyses.

The follow-up study was conducted in three phases. In the *first phase*, participants ($n =$ 172) were interviewed regarding their mental health and legal attitudes, primarily via phone. In the *second phase*, participants were asked to complete a set of more detailed mental health and legal attitude questionnaires that were sent through the mail. Of the 172 participants who completed the first phase, 36 were subsequently unlocatable, and nine refused to participate in the second phase, leaving 127 participants who completed the second phase. A subset of participants was then targeted to complete a longer structured, in-person interview about their former abuse and legal experiences. Of the 127 participants who completed the second phase, 26 were unlocatable to complete the third phase, leaving 101 participants in the third phase. Exceptions to interview formats were made as necessary (e.g., for participants without telephones, the phone interview portion was conducted via mail or in-person). Of the 101

participants who completed the in-person interview, 6 did not disclose the target case and 1 disclosed the target case but stated that the abuse was a false report, leaving 94 participants who reported the documented CSA case and answered questions about their experiences.

Of the 94 in-person interviews, 55 were audiotaped. To ensure completeness and accuracy of narratives, the current report thus focuses on data from these 55 participants. The 39 other interviews were not audiotaped because of special circumstances (e.g., participants who no longer lived in the Denver area were typically interviewed via phone). The 55 participants in the current subsample were comparable to the 39 disclosing participants who were not audiotaped in terms of age at the beginning and end of the abuse, abuse severity, legal involvement, and victim-perpetrator relationship, ts(89–92) ≤ |1.88|, ps > .06; however, a greater percentage of women were included in the current sample compared to the total in-person sample, χ^2 (1, N = 94) = 8.51, p = .004.

The audiotaped subsample (n = 55) was also comparable to the original Goodman et al. (1992) sample in terms of age at the beginning of abuse, abuse severity, and victim-perpetrator relationship, ts(199–216) ≤ 1.49, ps > .14; however, this subsample was older when the abuse ended, t(214) = 2.20, p = .03, experienced greater legal involvement t(216) = 3.42, p = .001, and included a larger percentage of women than the initial sample, χ^2 (1, N = 218) = 6.39, p = .01. The proportion of women in the current study nonetheless mirrors that found in national prevalence reports of CSA (U.S. Department of Health and Human Services, 2010).

Mental Health Measures Completed by CSA Survivors

Measures of mental health were obtained from the first, second, and third phases of the study. For the current analyses, we selected measures that we deemed particularly relevant to trauma and emotional processing. The number of respondents differs slightly across measures

(*n*'s range from 48 to 55) because some participants did not complete all measures. Means and standard deviations for measures of mental health can be seen in Table 1.1.

Brief Symptom Inventory (BSI). A subset of the BSI, a well-established measure of psychopathology, was completed by all participants (*n* = 55) as part of the Phase 1 interview. The BSI is standardized for use with adolescents and adults, with good test-retest and internal consistency reliabilities (Derogatis & Melisaratos, 1983). Alpha coefficients range from .71 to .85 across the BSI subscales (e.g., depression, anxiety). Because of time constraints, participants responded to the nine items with the highest factor loadings on each of the nine BSI subscales (as reported by Derogatis & Melisaratos, 1983): *feeling fearful, feeling that most people cannot be trusted, feeling tense or keyed up, feelings of worthlessness, trouble getting their breath, feeling lonely, temper outbursts they could not control, feeling uneasy in crowds, having trouble remembering things*. Respondents rated how frequently they had been distressed by each of these problems during the last seven days, on a 5-point scale, ranging from 1 (*never)* to 5 (*extremely*). Individual's scores were computed as the average of the nine items and higher scores indicate poorer adjustment.

Young Adult Self-Report Behavior Checklist (YASR). The YASR (Achenbach, 1997) is a standardized self-report measure of young adults' (ages 18-30) emotional and behavioral problems that was completed by participants (*n* = 48) as part of the Phase 2 interview. The reliability and validity of the measure have been extensively documented. For example, 1-week test-retest reliability (*r*) is .89 for total behavior problems (e.g., Achenbach, 1997). Participants rated the extent to which they currently or within the past six months have experienced internalizing (e.g., anxiety, depression) and externalizing (e.g., aggression, hyperactivity) behaviors. Participants rated 132 items such as, "I cry a lot" and "I feel worthless or inferior" on

a 3-point scale ranging from 0 *(not true)*, 1 *(somewhat true)* and, 2 *(very true).* Individual's

scores were computed as total *t*-scores, which were standardized according to age and gender

norms (Achenbach, 1997; Achenbach & Rescorla, 2003). Higher scores reflect poorer

adjustment.

Posttraumatic Diagnostic Scale (PDS). The PDS (Foa et al., 1997) is a widely used and

validated 49-item measure to diagnose posttraumatic stress disorder (PTSD) in individuals who

have experienced a variety of traumatic events (e.g., survivors of natural disasters). The PDS was

completed by participants ($n = 49$) as part of the Phase 2 interview. The PDS has high internal

consistency, good test-retest reliability, and strong associations with structured interview

assessments of PTSD. For instance, alpha reliability for symptom severity is .92 and, in terms of

classification capability, sensitivity is .89 and specificity is .75 (Foa et al., 1997). Participants

self-reported on a scale of 0 *(not at all or only one time)* to 3 *(5 or more times a week/almost*

always) how often in the past month they have experienced symptoms such as, "Having

upsetting thoughts or images about the traumatic event that came into your head when you didn't

want them to." The PDS provides a categorical diagnosis of PTSD (Foa et al., 1997) as well as

an index of symptom severity. For the purpose of this report we used the categorical diagnosis of

PTSD, coded as 0 = no PTSD diagnosis, 1 = PTSD diagnosis [1].

Beck Depression Inventory (BDI). The BDI (Beck & Beamesderfer, 1974) is a widely

used measure of depression in youth and adults. It was completed by participants ($n = 54$) as part

of the Phase 3 interview. The BDI has been extensively validated as a tool to measure and

diagnose depression and demonstrates high internal consistency with an average alpha

coefficient of .86 (Beck et al., 1988). Participants rated, on a scale of 0 (*never*) to 3 (*quite often*),

how often they experienced various symptoms of depression (e.g., sadness, worthlessness, guilty

feelings) during the last two weeks. Individual's scores were computed as the average of the items and higher scores indicate more depressive symptoms.

Mental Health Measures Completed by CSA Survivors' Primary Caregivers

Participants' parents or other primary caregivers were also invited to participate in the original study and follow-up study (see Quas et al., 2005). We had access to caregiver reports (*n*'s range from 34 to 55) of mental health functioning at the time of the original study and Phase 2 of the follow-up for participants in our audiotaped subsample.

Child Behavior Checklist (CBCL). We had access to participants' (*n* = 55) scores on the CBCL as children (Achenbach & Edelbrock, 1983). The CBCL is a standardized measure of children's emotional and behavioral adjustment in the previous month. Achenbach and Edelbrock (1983) reported a 1-week test-retest reliability (*r*) of .95 for total behavior problems. Non-offending caregivers filled it out at the time of the original study (i.e., after the case was referred for prosecution). Participants' caregivers rated the extent to which each item described their child (e.g., "feels worthless or inferior") within the past six months on a scale of 0 (*not true*) to 2 (*very true or often true*). The inclusion of the CBCL allowed for statistical control of emotion and behavior problems (e.g., that may have resulted from the abuse) evident at the start of the criminal prosecution. Children's scores were computed as total *t*-scores (scores were normed by age and gender) and higher scores reflect poorer adjustment.

Young Adult Behavioral Checklist (YABCL). Young adults' caregivers (*n* = 34) completed a measure of participants' current emotional and behavioral adjustment as part of the Phase 2 interview. The YABCL (Achenbach, 1997) is a psychometrically sound upward extension of the CBCL, completed by parents (or other caregivers, observers, etc.) of 18 to 30-year-olds. It correlates well with the CBCL and provides age- and gender-normed indices of

internalizing and externalizing problems as well as an overall behavioral adjustment score (Achenbach, 1997). Reliability and validity of the YABCL are well documented. For instance, test-retest reliability is high, with $r = .87$ for total behavior problems (Achenbach, 1997). Participants' scores were computed as total t-scores (normed by age and gender) and higher scores reflect poorer adjustment.

In-Person Interview Transcriptions and Text Analysis

Participants' audiotaped interviews were transcribed verbatim by trained research assistants. For text analysis, we included all of participants' responses to open-ended questions about the documented CSA case and subsequent legal involvement. Sample questions included: "How did you cope with the abuse, that is, how did you deal with it as it was occurring?", "In general, what triggers the memory of your sexual abuse experiences to come back?", "Overall, at the time of the case, how did you feel toward the person who was accused of the crime?", "In your own words, describe what happened when you were involved in the legal system because of sexual abuse/sexual assault. That is, describe what your legal experiences were like?", "What did you do at the courthouse while you were waiting to testify?", and "What do you remember about the investigation, that is, talking to the police, social workers, investigators, or attorneys?". Open-ended questions did not necessarily prompt or require participants to respond with emotion language, so any use of emotion language by participants can be considered spontaneous. Further, to keep interviews consistent, trained interviewers followed structured probes when they followed up on participants' responses; thus, interviewers did not attempt to influence participants' use of emotion language in their responses.

We did not include responses to yes/no questions or answers that required participants to give a scaled response. However, if participants provided additional follow-up information to a

yes/no question (e.g., "yes, because…"), that information was included. Additionally, non-emotional uses of words such as "like" or "well" were coded as fillers and nonfluencies, so they were not counted as emotion words. Responses that were inaudible or not in response to the interview (e.g., if participants were interrupted by family members) were not included, nor were any of the interviewers' questions or comments. All interview transcriptions were checked for spelling errors and the word count for these portions of the interview ranged from 122 to 6,751 words ($M = 1,744.18$, $SD = 1,584.60$) [2].

The selected portions of the interview text were analyzed using the LIWC program (Pennebaker et al., 2007) [3]. The LIWC provides over 80 different psychological and grammatical categories as a percentage of total words and has been extensively validated as a tool to examine the psychological implications of the words people use to talk about emotional experiences (Pennebaker et al., 2003). The current study focused on two content categories deemed by past research to be particularly relevant to mental health (e.g., Jaeger et al., 2014; Pennebaker et al., 2007; Pennebaker & Chung, 2007): positive emotion words (e.g., happy, laugh) and negative emotion words (e.g., sad, angry). A total of 409 and 499 words are included in the positive emotion and negative emotion categories, respectively.

Results

Preliminary Analyses

Descriptive statistics and correlations among the primary study variables are presented in Table 1.1. As shown in Table 1.1, 1-2% of the words that participants produced during the in-person interview were categorized as positive or negative emotion language. These percentages are similar to the rates of positive (2.74%) and negative (1.63%) emotion words used in clinical and non-clinical samples, including individuals who wrote or talked about deeply emotional

experiences (see Pennebaker, Francis, et al., 2001, for means across 43 studies). Also consistent with previous work, positive and negative emotion language usage were negatively correlated (Pennebaker et al., 2003). In addition, men and participants with more extensive legal involvement were more likely to use positive emotion words in their trauma narratives; however, because we only had six men in our sample, any findings regarding gender should be considered with caution. Age at the end of the abuse, delay between end of abuse and current interview, and abuse severity, were not significantly related to any variables of interest, $ps \geq .09$. Finally, as might be expected, self-reported measures of mental health across the three phases of the study were positively intercorrelated.

Associations between Emotion Language and Mental Health

Our first hypothesis was that participants who used more positive and negative emotion words in their trauma narratives would show better self- and caregiver-reported adjustment. As shown in Table 1.1, this hypothesis was partially supported: Participants who used more positive emotion words reported less psychological distress (BSI) and depression (BDI), and their caregivers reported that they had fewer emotional and behavioral problems (YABCL). Use of positive emotion language was not related to participants' reports of their emotional and behavioral problems (YASR) or posttraumatic stress (PDS), $ps \geq .69$. Use of negative emotion words was negatively related to participants' reports of posttraumatic stress (PDS), but (perhaps surprisingly) not to other self-reports of mental health, $ps \geq .11$. However, use of negative emotion language was positively associated with caregiver reports of emotional and behavioral problems (YABCL).

Our second hypothesis was that the association between emotion word usage and mental health outcomes would be particularly strong among individuals who experienced more severe

abuse. To test this hypothesis, we conducted separate linear regressions predicting each self-reported and caregiver-reported measure of mental health. A logistic regression was conducted to predict posttraumatic stress (PDS) because of the categorical nature of this outcome variable (0 = no diagnosis of PTSD; 1 = diagnosis of PTSD). Eleven of the 49 participants (22%) who completed the PDS had a diagnosis of PTSD. For all regressions, predictors in the first model included abuse severity, positive emotion language, and negative emotion language; the second model additionally included the two-way interactions between (a) abuse severity and positive emotion language and (b) abuse severity and negative emotion language [4]. Abuse severity, positive emotion language, and negative emotion language were centered prior to creating the interaction terms, as is recommend to reduce multicollinearity among predictors (Cohen et al., 2003). For all dependent variables, the inclusion of the two-way interactions resulted in a significant increase in the amount of variance explained; thus, we present results from the second model including these interactions. Additionally, results were virtually identical when we included the CBCL, gender, legal involvement, or delay (in years) between age at the end of abuse and participation in the current interview as statistical controls in separate models, so these covariates are not considered further.

As shown in Table 1.2, consistent with our hypotheses and the zero-order correlations, people who used more positive emotion language evidenced significantly less psychological distress (BSI), lower depression (BDI), and fewer caregiver-reported emotional and behavioral problems (YABCL). Interestingly, in the regression analyses, use of negative emotion language was negatively associated with the two mental health outcomes that were not linked with positive emotion language usage: self-reports of emotional and behavioral problems (YASR) and

posttraumatic stress (PDS; see Table 1.3). These findings suggest that the use of positive and negative emotion language might be associated with different psychological outcomes.

Also largely consistent with our hypotheses, the interaction between abuse severity and positive emotion word usage was significant for all self-reported mental health outcomes (BSI, YASR, BDI, PDS), but not those reported by the caregiver (YABCL). Likewise, the interaction between abuse severity and negative emotion word usage was significant, but only for two self-reported outcomes: psychological distress (BSI) and emotional and behavioral problems (YASR).

To examine the nature of the significant interactions between abuse severity and emotion language usage, we calculated the simple slopes for each effect using the PROCESS macro for SPSS (Dawson, 2014; Hayes, 2012). Simple slopes were calculated at one standard deviation above and below the means of abuse severity. These analyses indicated that the negative associations between *positive emotion language usage* and adverse mental health outcomes were significant only for participants who experienced more severe sexual abuse. That is, among those who experienced more severe abuse, positive emotion language was negatively related to psychological distress (BSI), $b = -.91$, $t = -3.84$, $p = .001$, emotional and behavior problems (YASR), $b = -12.42$, $t = -3.69$, $p = .001$, and depression (BDI), $b = -.37$, $t = -2.84$, $p = .01$. These associations were not significant for participants who experienced less severe abuse, $bs \leq 3.15$, $ts \leq 1.45$, $ps \geq .16$ (see Figures 1.1, 1.2, and 1.2). Figure 1.4 shows a similar pattern of findings for the dichotomous variable of posttraumatic stress (PDS): the negative association between positive emotion language usage and PDS diagnosis was significant among those who experienced more severe abuse, $b = -4.13$, $Z = -2.22$, $p = .03$, but not among those who experienced less severe abuse, $b = .35$, $Z = .45$, $p = .66$.

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Additionally, *negative emotion language usage* was inversely related to psychological distress (BSI) and emotion and behavioral problems (YASR) only among individuals who experienced more severe abuse, $b = -.43$, $t = -2.37$, $p = .02$, and $b = -8.79$, $t = -2.02$, $p = .05$, respectively; the association between negative emotion language usage and these outcomes was not significant among those who experienced less severe abuse, $bs \leq .30$, $ts \leq .86$, $ps \geq .40$ (see Figures 1.5 and 1.6) [5,6].

Discussion

The goal of the present study was to examine emotion language and mental health outcomes among survivors of childhood sexual abuse who are asked to reflect on their traumatic experiences. Previous research suggests that reflection is only sometimes beneficial, and that in some cases it may even be detrimental, for sexual abuse survivors (Batten et al., 2002; Ullman, 2011), who may have difficulty processing emotionally charged experiences. One reason for prior divergent effects may be that participants differ in the way they emotionally appraise their experience. Thus, we investigated whether the use of emotion language was associated with better mental health for CSA survivors. We addressed two questions: (1) Is emotion language associated with better psychological outcomes for CSA survivors? and, (2) Is emotion language differentially associated with psychological outcomes for people who have experienced more versus less severe abuse? We expected that people who used more positive and negative emotion language in their abuse narratives would show better self- and caregiver-reported mental health, but also that the association between emotion language and psychological outcomes would be particularly strong for participants who had experienced especially severe abuse.

Consistent with recent work, our findings suggest that simply talking about the experience might not be as important as what individuals say in their trauma narratives (e.g.,

Jaeger et al., 2014; Kross et al., 2014). For example, Jaeger et al. (2014) found that people who used more emotion words (both positive and negative) were less likely to develop PTSD and other trauma-related symptoms than people who used fewer such words. Of interest, the structure of participants' trauma narratives (e.g., disorganization and fragmentation) was largely unrelated to psychological outcomes. Thus, people's psychological reactions to trauma may be more closely tied to how they emotionally appraise a traumatic event rather than to other aspects of the narrative such as grammatical structure.

Perhaps psychological adjustment is reflected in emotion language because people who use such language are more in-tune with, or mindfully aware of, their emotions. Participants in the current study answered a standardized set of questions about a highly emotional experience. Yet, they differed markedly in the extent to which they used positive and negative words when describing that experience. Those who naturally used emotion language in their narratives may have been able to find the words to describe how they felt, a skill known as *emotion differentiation* or *emotional granularity* (Barrett et al., 2001; Kashdan et al., 2015). More granular individuals tend to use more discrete positive and negative emotion labels (e.g., happiness, sadness) rather than general or global labels (e.g., pleasantness, unpleasantness) to describe their emotional experiences, and greater emotion granularity is associated with healthier psychological outcomes (Barrett et al., 2001; Kashdan et al., 2015; Tugade et al., 2004). Increasing people's ability to recognize and utilize information about their emotions, therefore, may be beneficial, perhaps especially when people describe highly emotional experiences.

Our findings are also consistent with previous research in suggesting that using emotion words can be helpful in times of stress; however, positive and negative emotion language might foster psychological improvements in different ways. In fact, as has been observed in other

samples, we found a negative correlation between positive and negative emotion language usage, suggesting that people tend to use one category of words more than the other, and usage of the two valence categories was associated with different outcomes. Positive emotion language was linked to lower depression and psychological distress in our sample. Positive emotion language was similarly associated with decreases in depression and increases in resilience following the September 11th terrorist attacks (Fredrickson et al., 2003). The use of positive emotion language may be a way for survivors of particularly severe abuse to reappraise their experiences in ways that makes them feel more resilient and optimistic about the future (Fredrickson, 2001). Consistent with the broaden-and-build theory, when individuals are able to see the "good in the bad" or represent their experiences with positivity, they are able to think more broadly and organize and make sense of experiences (Fredrickson & Branigan, 2005). Thus, survivors of CSA may experience healthier outcomes if they are able to harness positive emotion in times of stress.

Nevertheless, confronting unpleasant emotions may be just as important for healing after severe trauma, perhaps by helping people to reappraise their experiences, and greater use of negative emotion was associated with fewer emotional and behavioral problems and a lower likelihood of PTSD diagnosis. Our findings are consistent with the literature on exposure therapy, in which people are repeatedly exposed to anxiety-provoking stimuli until their fear response is diminished (Foa & Rothbaum, 1998). In fact, exposure therapy can help sexual assault survivors become less focused on the specific details of the assault and more focused on emotional processing and meaning-making associated with the trauma (Foa et al., 1995). Repeated use of negative emotion language may therefore allow survivors of sexual abuse to express words such as *angry*, without experiencing the physiological sensations that come along

with that emotion. Over time, negative emotions may become less painful and more manageable to process.

Finally, our findings suggest that abuse severity can help to explain *how* and *why* reflection might be more effective for some individuals than others. People who experienced more severe abuse showed a particularly strong association between emotion language and psychological functioning, suggesting that they may then benefit the most from using emotion words when describing their experiences. Those who experience more severe trauma are also especially likely to avoid unwanted thoughts and emotions (Begotka et al., 2004). These individuals might therefore benefit the most psychologically from the use of positive and negative emotion language because the severity of their trauma might generally push them to ignore these emotions.

Of note, our measure of abuse severity was objective (i.e., indexed by a composite of abuse duration, extent of sexual activity, use of force, and extent of injury to the child), which gave us a standardized way to compare all participants on the same variable. However, it will also be important for future research to look at *perceived* severity of abuse from the survivor's perspective. Additionally, it should be noted that our measures of emotion language and those of psychological functioning were collected at different times (albeit within a few months of each other), yet they were related to one another in expected ways, suggesting that we are not just capturing participants' transient moods. Thus, we demonstrate that people are naturally using, or are capable of learning to use, emotion language, perhaps as a coping mechanism to combat the negative effects of trauma.

Although we have argued that people may benefit from using emotion language in their trauma narratives, it is important to note that the correlational nature of our data precludes causal

inferences. Thus, it is possible that better adjustment helped people use emotion language when talking about their experiences. One way to address questions about causality would be to randomly assign trauma survivors to use certain kinds of words when describing their experiences. Experimental paradigms that shift people's language usage under stressful situations can influence the way people think and feel (Kross et al., 2014). For example, people are better at controlling and regulating their thoughts and feelings during stressful situations when they are prompted to refer to themselves by their first name or other non-first-person pronouns (e.g., you) during self-talk (Kross et al., 2014). These shifts in language can encourage detachment from a stressor and therefore allow a person to gain better insight into their thoughts and feelings. Future research should examine whether prompting trauma survivors to include positive (e.g., happy, love, kind, nice) and/or negative emotion (e.g., sad, hurt, ugly, nasty) words can improve psychological health and allow people access to emotions that they otherwise might avoid and be unable to process.

Another avenue for future research is to examine whether CSA survivors benefit from sharing emotions with others in a more naturalistic setting. When people verbalize their feelings and emotions to others, they tend to report the experience as beneficial and comforting (i.e., they experience behaviors from the recipient that make them feel better, see Pennebaker, Zech, et al., 2001). According to the theory of "social sharing of emotions", when people share emotions in a situation in which another person can provide emotional support, both parties report feeling closer to each other and even decrease the physical distance between them (Christophe & Rimé, 1997). In fact, people who disclose more emotion tend to be liked more than people who disclose less emotion, and further, people tend to disclose more to people they like (Collins & Miller, 1994). Taken together, social sharing of emotions may contribute to the development and

maintenance of new and supportive relationships. Survivors of CSA who are more open to share their emotions and experiences with CSA may have an easier time finding support from others.

Future research should also examine whether the beneficial effects of emotion language persist over extended periods of time. Unfortunately, our mental health measures were collected in close proximity to the abuse narratives, so we cannot determine whether there are long-term benefits of emotion language in our sample. However, other studies have documented the long-term effects of language on psychological outcomes (e.g., Ayduk & Kross, 2010). For instance, people who spontaneously used a more distanced perspective (i.e., used more first-person words) to recount a negative experience reported less distress and rumination up to seven weeks later (Ayduk & Kross, 2010). Thus, there are reasons to expect that use of emotion language when recalling experiences of sexual abuse would enhance trauma survivors' long-term mental health.

It is also important to note that unique characteristics of our sample could have influenced our results. All of our participants were involved in the legal system, with about half actually testifying in their cases, and presumably our participants talked much more about their abuse experiences than most CSA survivors who are not involved in the legal system and may not have disclosed the abuse (Freyd, 2003; Goodman et al., 2003). Therefore, our participants may have been more practiced in adaptively recounting their experiences. Future research should examine whether the benefits of emotion language extend to CSA survivors who may not have had prior opportunities to discuss their experiences.

Finally, our sample was comprised of mostly women. This mirrors that found in national prevalence reports of CSA (U.S. Department of Health and Human Services, 2010). But, the small number of men in our study limited our ability to draw conclusions about gender

differences, and future research should include more male participants to probe for potential gender differences in how emotion language might be adaptive after trauma.

Conclusion

Our study makes several novel contributions to emotion and trauma-related research by suggesting that expressing both good and bad emotions may help people heal from trauma. Most importantly, we provide evidence that, after a trauma, people might benefit psychologically if they use emotion language when discussing their experiences. Future research should assess the causal effect of emotion word usage on psychological health outcomes, which could have major implications for understanding how people are able to process and move past trauma-related emotions. The current study offers new directions for trauma research and contributes innovative insights into the emotion literature.

1. The PDS uses a categorical diagnosis of PTSD based on the DSM-IV diagnostic criteria, which have been revised for the DSM-5.

2. Pennebaker and colleagues suggest that any text with fewer than 50 words should be treated with skepticism and potentially omitted from LIWC analyses (see Pennebaker, Booth, et al., 2015; Pennebaker, Boyd, et al., 2015). In the current sample, the lowest spoken word count was 122, so we did not exclude any participants based on word count. However, our findings remained virtually identical when we included only the 52 participants who used 200 or more words.

3. The most recent (2015) version of LIWC software (Pennebaker, Booth, et al., 2015) was released after we conducted our analyses; however, the emotional language categories are relatively unchanged between 2007 and 2015 and Pennebaker et al. report correlations of .96 between the two versions, suggesting that our results are not likely to differ by version (see Pennebaker, Boyd, et al., 2015).

4. We included both negative and positive emotion language, along with their interaction terms, in our regression analyses predicting each mental health outcome. We also ran additional analyses with each interaction term separately for positive and negative emotion language to ensure that including both interaction terms in the same model did not reduce the power to detect interaction effects. We still included both main effects in each model.

Results for positive emotion interaction effects were virtually identical for the outcomes of emotion and behavior problems (YASR), $b = -3.33, t = -2.67, p = .01$, depressive symptoms (BDI), $b = -.07, t = -2.10, p = .04$, caregiver-reported emotion and behavior problems (YABCL), $b = -1.01, t = -.85, p = .40$, and symptoms of posttraumatic stress (PDS), $\exp(b) = .36, Z = 5.40,$

$p = .02$; however, there was one exception such that psychological distress (BSI) was no longer significantly predicted by the positive emotion interaction, $b = -.09, t = -1.11, p = .27$.

Results for negative emotion interaction effects were virtually identical for the outcomes of psychological distress (BSI), $b = -.14, t = -2.16, p = .04$, depressive symptoms (BDI), $b = -.01, t = -.30, p = .80$, caregiver-reported emotional and behavioral problems (YABCL), $b = -.82, t = -.67, p = .51$, and symptoms of posttraumatic stress (PDS), $\exp(b) = .93, Z = .05, p = .82$; the only exception was that the negative interaction effect no longer significantly predicted the emotion and behavior problems (YASR), $b = -1.11, t = -1.01, p = .32$.

5. The negative emotion category of the Linguistic Inquiry and Word Count (LIWC) includes the subcategories of anxiety, anger, and sadness. We ran separate regressions to determine if each of these three emotion categories separately predicted any of our outcome variables. We found that in the majority of cases, none of the negative emotion subcategories, or their interactions with abuse severity, significantly predicted scores on our continuous, $bs \leq .14$, $ts \leq .75, ps \geq .06$, or dichotomous outcome variables, $\exp(bs) \leq .93, Zs \leq 3.09, ps \geq .08$. There were two exceptions: 1) the anger subcategory was significantly negatively associated with scores on the YASR, $b = -.39, t = -2.74, p = .01$ and, 2) the interaction between the sadness subcategory and abuse severity significantly predicted scores on the BSI, $b = -.43, t = -2.77, p = .01$. In both cases these results were consistent with those obtained using the overall negative emotion category. However, neither exception differed from the results when the negative emotion category was used, so we reported our analyses using the negative emotion category, which combines all three subcategories into one composite. The positive emotion category of the LIWC does not include subcategories.

6. As a supplementary analysis, to assess the possibility that people use emotion language more freely when more time has passed, and that passage of time might account for improved health, we examined the mediating role of the delay variable for each emotion and outcome using the Preacher and Hayes (2008) Macro for Multiple Mediation (Model 4). For bootstrapping analyses, each mental health outcome was entered separately as the dependent variable, positive or negative emotion was entered as the predictor variable, and delay was entered as the potential mediator. None of the mediation models were statistically significant for either emotion variable, $Zs \leq |.81|, ps \geq .42$. These findings suggest that associations between language usage and mental health outcomes cannot be explained simply by the passage of time.

Table 1.1. *Descriptive Statistics and Correlations Among Primary Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Positive emotion	–												
2. Negative emotion	-.38**	–											
3. BSI	-.40**	.10	–										
4. YASR	-.03	-.23	.53**	–									
5. PDS	-.06	-.29*	.30*	.40**	–								
6. BDI	-.27*	-.05	.66**	.71**	.54**	–							
7. YABCL	-.36*	.38*	.48**	.37*	.07	.28	–						
8. CBCL	-.18	.00	.35**	.22	.01	.25	.24	–					
9. Delay	.13	.09	-.10	.01	-.23	.02	-.24	.15	_				
10. Age at end of abuse	.02	-.08	-.01	.17	.25	.08	-.01	.00	-.10	–			
11. Gender	-.28*	.22	-.03	-.06	-.10	-.06	-.16	-.05	-.04	.05	–		
12. Legal involvement	.36**	.07	.00	.16	.01	.03	.21	-.09	-.02	.07	-.19	–	
13. Abuse severity	.05	-.01	.11	.13	-.04	.06	.15	.08	-.01	.05	.01	-.01	–
M	1.49	1.74	2.29	54.10	--	.41	58.79	63.60	13.73	9.87	--	2.24	5.07
SD	.68	.80	.81	11.68	--	.35	8.75	10.46	1.43	3.67	--	.79	1.90
N	55	55	55	48	49	54	55	34	55	55	55	55	55

Note. Self-report measures = BSI (Phase 1), YASR and PDS (Phase 2), BDI (Phase 3); caregiver report measures = YABCL (Phase 2), CBCL (initial Phase); Because of missing data for some variables, *Ns* range from 34 – 55. PDS (0 = no diagnosis of PTSD, 1 = diagnosis of PTSD); delay between end of abuse and current interview (in years); age at end of abuse (in years); gender (0 = men, 1 = women); legal involvement (1 = did not go to court, 2 = went to court but did not testify, 3 = testified). *p < .05, ** p < .01

Table 1.2. *Regression Analysis Predicting Self-Report and Caregiver-Report Mental Health Outcomes*

		Outcome										
	BSI			YASR			BDI			YABCL		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Abuse severity	.06	.05	.14	.39	.83	.06	.00	.02	.03	.89	.87	.18
Positive emotion	-.59	.16	-.50***	-4.75	2.59	-.26	-.20	.07	-.39**	-6.34	2.74	-.46*
Negative emotion	-.06	.14	-.06	-4.84	2.06	-.33*	-.10	.06	-.23	.71	2.63	.06
Abuse severity x positive emotion	-.17	.08	-.28*	-4.09	1.26	-.47**	-.09	.04	-.34*	-2.84	1.55	-.40
Abuse severity x negative emotion	-.19	.07	-.37**	-2.11	1.04	-.28*	-.04	.03	-.16	-2.77	1.59	-.41

Note. Ns range from 48 – 55. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 1.3. *Logistic regression Predicting PTSD Diagnosis (as measured with the PDS)*

	B	SE	Wald	Exp B
Abuse severity	-.27	.25	1.16	.76
Positive emotion	-1.93	1.06	3.29	.15
Negative emotion	-1.88	.84	4.95*	.15
Abuse severity x positive emotion	-1.19	.52	5.35*	.30
Abuse severity x negative emotion	-.47	.48	.96	.63

Note. N = 49. PDS (0 = no PTSD diagnosis, 1 = PTSD diagnosis). *p < .05.

Figure 1.1. The interaction between abuse severity and positive emotion in predicting overall psychological functioning (BSI)
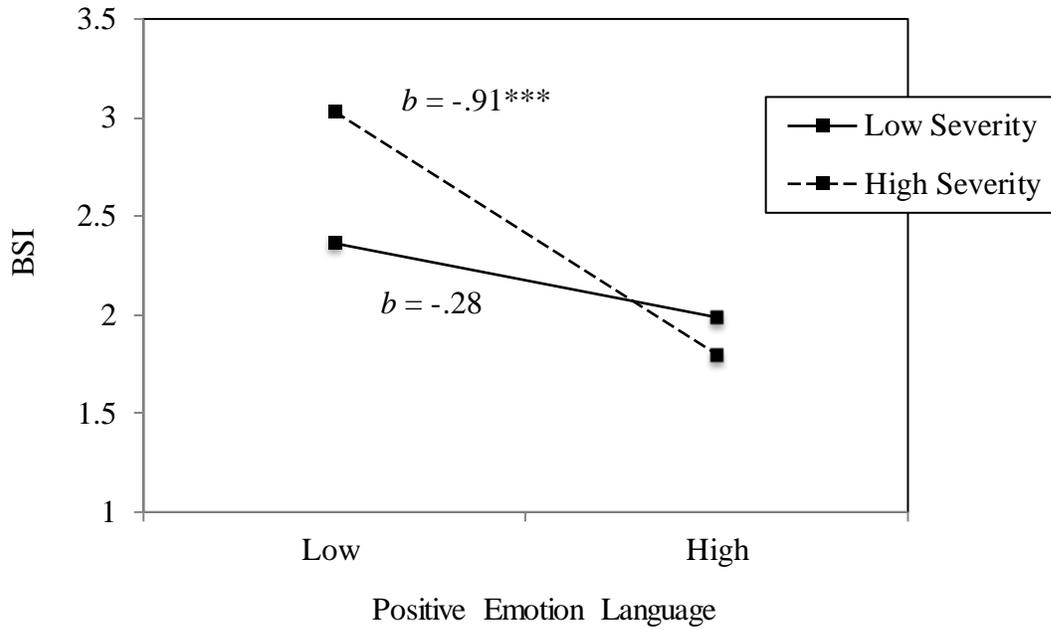
Figure 1.2. The interaction between abuse severity and positive emotion in predicting emotional and behavioral problems (YASR)
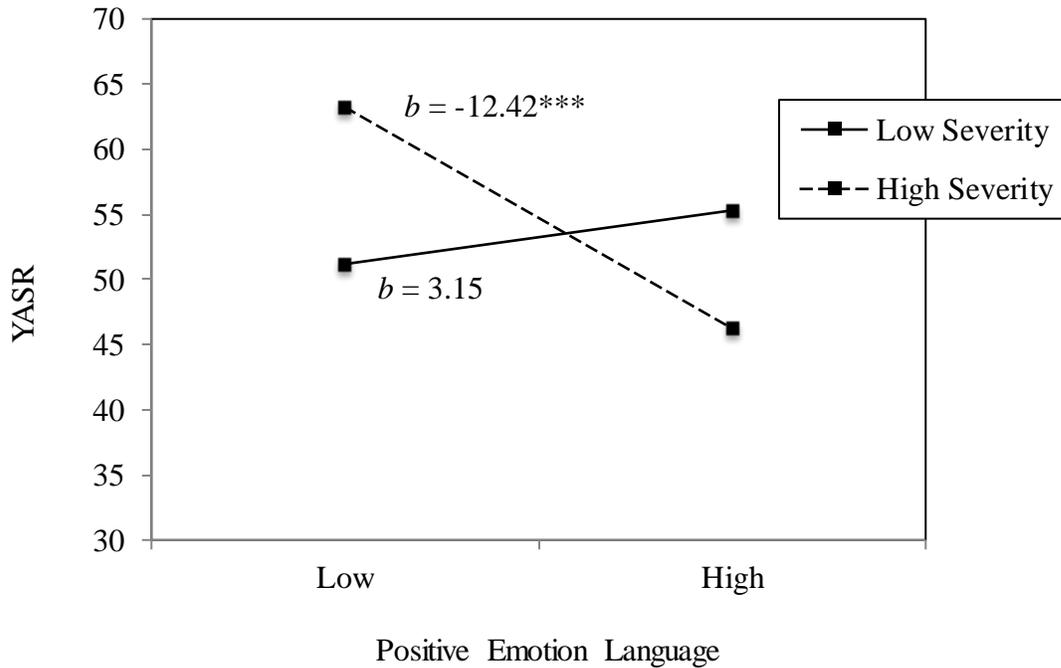
Figure 1.3. The interaction between abuse severity and positive emotion in predicting depressive symptoms (BDI)
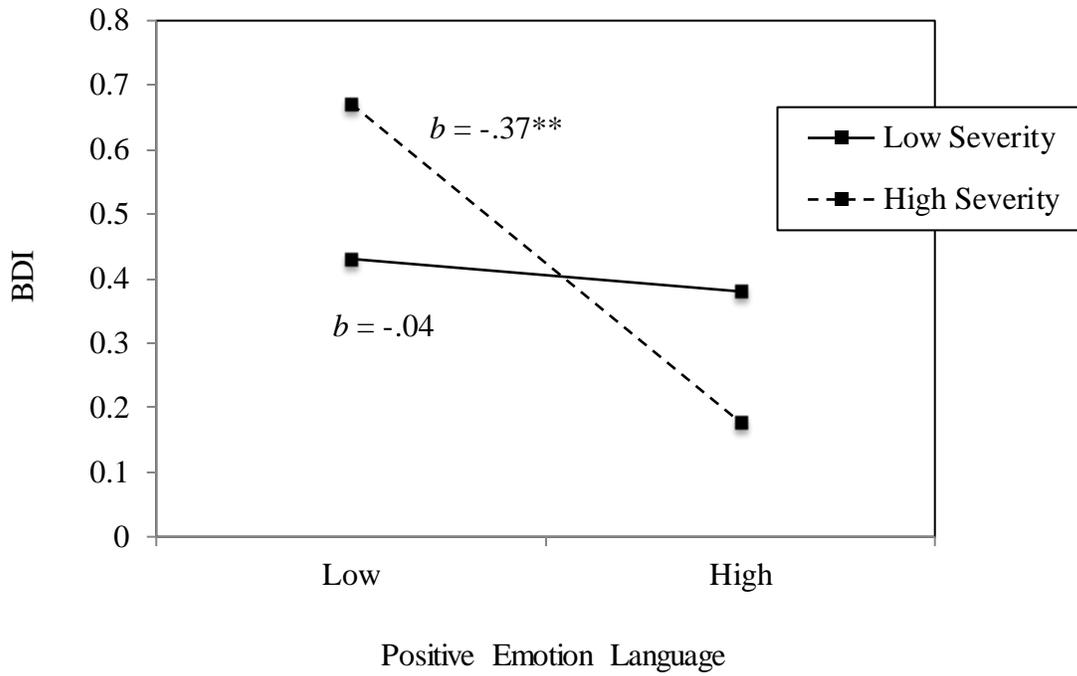
Figure 1.4. The interaction between abuse severity and positive emotion in predicting PTSD diagnosis (PDS)
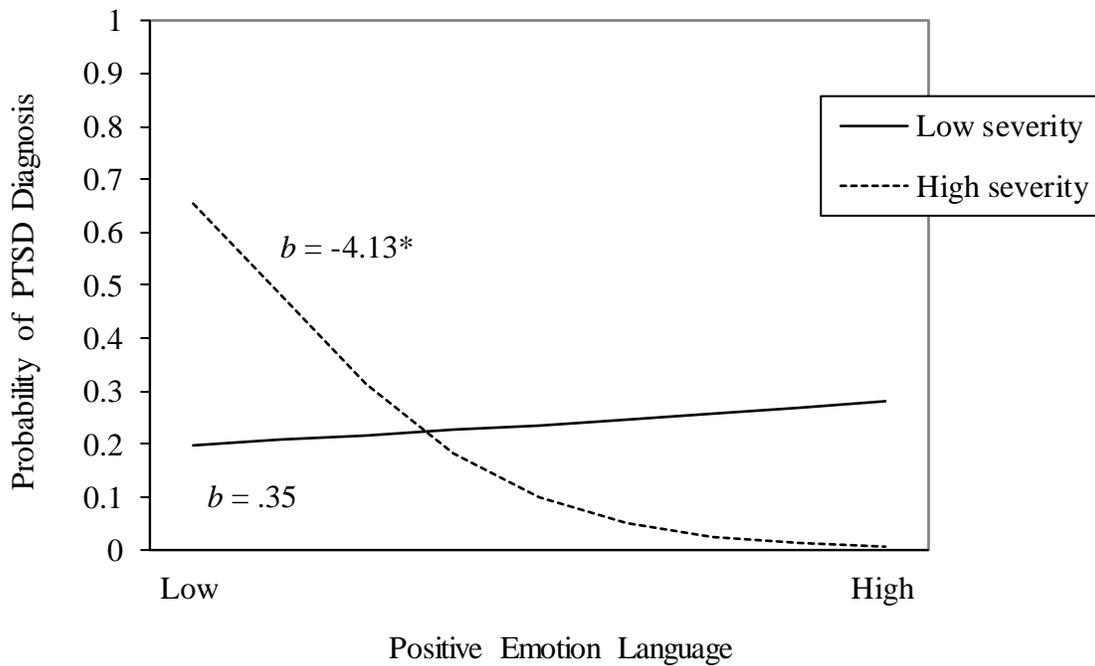
Figure 1.5. The interaction between abuse severity and negative emotion in predicting overall psychological functioning (BSI)

Negative Emotion Language
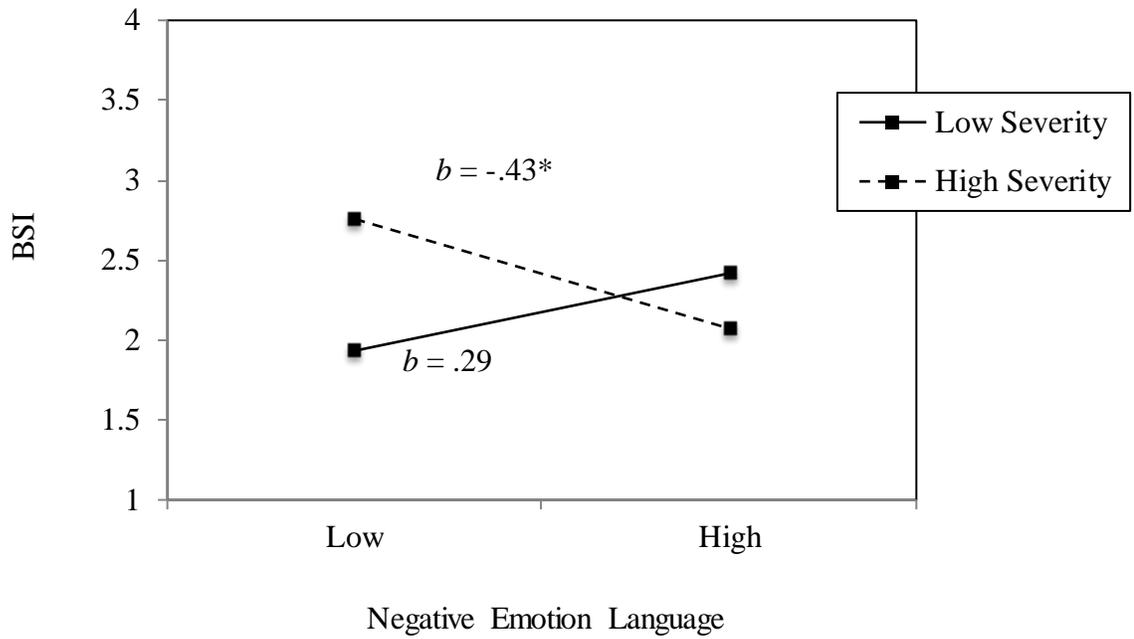
Figure 1.6. The interaction between abuse severity and negative emotion in predicting emotional and behavioral problems (YASR)

Negative Emotion Language
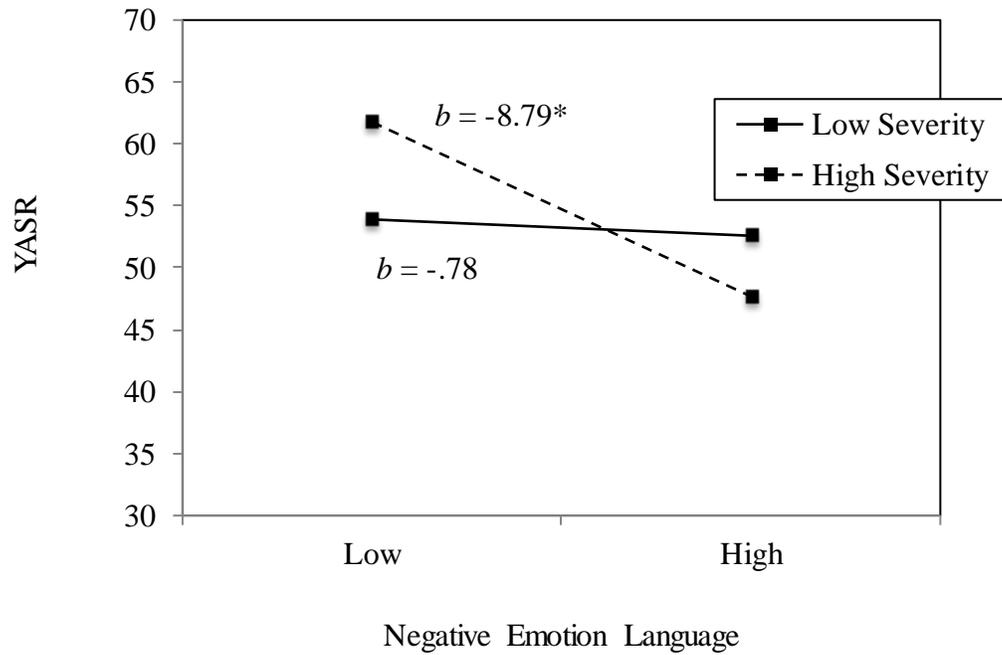
Figure Captions

Figures 1.1, 1.2, 1.3. The interactions between abuse severity and positive emotion in predicting overall psychological functioning (BSI), emotional and behavioral problems (YASR) and depressive symptoms (BDI). Higher scores on these measures indicate poorer psychological health. Following procedures recommended by Cohen et al. (2003), regression lines are plotted at one standard deviation above and below the mean of positive emotion word usage and abuse severity. $*p < .05, **p < .01, ***p < .001$.

Figure 1.4. The interaction between abuse severity and positive emotion in predicting PTSD diagnosis. Following procedures recommended by Dawson (2014) to plot a two-way interaction effect for a logistic regression analysis, slopes are plotted at one standard deviation above and below the mean of the moderator (abuse severity). Y-axes indicates the probability of a PTSD diagnosis: 0 indicates no diagnosis of PTSD and 1 indicates a diagnosis of PTSD. $*p < .05$.

Figures 1.5, 1.6. The interactions between abuse severity and negative emotion in predicting overall psychological functioning (BSI) and emotional and behavioral problems (YASR). Higher scores on these measures indicate poorer psychological health. Following procedures recommended by Cohen et al. (2003), regression lines are plotted at one standard deviation above and below the mean of negative emotion word usage and abuse severity (CSA). $*p < .05$.

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CHAPTER 3: (Study 2) It's a matter of time: Caregivers' positive emotional expression and children's psychological functioning in the aftermath of parental loss

Approximately 151 million children worldwide have experienced the death of a parent (UNICEF, 2013). Although the field of childhood bereavement is still in a nascent state, existing studies suggest that approximately 10% of bereaved youth in the general population are at risk for the development of depression and other problematic outcomes (e.g., substance abuse; Dowdney, 2000; Kaplow, Saunders, Angold, & Costello, 2010). Despite the frequency of parental loss around the world, little is known about psychosocial factors in bereaved children's lives that are related to positive adjustment. A growing literature has begun to highlight the critical role that surviving caregivers play in helping children to grieve in healthy and adaptive ways. Kaplow, Layne, Pynoos, Cohen, and Lieberman (2012) refer to this concept as *parental grief facilitation* and highlight the need for future research to empirically test pathways through which caregivers' communication is tied to bereaved children's healthy psychological adjustment.

Recent research suggests that certain forms of communication between surviving caregivers and their bereaved youth can positively shape children's responses to loss. For example, mothers' "positive parenting" behaviors (e.g., parental warmth and engagement, hugging, and eye contact) are associated with lower distress in children who recently lost a father (Shapiro, Howell, & Kaplow, 2014). Other studies of bereaved youth have similarly found an inverse relation between caregivers' verbal and non-verbal displays of empathic and supportive communication and children's psychopathology (e.g., Howell, Shapiro, Layne, & Kaplow, 2015;

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Lin, Sandler, Ayers, Wolchik, & Luecken, 2004; Saldinger, Porterfield, & Cain, 2004). The current research builds on these studies by further exploring the ways in which caregivers' language is associated with positive outcomes for bereaved children following parental death.

Parental Grief Facilitation Through Positive Reminiscing

Conversations that encourage bereaved youth to positively reminisce about the deceased parent are thought to be associated with psychological benefits. These conversations can ease the pain of separation distress for bereaved youth and foster a sense of connection to the deceased (Castle & Phillips, 2003; Kaplow, Layne, & Pynoos, 2014a; Kaplow et al., 2012). In fact, the normal grieving process generally involves positively reminiscing about the deceased person (Saltzman, Steinberg, Layne, Aisenberg, & Pynoos, 2001), and surviving caregivers play a critical role in assisting bereaved children with this task (Kaplow, Layne, Pynoos, & Saltzman, in press). Positive reminiscing between a caregiver and bereaved child may include both verbal and non-verbal interactions, including sharing favorite memories about the deceased, looking at pictures of the deceased, or discussing commonalities or similarities between the deceased and the child (Kaplow, Layne, et al., 2014a; Kaplow, Layne, & Pynoos, 2014b; Kaplow et al., 2012; Kaplow, Layne, Saltzman, Cozza, & Pynoos, 2013). Despite the potential benefits of positive reminiscing, it is not uncommon for caregivers to avoid positively reminiscing about the deceased with their children due to their own concerns regarding *how* and *when* to engage in these discussions (Kaplow, Layne, et al., 2014a).

Positive Reminiscing and Parental Expression of Positive Emotion

Reminiscing about pleasant memories evokes positive emotion and bolsters social bonds (Bryant, Smart, & King, 2005; Wildschut, Sedikides, Arndt, & Routledge, 2006). When caregivers reminisce with bereaved youth, they often use positive emotions (e.g., joy, funny,

silly) to describe happy memories. Caregivers' expressions of positive emotion in a reminiscing context may benefit bereaved children in a number of ways. Generally speaking, exposure to positive emotions through language may foster children's sense of psychological well-being, such as resilience and optimism about the future (Fredrickson, 2001). According to the broaden-and-build theory, positive emotions increase one's ability to find meaning in times of stress and trauma (Fredrickson, 2001, 2004; Tugade & Fredrickson, 2004). In this way, caregivers who harness positive emotion might be better able to help children create a narrative that assigns meaning and personal growth to their recent loss.

Positive emotions when reminiscing about a deceased loved one might also encourage more cheerful interactions between caregivers and children that evoke joking, smiling, and laughter. Keltner and Bonanno (1997) found that genuine smiling and laughter in bereaved individuals was associated with less distress and anger, more enjoyment, and stronger social relations; thus children could indirectly benefit from caregivers' positive emotions. Similarly, caregivers' expressions of positive emotion may also elicit similar emotions in children, such that if the caregiver expresses joy, the child may also express and feel joy (i.e., emotional contagion, Hatfield, Cacioppo, & Rapson, 1994).

It is important to note, however, that caregivers' expression of positive emotion may not always be helpful to bereaved children. In the immediate aftermath of parental death (e.g., within the first few months), children are expected to feel sad and distressed over the loss (e.g., Kaplow et al., 2012), and may feel invalidated if caregivers are expressing too much positivity. This type of emotional dysynchrony can create breakdowns in communication between bereaved parents and their children (Kaplow, Layne, et al., 2014b; Kaplow et al., in press).

Consequently, caregivers' attempts to positively reminisce about the deceased person too soon after the death may result in more dysynchrony and higher levels of distress among their bereaved youth (Kaplow, Layne, et al., 2014b). After the intensity of the initial grief reactions diminish slightly, a child may feel better able to positively reminisce about the deceased (talk about positive, happy memories) and may benefit more from these discussions as time passes. The current study examines whether time (since parent's death) moderates the relation between parental positive emotional expression and youth psychological distress. This work carries important implications for developmentally informed theories of bereavement-related risk and resiliency (Kaplow & Layne, 2014) as well as for intervention efforts targeting caregiver-child communication in the aftermath of parental death.

The Current Study

The overarching goal of the current study was to examine *how* and *when* caregivers' reminiscing conversations about the deceased are associated with the most optimal outcomes for bereaved children. In the present study, 39 recently-bereaved children and their surviving caregivers participated together in a 10-minute communication task in which they jointly discussed two standardized "positive reminiscing" prompts designed to elicit positive emotional exchanges between the caregiver and child – *"Please talk together about your favorite memories of the deceased parent"* and *"Please talk together about what (child) has in common with the deceased parent."*

We used the Linguistic Inquiry and Word Count Program (LIWC; Pennebaker, Booth, & Francis, 2007) to analyze caregivers' portions of the "positive reminiscing" interview. The LIWC is an extensively validated tool for analyzing natural language (Tausczik & Pennebaker, 2010). We focused on the positive emotion word category (e.g., happy, laugh, love, joy), which

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has been used to assess positive emotion language in the narratives of bereaved individuals (e.g., Pennebaker, Mayne, & Francis, 1997) and survivors of other emotionally charged traumas (e.g., sexual assault, Jaeger, Lindblom, Parker-Guilbert, & Zoellner, 2014).

Specifically, we investigated whether the association between caregivers' positive emotion words (e.g., "love", "happy", "joy", "good") and children's adjustment (as measured by anxiety, depression, and avoidant coping) was moderated by time since the child lost their parent. We expected to find a significant interaction such that bereaved youth would experience greater psychological functioning in relation to caregivers' use of positive emotion words, but *only* when more time passed since the death.

Methods

Participants

Participants were 39 bereaved children (18 females) and their surviving caregivers (30 females) who took part in a larger study designed to understand risk and protective factors associated with children's responses to parental death (see Kaplow, Shapiro, et al., 2013). Inclusion criteria were that a child: (1) experienced the death of a parent within the last six months, (2) was between the ages of 3 and 12 at the time of their parent's death, (3) spoke English and, (4) did not have cognitive deficits severe enough to interfere with comprehension of assessment measures. Children from the same family were eligible to participate. The majority of children and their caregivers were recruited through bereavement support centers and hospital settings throughout Michigan.

During study recruitment, 56 families were approached and, of those, 41 agreed to participate. We included only children aged 7 and older in the current sample due to their capacity to complete the self-report measures used, as these particular measures have not been

empirically validated on children under the age of 7. Given this age restriction, participants in the present study included 39 bereaved children and their surviving caregivers. All surviving caregivers had a biological relationship to the child: 77% were biological mothers and 23% were biological fathers. Caregivers' ages ranged from 28 to 70 years ($M = 40.85$ years, $SD = 9.30$), 77% completed at least some college, and ethnicities were self-identified as 79% Caucasian, 8% Black or African American, 8% Hispanic, and 5% Asian.

For the 39 bereaved children included in the present report, ages ranged from 7 to 13 years ($M = 9.26$ years, $SD = 2.00$) and 69% identified as Caucasian, 10% Black or African American, 8% Hispanic, 5% Asian, and 8% mixed or other ethnicities. All children experienced the death of a biological parent: 69% lost their father and 31% lost their mother. Twenty-eight percent of parents died from anticipated illness (e.g., cancer), 28% from sudden or natural causes (e.g., heart attack or stroke), 20% were drug-related (e.g., overdose), 15% were accidents (e.g., traffic accident), and 8% were suicides. The death of the parent occurred within a range of 29 to 208 days prior to the study interview ($M = 105.92$ days, $SD = 45.74$).

Procedure

The University of Michigan Medical School Institutional Review Board approved all study procedures. Participating caregivers provided informed consent, and children gave verbal assent. Caregivers filled out demographic and family history information at the beginning of the study (e.g., their own psychological functioning, child's age and ethnicity, cause of spouse's death). Children separately completed a battery of psychological and behavioral measures. Following the completion of these measures, children and their caregivers came together to participate in a 10-minute, semi-structured "positive reminiscing" discussion about the deceased person (see **Caregiver-Child Semi-Structured Discussion)**. Discussions were videotaped to

ensure completeness and accuracy, and the current report includes data from all 39 child-caregiver dyads. Families were compensated monetarily.

Child Self-Report Mental Health Measures

Multidimensional Anxiety Scale for Children (MASC). Children completed the MASC (March, Parker, Sullivan, Stallings, & Conners, 1997), a well-established measure of anxiety in children between the ages of 8-19 years old. Previous research on the psychometric properties of the MASC indicates adequate construct validity established by strong correlations with standard measures of childhood anxiety, excellent internal consistency, and satisfactory to excellent test-retest reliability (Baldwin & Dadds, 2007). The MASC ($\alpha = .93$) includes 39 items, such as "I get shaky or jittery", "I am scared", and "I feel troubled." Children rated how often they experience each of these symptoms on a 4-point scale, ranging from 0 *(never true)* to 3 *(often true)*. Items were summed to generate a total anxiety score and higher scores indicate greater symptoms of anxiety.

Short Mood and Feelings Questionnaire (SMFQ). The SMFQ (Angold et al., 1995) was used to assess child depressive symptoms. This measure has the ability to correctly detect major depression and has been used in previous research to assess depressive symptoms in bereaved children (Shapiro et al., 2014). Children responded to 13-items ($\alpha = .69$) about how frequently within the past two weeks they experienced problems such as "I cry a lot", "I felt I was a bad person" and "I felt miserable or unhappy." Items were rated on a 3-point scale from 0 *(not true)* to 2 *(true)*. Responses were summed to create a total score and higher scores reflect greater symptoms of depression.

Active Inhibition Scale (AIS). Symptoms of avoidant coping were assessed using the 11-item AIS ($\alpha = .92$, Ayers, Sandler, & Twohey, 1998), a measure of avoidant coping

developed for use with bereaved youth. The AIS exhibits excellent internal consistency in other studies that have focused on bereaved youth (e.g., Howell et al., 2015). Children rated how often they avoided or suppressed their emotions since the loss of their parent (e.g., "You've tried to hide any bad feelings that you've had", "When you've been upset, you've acted like nothing was wrong", "When you've felt sad, you tried not to let anybody know") on a 5-point scale ranging from 0 (*never)* to 4 (*a lot*). Items were summed to create a total score and higher scores reflect greater use of avoidant coping strategies.

Caregiver Self-Report Mental Health Measures

Beck Depression Inventory (BDI). We assessed caregivers' ($n = 39$) depressive symptoms through the use of the BDI (Beck, Steer, & Garbin, 1988), a widely used 21-item measure of depression. Caregivers rated, on a scale of 0 (*never*) to 3 (*quite often*), how often they experienced various symptoms of depression (e.g., sadness, worthlessness, guilty feelings) during the last two weeks. Caregivers' items were summed and higher scores indicate more depressive symptoms. The inclusion of caregivers' scores on the BDI allowed for statistical control of depressive symptoms (e.g., likely resulting from the recent death of their spouse) as the presence (or absence) of depressive symptoms could influence youth's psychological or behavioral outcomes (e.g., Rude, Gortner, & Pennebaker, 2004).

Caregiver-Child Semi-Structured Discussion

Caregivers and children participated together in a 10-minute videotaped communication task in which they were asked to jointly discuss two standardized "positive reminiscing" prompts that were designed to elicit positive emotional responses from caregivers and children - *"Please talk together about your favorite memories of the deceased parent"* and *"Please talk together about what (child) has in common with the deceased parent."* These prompts were chosen to

maximize the potential to code emotional content, impose as little psychological and relational stress as possible on participants, and to evoke positive emotional responses. Master's-or doctoral-level clinicians who were experienced in working with bereaved adults and children conducted the semi-structured interviews.

Discussion Transcriptions and Text Analysis

Trained research assistants transcribed children and caregivers' responses verbatim from 10-minute videotaped discussions. We were specifically interested in aspects of caregivers' communication in relation to children's psychological outcomes; however, we briefly report on children's portions of the discussion in relation to their own psychological outcomes (see **Supplemental Analyses**). We followed the text analysis guidelines of the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2007) such that we excluded all responses that were inaudible as well as clinicians' questions or comments. Non-emotional uses of words such as "like" or "well" were coded as fillers and nonfluencies, so they were not counted as emotion words. All discussion transcriptions were checked for spelling errors and the word count for the caregivers' portions of the interviews ranged from 42 to 554 words ($M = 188.82$ words, $SD = 114.75$) [1].

The selected portions of the discussion text were analyzed using the LIWC program (Pennebaker et al., 2007) [2]. The LIWC provides over 80 different psychological and grammatical categories as a percentage of total words and has been extensively validated as a tool to examine the psychological implications of the words people use to talk about emotional experiences (Pennebaker, Mehl, & Niederhoffer, 2003), such as bereavement and other trauma-related contexts (Eggly et al., 2015; Jaeger et al., 2014; Lester, 2012; Pennebaker et al., 1997). The current study focused on positive emotion - a content category deemed by past research to be

particularly relevant to mental health (e.g., Pennebaker et al., 2003; Rude et al., 2004). A total of 409 words are included in the positive emotion category (e.g., happy, laugh, love). Below is an example excerpt of a caregiver's discussion with her child who just lost his father (positive emotion words are italicized):

Please talk together about your favorite memories of the deceased parent.

"I have lots of memories but I think my *favorite* memory of you and him together would be when you guys were wrestling. That's always a *good* memory. I have one when you were little. You were such a little *cutie* and you were so *snuggly* you just *loved* to be held by dad, and I always remember you in the backpack. And dad would carry you around everywhere, you know, fishing with the other two you were always in the backpack. It was pretty *cool*."

Please talk together about what (child) has in common with the deceased parent.

"I think you look a lot like dad. I think a lot of you know, how you walk and a lot of the expressions you make remind me a lot of daddy. You both *like* strawberries and blueberries. You have the same hairline, except he didn't have the freckles. I think your hands are like dad's hands. I know you both *like* to give me *hugs*. You give me *good hugs*. What about *favorite* foods? You know what else you do whenever you have something on you, you always wipe your hands on your shirt you know that? They are *good* memory shirts."

<div align="center">

Results

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Preliminary Analyses

Previous studies have found group differences between outcomes in children who experienced the death of a parent from an anticipated versus sudden death (e.g., Howell et al., 2016; Kaplow, Howell, & Layne, 2014). Thus, we first conducted independent-samples t-tests to examine group differences (anticipated vs. sudden) in primary variables of interest. Independent samples t-tests for the primary variables of interest suggested similar mental health scores in children (anxiety, avoidance, depression) and caregivers (depression) across both groups, ts(37) $\leq |1.43|$, ps > .16 [3]. Children who lost a parent suddenly participated in the study after more days

had passed since their parent died (M = 118.07 days) compared to children who anticipated the loss (M = 75.00 days), $t(37)$ = -2.89, p = .01. However, both groups were equivalent in terms of caregivers' use of positive emotion words and total number of words spoken, $ts(37) \leq |1.93|$, $ps >$ .06.

Descriptive statistics and correlations among the primary study variables are presented in Table 2.1. On average, 5.5% of the words caregivers provided during the discussion were categorized as positive emotion. As we had expected - and because the "positive reminiscing" discussion pulled for positive emotion - this percentage exceeds the rates of positive emotion words typically used in clinical and non-clinical samples (~2.74%), including individuals who wrote or talked about deeply emotional experiences (see Pennebaker, Francis, & Booth, 2001, for means across 43 studies). Consistent with previous research (see Kaplow, Shapiro, et al., 2013), children's symptoms of anxiety (MASC), depression (SMFQ), and avoidant coping (AIS) were positively intercorrelated, suggesting that mental health problems and maladaptive coping often occur simultaneously or in combination with one another. Younger children and females were more likely to report symptoms of anxiety (MASC). The number of days between a parent's death and child's participation in the study (time since death) was not related to any variables of interest.

Regression Analyses: Caregivers' Positive Emotion Words and Children's Mental Health

The overarching goal of the current study was to examine whether time (since parent's death) moderated the relation between caregivers' positive emotion words and mental health outcomes as reported by children. We hypothesized that time (since parent's death) would significantly moderate this association, such that caregivers' positive emotion words would be

inversely related to children's anxiety (MASC), depression (SMFQ), and avoidance (AIS), but *only* when more time passed since the parent's death.

Four families had more than one child participate in the study. Because some of our participants are nested within families, Hierarchical Linear Modeling (HLM) analyses are an ideal technique to control for each participant's membership in a family. However, in the current study, we use the General Linear Model rather than HLM because of concerns regarding our already small sample size and statistical power (see Maas & Hox, 2005; Snijders, 2005). Further, all analyses replicated when one child was randomly selected from families in which multiple children had participated. Thus, all children were included in the final analyses.

To test our hypothesis, we conducted separate linear regressions predicting children's reported measures of anxiety (MASC), depression (SMFQ), and avoidant coping (AIS). For all regressions, predictors in the first model included time (since parent's death) and caregiver's positive emotion language; the second model additionally included the two-way interaction between these variables. Time and caregiver's positive emotion language were centered prior to creating the interaction term, as is recommended to reduce multicollinearity among predictors (Cohen, Cohen, West, & Aiken, 2003). For all dependent variables, the inclusion of the two-way interaction resulted in a significant increase in the amount of variance explained; thus, we present results from the second model including the interaction term.

We included children's age and gender as statistical controls because adults are more likely to talk about emotions with older children and to use a greater variety of emotion language with girls compared to boys (Kuebli, Butler, & Fivush, 1995). We additionally included caregiver's reported psychological functioning (BDI; depressive symptoms) as a covariate because research suggests that depression in adulthood can alter use of natural language,

including emotion language (Rude et al., 2004), and can have an impact on children's psychological functioning (Shapiro et al., 2014). Lastly, we controlled for children's use of positive emotion words during the interview, to test whether caregivers' positive emotion words were related to children's psychological outcomes, above and beyond children's own use of positive emotion. Results were virtually identical when children's age and positive emotion words and caregivers' depression scores were entered as covariates in separate models, thus our analyses are reported with only child's gender as a covariate [4].

As shown in Table 2.2, there were no significant main effects of time since parent's death, which suggests that, in the current sample, children's psychological health did not change over this brief period of time. There was a significant main effect of caregiver's positive emotion words on children's levels of depression (SMFQ) such that, regardless of time since parental loss, caregivers' greater use of positive emotion words was associated with less depressive symptoms in children. This main effect of positive emotion was not present in relation to children's anxiety (MASC) or avoidance (AIS), which was consistent with our hypothesis. Lastly, as we expected, the interaction between time since parent's death and caregivers' positive emotion words was significant for all three dependent variables (child anxiety, depression, and avoidant coping).

To decompose these significant interactions, we calculated the simple slopes for each effect using the PROCESS macro for SPSS (Dawson, 2014; Hayes, 2012). Simple slopes were calculated at one standard deviation above and below the means of time since parent's death and caregivers' positive emotion language. These analyses indicated that the inverse associations between caregiver's positive emotion language and children's mental health outcomes were significant only for participants who experienced more time since their parent's death. That is,

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when a greater number of days had passed since the death, caregiver's positive emotion language was inversely related to children's anxiety (MASC), $b = -5.85$, $t = -2.71$, $p = .01$, depression (SMFQ), $b = -1.21$, $t = -3.32$, $p = .002$, and avoidance (AIS), $b = -2.48$, $t = -2.01$, $p = .05$. These associations were not significant when fewer days had passed since the death, $bs \leq 1.94$, $ts \leq 1.28$, $ps \geq .21$ (see Figures 2.1, 2.2, and 2.3).

Further, based on the Johnson and Neyman (1936) technique of significance regions, we were able to determine the exact number of days that must pass before the relation between caregivers' positive emotion language and reductions in children's mental health problems becomes significant: the relation between caregivers' positive emotion language and reductions in children's anxiety, depression, and avoidant coping becomes significant at post-loss days 116.55, 100.47, and 158.87, respectively. These findings have implications for exactly *when* caregivers may most effectively facilitate children's adaptation to loss through positive reminiscing, points we discuss in the following sections.

Supplemental Analyses: Children's Positive Emotion Words and Mental Health

We conducted supplemental analyses to examine whether children's own use of positive emotion words was related to their own psychological functioning. On average, children spoke 89.13 words and included 3.47% of the words used in their discussion were categorized as positive emotion words. We conducted separate linear regressions predicting children's anxiety (MASC), depression (SMFQ), and avoidant coping (AIS). For all regressions, predictors in the first model included time (since parent's death) and children's positive emotion language; the second model additionally included the two-way interaction between these variables. Children's positive emotion words were not related to any of their outcomes (anxiety, depression, or avoidant coping), $bs \leq |.02|$, $ts \leq |.03|$, $ps \geq .48$, and the interaction between children's positive

emotion language and time did not predict outcomes, $bs \leq |.004|$, $ts \leq |.19|$, $ps \geq .24$. Results were consistent when we separately controlled for caregivers' use of positive emotion and depressive symptoms, and children's age and gender. Thus, children's own use of positive emotion words was unrelated to their psychological outcomes.

Discussion

The aim of the current study was to examine positive emotion words (e.g., happy, laugh, joy) as a potential pathway through which caregivers' communication is tied to bereaved children's mental health. Previous research suggests that children who experience warm and empathic interactions with caregivers are less distressed in the aftermath of parental loss (Shapiro et al., 2014). However, prior studies have focused primarily on behavioral measures of parenting and have not examined caregivers' use of language, particularly with regard to positive reminiscing, in relation to child mental health outcomes. We examined whether the relationship between caregivers' positive emotion language and bereaved children's psychological outcomes varied as a function of the time that had passed since the death. Our hypotheses were confirmed, such that we found a negative association between caregivers' positive emotion words and bereaved children's psychological problems, but *only* after more time passed since parental loss.

As a whole, our findings highlight the role that surviving caregivers have in helping children cope with loss (e.g., Kalter et al., 2003; Lin et al., 2004). Of note, in our supplemental analyses, children's positive emotion language was unrelated to their own psychological outcomes, which points to the importance of caregivers' communication for children's adjustment. We specifically found that caregivers' positive emotion words – in a discussion about memories of the deceased - were inversely related to children's anxiety, depression, and avoidant coping symptoms after approximately 100 days (around 3 months) since the loss of the

parent. Our findings corresponded with our expectations, such that the potential benefits of caregivers' use of positive emotion words may not be evident in the immediate aftermath of loss, but are nonetheless linked with reduced psychological distress among their bereaved youth at a later time.

Why is Positive Reminiscing Beneficial to Bereaved Children Over Time?

Our results suggest that parents' positive emotion is associated with children's outcomes only after approximately 100 to 158 days (3-5 months) post-loss. That is, before approximately 100 days post-loss, positive reminiscing may not result in psychological benefits for children. One potential explanation for this finding is that too much positivity in the first few months of parental loss could lead children to feel that their reactions to the death (including anxiety, depressive symptoms, and a general avoidance of death-related conversations) are unhealthy or abnormal. It is important for children to experience validation with regard to their own feelings of sadness and concern in the immediate aftermath of parental death (e.g., Kaplow et al., 2012). In fact, a recent study found that youth are more likely to experience negative psychological outcomes after parental death when their mothers do not appear to be at all sad or depressed (Shapiro et al., 2014). Similarly, the current study suggests that youth may benefit from observing normative levels of sadness or distress in their caregivers in the first few months following the death, with more positive reminiscing occurring after more time has passed.

As more time passes after parental loss, children may become fearful they will forget important features of the parent who died or cherished aspects of their relationship (Kaplow, Layne, et al., 2014a, 2014b). For example, a common grief reaction among bereaved children is the concern that they will forget important distinguishing characteristics, traits, or behaviors of the parent, such as their laugh, voice, or fun memories together. This may be due, in part, to the

notion that their memories are all that they have left of the person (Kaplow et al., in press). Surviving caregivers can keep the deceased parent's memory alive through sharing stories and images with children. Caregivers' ability to recognize and remember the deceased, and help children maintain positive memories, may become more important over time as children begin to worry that they will forget important aspects of the deceased person and/or their relationship.

Why is Parental Positive Emotion Beneficial to Bereaved Children Over Time?

In addition to keeping the deceased parent's memory alive, caregivers' positive emotion may serve other benefits over time. Consistent with the broaden-and-build theory of positive emotions, when individuals are able to see the "good in the bad" or represent experiences with positivity, they are able to think more broadly and organize and make sense of experiences (Fredrickson & Branigan, 2005). Over time, caregivers who use more positive emotion may be better able to help children form narratives around the death that give meaning to the loss experience. Helping children create a narrative that gives them a sense of understanding and purpose surrounding the death may allow children to feel more optimistic about the future (Fredrickson, 2001).

Positive emotions over time might also encourage a closer and more supportive bond between children and caregivers (Bryant et al., 2005; Wildschut et al., 2006). Expression of positive emotion tends to create more cheerful interactions that involve joking, smiling, and laughter. People often report feeling closer to others and rate them as warmer after interactions that elicit happiness and enjoyment (Treger, Sprecher, & Erber, 2013). Children who feel their caregiver is warm and caring may be better able to explore their own emotions and feelings (Black & Urbanowia, 1984; Kranzler, Shaffer, Wasserman, & Davies, 1990; Shear et al., 2007).

Over time, positive interactions may allow children to feel more supported by their caregiver and free to express, rather than avoid, worries or concerns.

What are the Developmental Considerations of Positive Emotional Expression for Bereaved Children? More generally, previous studies with recently bereaved adults have shown that expressions of positive emotion are associated with self-reports of post-loss psychological adjustment in both the short- and long-term (e.g., Bonanno & Keltner, 1997; Ong, Bergeman, & Bisconti, 2004; Pennebaker, Mayne, & Francis, 1997; Tweed & Tweed, 2011). For example, in a sample of individuals widowed within the last 6 months, self-reports of more positive emotions experienced (e.g., "How often in the last month have you felt excited or optimistic?") were associated with less grief, less depression, and greater social support. In another study, people who displayed more genuine laughter and smiles during a discussion about the loss of their loved one were doing better psychologically one year after the loss (Bonanno & Kaltman, 2001; Bonanno & Keltner, 1997).

However, in the current study, we found that children's expressions of positive emotion were not associated with their psychological outcomes, suggesting that positive emotion may not be as helpful for bereaved children compared to bereaved adults. A possible explanation for why positive emotion is not as helpful for children compared to adults could be that young children are not as emotionally intelligent as adults and therefore, may be less able to appraise, express, or regulate useful emotions. Furthermore, children are more likely to rely on external cues of emotions, such as facial expressions or hugs, and these behaviors signal to children how they should feel and how others feel (Brenner & Salovey, 1997). Thus, children's behaviors of smiling or hugging, for example, may be more strongly associated with their psychological adjustment, rather than the words they use to describe their death-related experiences.

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Along these lines, our finding that caregivers' use of positive emotion words is associated with children's psychological outcomes could also be explained by caregivers' behaviors rather than their positive emotion words. Caregivers who used more positive emotion words were probably more likely to display warm and caring behaviors towards their child, and these warm behaviors could instead account for the inverse association between positive emotion words and children's anxiety, depression, and avoidant coping. Previous research using the same sample as reported in the current study found that mothers' warmth and engagement, hugging, and eye contact, were associated with lower distress in children who recently lost a father (Shapiro, Howell, & Kaplow, 2014). Future research should examine the way in which caregivers' verbal *and* behavioral expressions of emotion interact to predict children's psychological adjustment in the aftermath of parental loss.

Limitations and Future Directions

Although we have argued that bereaved children may benefit over time from positive reminiscing, it is important to note that the correlational nature of our data precludes directional or causal inferences. It is possible that better adjusted children have caregivers who tend to express more positive emotion; thus, we cannot conclude whether caregivers' positive emotion predicts children's functioning or whether children's functioning predicts caregivers' positive emotion and reminiscing. Longitudinal studies that examine caregivers' language over time and at multiple points can help to shed light on issues of directionality and causality.

Caregivers' positive emotion was not related to bereaved children's mental health among children who participated in our study before 100 days post-loss. Thus, we believe that caregivers' positive emotion is associated with benefits over time, but the cross-sectional nature of our study limited our ability to draw conclusions regarding the effects of caregivers' positive

emotional expression on youth outcomes over time. We were also unable to address whether the effects of positive emotion lasted beyond a 3-month window of time. Future research should examine the same youth over time to examine the true longitudinal effects of parents' positive emotion.

Additionally, given that this was an observational study in the context of a semi-structured interview, our findings may not generalize to bereaved children and families in natural settings. It is possible that caregivers in our study may have used more positive emotion due to the fact that they were being observed by interviewers. The generalizability of the sample is also unclear given that the majority of children and families were recruited from bereavement support groups (i.e., were simultaneously receiving help and support) and may have had greater knowledge regarding how to speak with their bereaved youth. The small and relatively homogenous nature of our sample (with regard to age of child, relationship to person who died) also precluded us from more sophisticated analyses and the ability to generalize our findings to more diverse populations of bereaved children.

Despite these limitations, our study makes several novel contributions to the field of childhood bereavement by shedding light on how caregivers can help children to reminisce about the deceased in adaptive ways. Additionally, our findings carry implications for screening youth who may be at risk for bereavement-related psychopathology. For example, youth at higher risk for anxiety and depression may have caregivers who are unable to express positive emotion after several months have passed since the time of the death. If replicated in a larger, longitudinal sample, our findings speak to the importance of caregivers' positive emotional expression as a potentially fruitful target for intervention among bereaved youth and families.

Conclusion

Most importantly, we provide evidence that timing of parental positive reminiscing is critical to bereaved children's psychological health. If caregivers engage in positive reminiscing too soon after parental loss, conversations thought to facilitate improvements for children may not be beneficial given that children are expected to feel sad in the immediate aftermath of the death, and these emotions must be validated by the caregiver. Alternatively, if caregivers fail to engage in positive reminiscing with bereaved children at a later point in time, the "critical period" may be lost in which the child is most receptive to parental grief facilitation and healthy psychological adaptation to the loss.

As has been recommended, we examined a potential moderator (time since loss) in the larger context of bereavement, which has implications for understanding when people benefit from bereavement-related treatments (e.g., Hagan, Luecken, Sandler, & Tein, 2010; Layne et al., 2009; Layne, Steinberg, & Steinberg, 2014). Our findings also suggest that a "one-size-fits-all" intervention for bereaved youth may not be beneficial, given that youth may need different intervention components (e.g., positive reminiscing) at different points in time. Positive reminiscing has long been thought of as an effective way to increase positive emotions (Bryant et al., 2005; Wildschut et al., 2006), and among bereaved youth, facilitate a healthy connection to the deceased (Kaplow et al., in press). However, our findings suggest that positive reminiscing may only be beneficial to bereaved youth after a certain amount of time has passed since the death.

To our knowledge, this is the first study to pinpoint a potential "critical period" after loss in which caregivers' positive emotion is inversely tied to children's anxiety, depression, and avoidance. We specifically found that caregivers' positive emotion becomes associated with less

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anxiety, depression, and avoidant coping among children approximately 3 to 5 months following the death. If replicated in a larger, longitudinal sample, our findings have important implications for *how* and *when* surviving caregivers can most effectively help children grieve the loss of a parent.

Our findings, along with those of others (de Groot, Neeleman, van der Meer, & Burger, 2010; Wetherell, 2012), point to the potential utility of family-based therapy in the context of childhood bereavement. For example, our findings suggest that clinical interventions for parentally bereaved children should focus on communication strategies that involve positive emotion such as positive reminiscing over time. Parental use of positive emotion and reminiscing over time can serve the important role of helping children to maintain comforting memories of the deceased, which can serve to reduce separation distress, anxiety, and depressive symptoms (Kaplow et al., 2012). Such parental grief facilitation strategies can also help to encourage children's expression of emotion, buffer feelings of distress, create a sense of healthy connection to the deceased, and promote meaning-making and optimism.

Footnotes

1. Pennebaker and colleagues recommend that any text with fewer than 50 words should be treated with skepticism (see Pennebaker, Boyd, Jordan, & Blackburn, 2015). In the current sample, three caregivers had word counts below 50 (42, 43 and 49, respectively). However, our findings remained virtually identical when we included only the 36 caregivers who used 50 or more words. Thus, we used the full sample of 39 caregivers.

2. The LIWC2015 software was released after we conducted our analyses; however, the positive emotion category is relatively unchanged between 2007 and 2015 and Pennebaker et al. report correlations of .96 between the two versions, suggesting that our results are not likely to differ by version (see Pennebaker et al., 2015).

3. Kaplow, Howell, et al. (2014) found group differences in posttraumatic stress and maladaptive grief between children who experienced the death of a parent from an anticipated versus sudden death; however, both groups were similar in levels of depression ($p > .05$). Our results most likely differ from Kaplow and colleagues because we measured different outcomes, with the exception of depression.

4. Of note, we also had access to caregivers' use of negative emotion language (e.g., sad, grief, unhappy). However, negative emotion words were not included because of their low frequency of usage in caregivers' narratives (less than half of caregivers used negative emotion words), likely due to the nature of the positive interaction task. For the subset of caregivers that used negative emotion words, we found that use of positive and negative emotion language was not related, suggesting that use of one type of emotion was not related to use of the other. However, our analyses remained the same when we controlled for caregivers' use of negative emotion language.

Table 2.1. *Descriptive Statistics and Correlations Among Primary Study Variables*

	1	2	3	4	5	6	7
1. Caregiver's positive emotion language	–						
2. Child's anxiety symptoms (MASC)	-.10	–					
3. Child's depressive symptoms (SMFQ)	-.23	.78**	–				
4. Child's avoidant coping (AIS)	-.14	.61**	.60**	–			
5. Time since parent's death	-.21	-.03	.07	.17	–		
6. Child's age	-.04	-.33*	-.17	-.08	.08	–	
7. Child's gender	.02	-.37*	-.30	.01	.20	.30	–
M	5.50	50.87	5.62	17.97	105.92	9.26	--
SD	2.74	22.31	3.81	11.39	45.74	2.00	--

Note. $N = 39$. Time since parent's death (in days); child's age (in years); child's gender (0 = female, 1 = male). $*p \leq .05, **p \leq .01$.

Table 2.2. *Regression Analysis Predicting Children's Psychological Functioning*

Predictor	Child's Anxiety Symptoms (MASC)			Child's Depressive Symptoms (SMFQ)			Child's Avoidant Coping (AIS)		
	B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Time	-.06	.08	-.12	-.01	.01	-.07	.01	.04	.04
Caregiver's positive emotion language	-1.65	1.23	-.20	-.45	.21	-.32*	-.80	.70	-.20
Time x caregiver's positive emotion language	-.09	.03	-.44**	-.02	.01	-.47**	-.03	.02	-.34*

Note. $N = 39$. Time = time since death (in days). Analyses control for child's gender. $*p \leq .05$, $**p \leq .01$.

Figure 2.1. The interaction between time (days) since parent's death and caregiver's positive
emotion in predicting children's symptoms of anxiety (MASC)
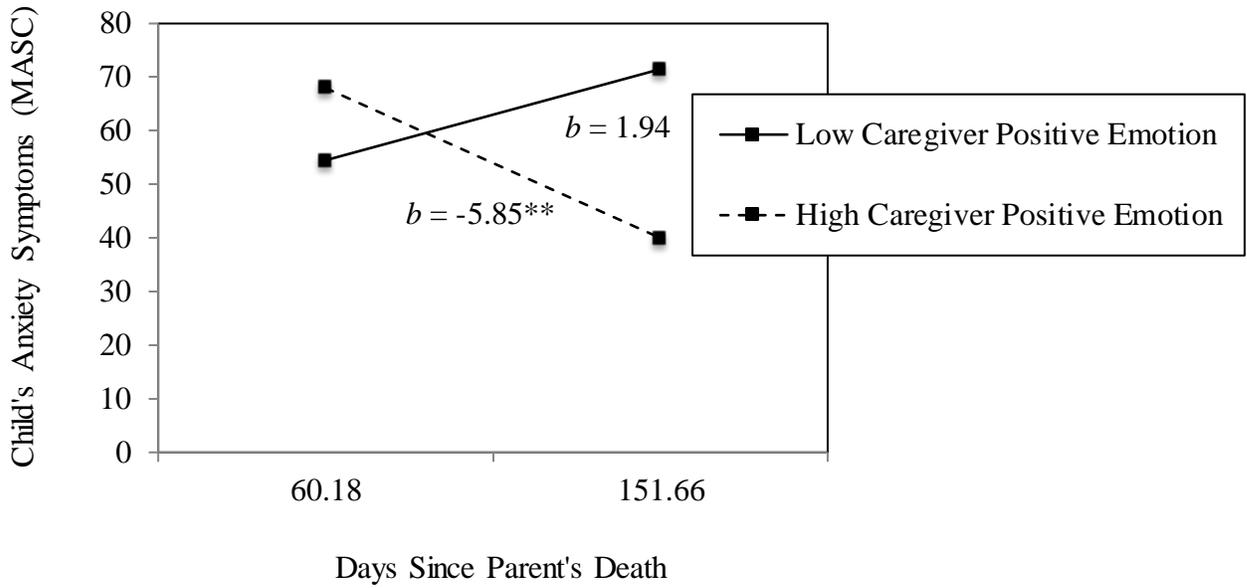
Figure 2.2. The interaction between time (days) since parent's death and caregiver's positive
emotion in predicting children's symptoms of depression (SMFQ)
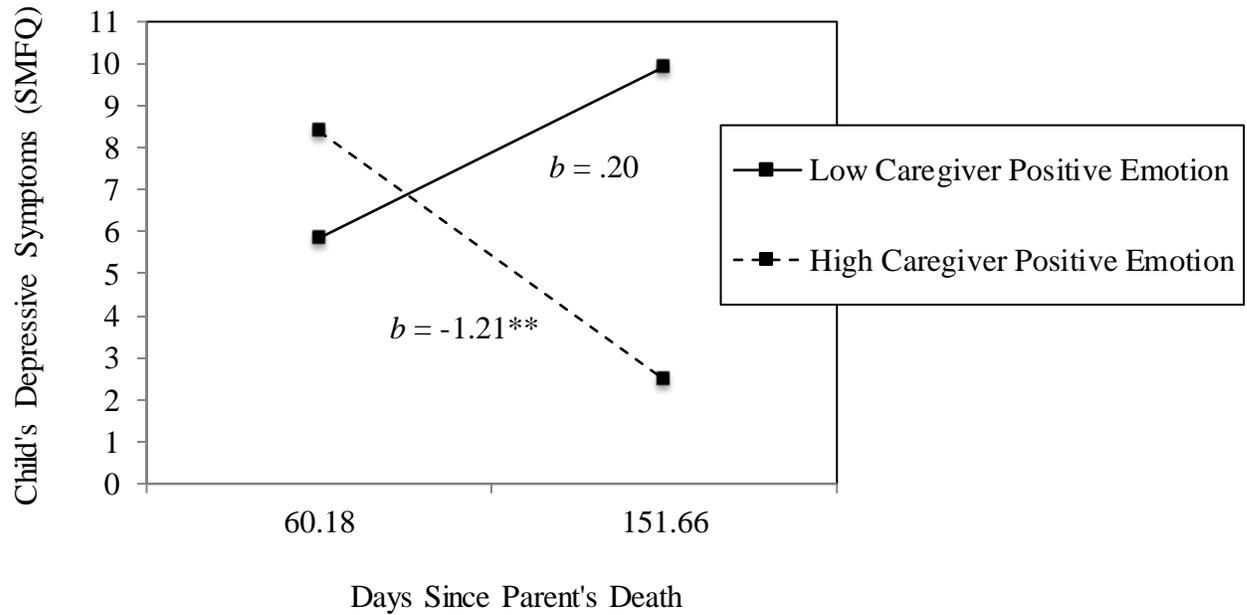
Figure 2.3. The interaction between time (days) since parent's death and caregiver's positive emotion in predicting children's symptoms of avoidant coping (AIS)
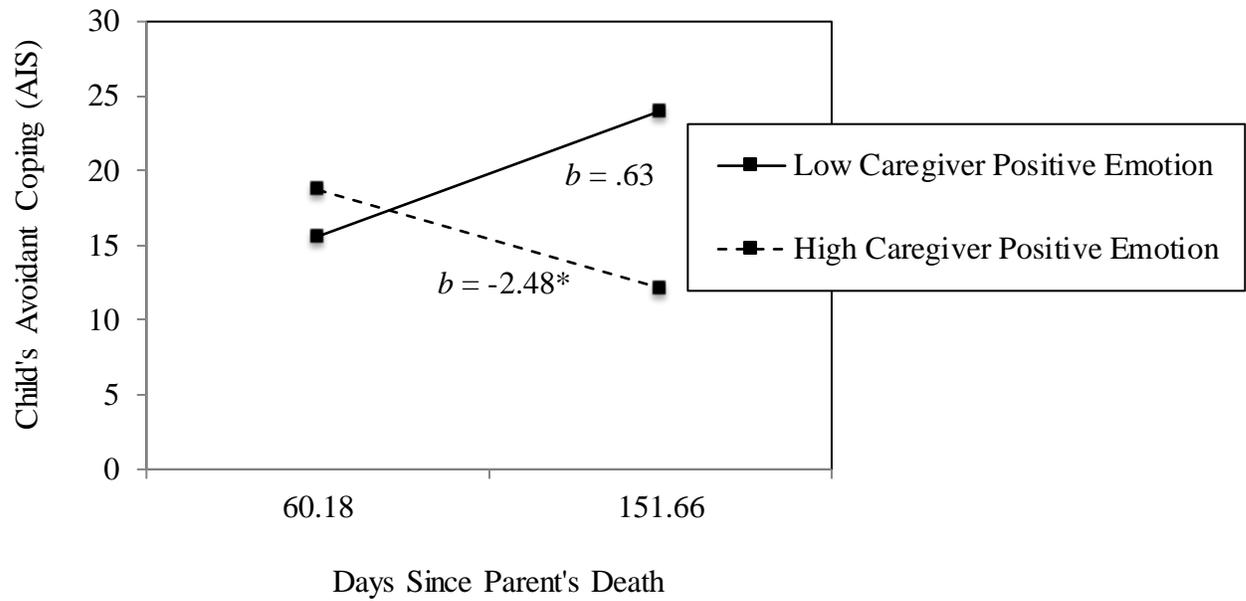
Figure Captions

Figures 2.1, 2.2, 2.3. The interactions between time since parent's death and caregiver's positive emotion in predicting children's symptoms of anxiety (MASC), depression (SMFQ), and avoidant coping (AIS). Higher scores on these measures indicate poorer psychological health. Following procedures recommended by Cohen et al. (2003), regression lines are plotted at one standard deviation above and below the mean of caregiver's positive emotion and time since parent's death. $*p \leq .05, **p \leq .01$.

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CHAPTER 4: (Study 3) Dyadic and longitudinal effects of emotional expression: Changes in emotion language across the transition to parenthood predict postpartum well-being

Expressing emotions in times of stress is associated with a wide-range of health benefits (see Christophe & Rimé, 1997; Rimé, 2009; Smyth, Pennebaker, & Arigo, 2012). For instance, interventions that encourage people to write about stressful experiences in an emotional way improve peoples' psychological health and well-being, even over extended periods of time (e.g., Bastian, Jetten, & Ferris, 2014; King & Miner, 2000; Rimé, 2007; Smyth et al., 2012; Stanton et al., 2000). Disclosing emotional experiences can also strengthen social bonds. People tend to feel more support and trust when they verbalize their emotions to others, especially when the recipient behaves in warm and comforting ways (Pennebaker, Zech, & Rimé, 2001).

Responses to Emotional Expressiveness in Romantic Relationships

Research on emotional expression in romantic relationships has generally focused on individuals' verbal or behavioral responses to a partner's shared emotional material. For instance, to simulate a real-word interaction between couples, Gable, Gonzaga, and Strachman (2006) prompted individuals to share a recent positive event and recorded spouses' responses to the shared news. Enthusiastic, supportive, and positive responses from a partner predicted greater relationship satisfaction, commitment, and passionate love (Gable et al., 2006; Gable, Reis, Impett, & Asher, 2004). Gable and colleagues' results suggest that sharing positive emotions with a partner, and receiving warm and empathic responses from that partner, facilitate relationship closeness and happiness.

Other research demonstrates that spouses' responses to negative emotional content also predict individuals' well-being and relationship stability (e.g., Gottman, 1994; Karney & Bradbury, 1997; Markman, Rhoades, Stanley, Ragan, & Whitton, 2010). For instance, Gottman and colleagues consistently find that people who share negative emotional material in marital interactions experience less happiness and relationship satisfaction when partners respond with displays of contempt and anger (e.g., Gottman, Coan, Carrere, & Swanson, 1998). Although this research is informative and sheds light on individuals' health and happiness as a function of their partners' responses to shared emotional content, much of this research fails to account for the health and happiness of the recipient or person who hears the emotional content.

Dyadic Implications of Emotional Expressiveness on Health and Well-Being

Previous studies demonstrate that people share both their positive and negative emotional experiences, and that romantic partners are one of the most common recipients of social sharing (e.g., Duprez, Christophe, Rimé, Congard, & Antoine, 2014; Rimé, 2009). For example, when happy and joyful events occur, people often feel positive emotions and share the details of these experiences with a partner or spouse (Gable, Reis, & Elliot, 2000; Langston, 1994). Similarly, people turn to partners in times of stress to talk through and process emotional content (Simpson & Rholes, 2012). Although it appears clear that people gain intrapersonal and interpersonal benefits from sharing emotions, much less is known about the effects of these conversations on a partner. There is reason to believe that emotional expression is tied to health outcomes between couple members, but research is mixed as to how displays of emotion might affect the person who receives the emotional information.

On one hand, both relationship partners may experience similar benefits from shared emotional content. According to the theory of the "social sharing of emotions", when people

share emotions in a situation in which another person can provide emotional support, both parties report feeling closer to each other and even decrease the physical distance between them (Christophe & Rimé, 1997). In a literature review, Collins and Miller (1994) found overwhelming evidence that sharing emotions plays a central role in the maintenance of close and intimate relationships, such that people tend to be perceived as more likeable when they share more versus less emotion, people share emotions more with people they like, and people like others as a result of sharing emotions with them.

On the other hand, research finds that recipients sometimes feel worse after someone emotionally discloses to them. Expressions of negative emotion from one person can trigger similar feelings in the other person, such that if one person expresses worry, the other person feels worry (i.e., emotional contagion; Hatfield, Cacioppo, & Rapson, 1993). People also sometimes feel worse after exposure to positive emotions. Two theories (the comparison process and self-evaluation maintenance model) posit that people often feel threatened by others' displays of positive emotion, especially when the content of the shared emotion is self-relevant. People tend to evaluate themselves and their own emotions in comparison to others' emotions (Beach & Tesser, 1995; Tesser, Millar, & Moore, 1988; Festinger 1954). For example, in the context of the transition to parenthood – a situation that is relevant to both members of a romantic couple – expressions of positive emotion (excitement) from a wife could elicit negative emotions (envy or anger) in a husband if he feels less enthusiastic or excited.

The goal of the current study was to examine the dyadic implications of expressions of emotion in close relationships, a topic that has received less attention in the emotion and relationship literature. The current study examined the dyadic effects of emotional expression in a context that often elicits both positive and negative feelings in people - the transition to

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parenthood. The transition to parenthood is a time of happiness and excitement, but it is nevertheless a unique stressor that can negatively impact expectant parents and their intimate relationships (e.g., Cowan & Cowan, 2000; Doss, Rhoades, Stanley, & Markman, 2009). Expectant parents often feel joy over the prospect of a new baby as well as worry and fear about becoming parents (Besser & Priel, 2003; Cowan & Cowan, 2000; Doss, Rhoades, Stanley, & Markman, 2009). Given that people often experience benefits from sharing their own emotions, expressions of emotion as people discuss major life transitions, such as parenthood, are likely associated with greater well-being. However, less is known as to whether significant others benefit in the same way when a partner expresses positive and negative emotions.

The Current Study

In a sample of 29 heterosexual couples, we examined the dyadic and longitudinal effects of emotional expression across the transition to parenthood. As mentioned, most couples are excited and overjoyed about the prospect of new parenthood, but also feel unsettled over the major life transition. In the current study, expectant couple members independently responded to open-ended items designed to tap into excitement and worry with regard to new parenthood. We specifically analyzed individuals' inclusion of positive and negative emotion words in open-ended responses across the prenatal period.

The Linguistic Inquiry and Word Count Program was used to analyze participants' open-ended responses to items about parenthood (LIWC; Pennebaker, Booth, & Francis, 2007). The LIWC is an extensively validated tool for analyzing the natural words people use to talk about emotional experiences, including pregnancy and the transition to parenthood (Nelson, Robbins, Andrews, & Sweeny, 2015; Pennebaker, Mehl, & Niederhoffer, 2003; Tausczik & Pennebaker, 2010). In the current study, we focused on the two broad LIWC word categories associated with

emotionality that have been extensively studied in previous research (Tausczik & Pennebaker, 2010): positive emotion (e.g., love, joy) and negative emotion (e.g., worried, anxious).

We had three primary goals for the current research. The first goal was to test whether individuals' expressions of positive and negative emotion were tied to self-reports of postpartum psychological (stress and depression) and interpersonal health (relationship satisfaction). Given the well-documented effects of emotional expression on individuals' health and relationship bonds, we expected people who were more emotionally expressive in the prenatal period (used more positive and negative emotion language) to report less postpartum stress and depression and greater relationship satisfaction.

The second goal of the current study was to test the dyadic nature of emotional expression in close and intimate relationships; that is, how one person's emotional expression is associated with a romantic partner's health and relationship quality. Relatively little is known about the dyadic effects of emotional expression; however, there are reasons to expect that couples' emotional expression and health may be intertwined. Some research suggests that people on the receiving end of emotional expression also experience benefits such as feelings of closeness and trust, while other research suggests that emotional conversations elicit negative feelings in the recipient. Based on these contradictory results, and that most research on emotional expression focuses on people outside of romantic relationships (e.g., college roommates; Erb, Renshaw, Short, & Pollard, 2014), our examination of the dyadic nature of emotional expression in romantic relationships was largely exploratory.

Finally, the third goal of the current research was to test whether *changes* in emotional expressiveness across a major life transition, such as parenthood, were associated with individuals' and partners' health and relationship outcomes. The longitudinal nature of the

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current study made it possible to assess whether *changes* in emotional expressiveness in the prenatal period, in addition to initial or baseline levels, are particularly relevant to the way people move through and adjust to major life transitions.

Methods

Overview of Study Design

First-time expectant couples participated in a five-wave longitudinal study. The first four prenatal sessions were conducted in our laboratory at approximately weeks 12, 20, 28, and 36 gestation. Participants completed a follow-up session online at approximately three-months postpartum. Free-response items were completed at the four prenatal sessions; psychological and relational outcomes were assessed at the three-month postpartum session (see *Figure 3.1* for basic data structure).

Participants

Twenty-nine pregnant women and their male partners ($N = 58$) expecting their first child participated in a longitudinal study of psychological and hormonal changes across the transition to parenthood (see Edelstein et al., 2015, for additional details) [1]. Couples were recruited via online and print advertisements and they received $25 per session ($50/couple) for participating. Inclusion criteria for the study were that, both couple members were between 18 - 45 years old, first-time parents, living together, and currently within the first two trimesters of pregnancy. We did not restrict participation based on couples' method of conception (e.g., in vitro fertilization). Two male participants had a child from a previous relationship, but this was the first child together for all couples and the first pregnancy for all female participants. All 29 couples (58 individuals) in the current study participated in at least two and up to four prenatal visits. Three additional couples began the study but are not included here because they: (1) were not in fact

first-time parents, (2) terminated the pregnancy because of chromosomal abnormalities, or (3) did not respond to our requests to schedule subsequent sessions.

All participants resided in the USA. Women in the current sample ranged in age from 20 to 38 at the beginning of their participation ($M = 29.41$ years, $SD = 3.70$); men ranged in age from 21 to 42 ($M = 30.48$ years, $SD = 4.01$). Participants self-reported their race/ethnicity as 74.1% Caucasian, 3.4% Black or African American, 6.9% Asian American, 5.2% Hispanic, and 5.2% mixed or other ethnicities (5.2% did not report their race/ethnicity). The majority of couples were married or engaged (90%). The median household income was $50,000-$75,000 and the sample was well educated, 69% of participants had at least a college degree.

Prenatal Laboratory Sessions

All procedures were reviewed and approved by the University of Michigan Institutional Review Board. Prenatal laboratory sessions were scheduled, according to couples' due dates, at approximately 8-week intervals (roughly weeks 12, 20, 28, and 36 gestation). These intervals were modeled after Fleming, Ruble, Krieger, and Wong (1997), with the goal of capturing psychological changes during each trimester and at the very end of pregnancy. However, due to the difficulty of recruiting couples earlier in the first trimester, our study began at 12 weeks and we targeted the beginning of the ranges used by Fleming et al. (1997) for subsequent sessions. Couples were tested throughout the year, with initial sessions occurring between July 2011 and November 2012. Several couples began the study during the second trimester of pregnancy, and some did not complete the last session because their baby was born before their scheduled session, so there was some variability in the number of sessions completed by each couple (mean number of sessions = 3.62, SD = 0.62). Three couples completed two sessions, seven couples completed three sessions, and 19 couples completed all four sessions.

Couples came to the laboratory together for each session. Informed consent was obtained during the initial session and participants were told that they could withdraw from the study at any time without penalty. Prenatal sessions included completion of several psychological measures and free-response items.

Free-Response Items. As part of the four prenatal sessions, participants responded to several free-response items designed to tap into thoughts about parenthood and worries or concerns related to pregnancy. The free-response items were: "*Do you anticipate any challenges in the next month related to your (or your partner's pregnancy)?*", "*Do you anticipate any other challenges in the next month?*", "*Have you experienced any particularly positive events in the last month?*" and, "*Please describe any specific stressors in the last month that you have been upset about because they happened unexpectedly.*" Participants were asked the same free-response items during each of the four prenatal sessions and the questions were the same between couple members. Identical free-response items across each prenatal session allowed us to assess individuals' changes in emotion language across the prenatal period, at approximately weeks 12 through 36.

Postpartum Assessment

An online postnatal follow-up questionnaire was emailed to participants ($n = 27$ couples) approximately three and nine months after their scheduled due date ($M = 14.36$ weeks; $SD = 2.52$, for the first follow-up, and $M = 40.87$ weeks; $SD = 3.32$, for the second). Three months postpartum was chosen as the initial time of the follow-up time because it is a common time for initial follow-up sessions in studies on the transition to parenthood (e.g., Belsky & Rovine, 1990) and because it falls within the most common time for the development of postpartum depression (Gavin et al., 2005) and the time when many parents return to work (which can increase stress;

Feldman, Sussman, & Zigler, 2004). Because our response rate was somewhat lower for the nine-month follow-up ($n = 24$ couples completed this follow-up) and because we expected prenatal effects to be strongest earlier during the postpartum period, only data from the three-month follow-up questionnaire are included in the current report. Participants were asked to complete the postnatal questionnaire from home and independently from their partner, with assurance that their responses would not be shared with their partner. Although participants completed this portion of the study from home, we stayed in contact via phone and email and reviewed survey responses to ensure that directions were clear and that participants understood the questions (Burke & Miller, 2001).

Postpartum Perceived Stress. Postpartum perceived stress was measured with the 10-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), which measures the amount of global stress felt by individuals ($\alpha = .91$). The PSS has established acceptable psychometric properties for a diverse range of populations (Lee, 2012). Respondents indicated how often in the last month they felt each statement, using a 5-point scale ranging from 1 (*never*) to 5 (*very often)* on items such as, "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?" and "In the last month, how often have you felt that you could not cope with all the things that you had to do?" Scores were averaged and higher scores indicate more perceived stress.

Postpartum Depression. Postpartum depression was measured with the 10-item Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987), which assesses participants' symptoms of depression. The EPDS ($\alpha = .88$) has shown good internal validity and reliability for detecting postpartum depression in new mothers and fathers (e.g., Matthey, Barnett, Kavanagh, & Howie, 2003). Participants were asked to indicate how often in the past 7

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days they felt depressive symptoms (e.g., "I have blamed myself unnecessarily when things went wrong" and "I have been anxious or worried for no good reason"), on a 4-point scale of increasing endorsement. Scores were averaged and higher scores indicate more postpartum depressive symptoms.

Postpartum Relationship Satisfaction. Postpartum Relationship satisfaction was assessed with subscales from the widely used Investment Model Scale (IMS; Rusbult, Martz, & Agnew, 1998). The 10-item satisfaction subscale ($\alpha = .97$) includes items such as, "My relationship is much better than others' relationships" and "Our relationship does a good job fulfilling my needs for intimacy, companionship, etc." Respondents indicated the degree to which they agreed with each statement, using a 7-point scale ranging from 1 (*do not agree at all*) to 7 (*agree completely*). Scores were averaged and higher scores indicate greater relationship quality.

Text Analysis of Free-Response Items

For text analysis, we included all of participants' responses to the free-response items asked at each of the four prenatal sessions. As mentioned, the free-response items were: "*Do you anticipate any challenges in the next month related to your (or your partner's pregnancy)*?", "*Do you anticipate any other challenges in the next month?*", "*Have you experienced any particularly positive events in the last month?*" and, "*Please describe any specific stressors in the last month that you have been upset about because they happened unexpectedly.*"

Trained research assistants followed the text analysis guidelines of the Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, Boyd, & Francis, 2015) to put participants' responses into a format that could be text analyzed. Non-emotional uses of words such as "like" or "well" were coded as fillers and nonfluences, so they were not counted as emotion words. All

discussion transcriptions were checked for spelling errors and the total word counts across the prenatal period were on average 67.22 at Time 1, 58.05 at Time 2, 64.06 at Time 3, and 72.34 at Time 4.

Free-response items were analyzed using the LIWC program (see Pennebaker, Booth, et al., 2015; Pennebaker, Boyd, Jordan, & Blackburn, 2015). The LIWC provides over 80 different psychological and grammatical categories as a percentage of total words and has been extensively validated as a tool to examine the psychological implications of the words people use to talk about emotional experiences (Pennebaker et al., 2003). The current study focused on two content categories deemed by past research to be particularly relevant to mental health (e.g., Pennebaker et al., 2007; Pennebaker & Chung, 2007): positive emotion words (e.g., happy, laugh) and negative emotion words (e.g., sad, angry). A total of 620 and 744 words are included in the positive emotion and negative emotion categories, respectively. Below are sample excerpts from participants' responses (emotion words are italicized):

Do you anticipate any challenges in the next month related to your (or your partner's pregnancy)?"

"My wife is feeling larger, less mobile, and less *beautiful* – all of which are likely to be *challenges*. I have thought through approaches to assist her in all these areas, including planning for things like a prenatal massage, buying nail polish to paint her toes, picking things up for her, etc. We will also be having family coming over which is a *stressor* as these individuals are expected to see and interact with the baby. It is also a busy time for me at work, which creates added *strain*." - Husband

"We're getting to the point that people are asking about baby showers and whether we've settled on a name, as well as formulating our birth plan and starting to think in earnest about what labor and delivery might be like. There will be some *challenges* inherent in navigating large family events (*worrying* that people will get along, ceding control to the friend who is planning the shower). I also wonder if it might be a *challenge* to keep the name we've chosen "under wraps," as we'd like it to be a *surprise* but it's sometimes hard to keep *good* news to yourself! The *challenge* I see in articulating a birth plan, attending birthing classes et cetera is that I would like to find a balance between feeling well-informed, and *scaring* myself into *worrying* too much - there's a lot of information out there, and I think there might be such thing as too much of a *good* thing." - Wife

Have you experienced any particularly positive events in the last month?

"We had a very *nice* baby shower and it was *great* to see and experience all of the *support* and *enthusiasm* from family and friends." - Husband

"We had two baby showers, one given by my husband's side of the family and one given by my closest girlfriends for my side of the family as well as other friends and our church family. We had a *wonderful* time, and people were extremely *generous* in *helping* us celebrate the arrival of our baby. We also took a week to go up north and spent the time with my parents and my brother. We decided we wanted one last baby-*free* vacation! The cottage at which we spent the week is my *favorite* place in the world, so being able to *relax* and spend time with family there for a week is always a *positive* event." – Wife

Data Analytic Plan

The Statistical Package for the Social Sciences (SPSS, version 22) was used to conduct all analyses. For preliminary analyses, mean differences were assessed with independent samples *t*-tests and associations were assessed with bivariate correlations. Our data had a multilevel structure: participants were assessed repeatedly over time (e.g., multiple measures of free-response items) and were nested within couples (dyads), which meant that individual observations could not be treated as independent. To account for this multilevel structure and to model the interdependence of individuals within dyads, we computed dyadic growth curve models using multilevel modeling (MLM) procedures established for dyadic data analysis with repeated measures (i.e., SPSS Mixed; Kenny, Kashy, & Cook, 2006). Dyadic growth curve models provided us with estimates of change over time while still accounting for the statistical dependence of couples (Kashy & Donnellan, 2008).

MLM estimates both *actor effects* and *partner effects* while adjusting for interdependency and allowing both within-person (or within-couple) and between-person (or between-couple) effects to be simultaneously calculated. In the current study, the *actor effect* is the association between an individual's prenatal changes in emotion language and his/her postpartum psychological or relational outcomes. The *partner effect* is the association between an

individual's prenatal changes in emotion language and his/her partner's postpartum psychological or relational outcomes. Additionally, MLM can accommodate missing data at the within-person level and observations that are unevenly spaced (e.g., assessments that occur at different weeks for different participants); thus, this statistical technique provided powerful and reliable estimates of changes over time.

Following recommended procedures by Kenny et al. (2006), we contrast-coded gender as (-1 = men, 1 = women) and we grand-mean centered predictor variables. Conceptually, we were interested in whether changes in emotion language predicted postpartum outcomes (see *Figure 3.2* for analytical model); however, because the model is correlationally based, it is recommended that the "over-time" value be treated as the dependent variable. Thus, predictor variables were actor/partner stress, depression, and relationship satisfaction. Changes in positive and negative emotion words served as dependent variables. We used week of pregnancy as our repeated measure of time, such that the estimate (slope) for time corresponds to the extent to which positive or negative emotion language changes over time. We centered the time variable at the initial assessment of the study (~12 weeks of pregnancy); thus values for the intercept in each model correspond to an individual's average positive or negative emotion words at the beginning of the study.

Results

Preliminary Analyses

Means, standard deviations, and correlations among positive and negative emotion words at each of the four prenatal time-points are presented in Table 3.1. Positive emotion words were positively correlated between husbands and wives at Time 4 (at approximately 36 weeks of pregnancy) and negative emotion words were positively correlated between husbands and wives

at Time 1 (at approximately 12 weeks of pregnancy) and Time 3 (at approximately 28 weeks of pregnancy). These significant correlations suggest that, at some points across the prenatal period, men and women had similar rates of positive and negative emotion language usage.

In Table 2, means, standard deviations, and correlations are presented by gender among the postpartum variables (collected at approximately three-months postpartum). Overall, there were no gender differences in the postpartum outcomes: stress, $t(54) = -.36$, $p = .71$, depression, $t(54) = .53$, $p = .60$, relationship satisfaction, $t(54) = .38$, $p = .71$. However, within dyads (presented in the bold diagonal in Table 2), relationship satisfaction was positively correlated between men and women, such that couple members had similar levels of relationship satisfaction at the three-month postpartum assessment. Postpartum stress and depression were not significantly correlated between men and women; however, women's relationship satisfaction was negatively associated with men's perceived stress.

We additionally examined whether potential covariates—participants' age, the sex of the infant, and the timing of the postpartum assessment—were associated with any of our key variables. These variables were largely unrelated to postpartum outcomes (stress, depression, relationship satisfaction) for men and women, and they were unrelated to men and women's emotion language (positive and negative) at each of the four prenatal time-points. In the interest of parsimony, we report subsequent analyses without covariates.

Multilevel Modeling (MLM) Analyses

We first tested a basic model (not tabled) that included only participants' positive emotion and negative emotion words (as outcome variables) predicted by time (the week of pregnancy), to examine whether use of emotion words in free-response items significantly changed across the prenatal period for men or women. For both positive and negative emotion

language, the main effects of time and gender were not significant ($bs \leq$ -.03, SEs $\geq$ .19, $ts \leq$ .12, $ps \geq$ .23), such that there was not evidence to indicate that husbands and wives significantly differed from each other in emotion language at the start of the study, or that husbands and wives' emotion language changed (increased or decreased) significantly over time (i.e., over the prenatal period).

Next, we tested a two-intercept model to examine the associations between emotion words and postpartum outcomes for men and women separately, and this model included the predictors of stress, depression, and relationship satisfaction. As a reminder, conceptually, we were interested in whether changes in emotion language predicted postpartum outcomes; however, because the model is correlationally based, it is recommended that the "over-time" value be treated as the dependent variable. Thus, predictor variables were actor/partner stress, depression, and relationship satisfaction. Positive and negative emotion words served as dependent variables. This model allowed us to examine *actor* and *partner* associations between emotion language and postpartum outcomes for husbands and wives. Further, we were able to determine whether any changes in emotion language across the prenatal period were predicted by individuals' and/or their partners' postpartum outcomes of stress, depression, and relationship satisfaction.

Postpartum Perceived Stress. First, we examined both partners' reports of *postpartum perceived stress*. As shown in Table 3.3, the left and right panels reflect participants' use of positive and negative emotion words, respectively. The top panel reflects the way in which wives' own and her partner's postpartum stress predicts emotion language on average (the main effects of actor/partner stress) as well as across the prenatal period (interactions between time

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and actor/partner stress). Similarly, the bottom panel reflects the way in which husbands' own and his partner's postpartum stress predicts emotion language on average and across time.

There were two significant main effects of actor and partner stress, such that men who expressed more negative emotion on average (not across time), and men whose wives expressed more negative emotion, reported higher levels of postpartum stress. It appears that men may feel more stressed in the postpartum if they or their wives express more negative emotion in the context of discussions of pregnancy; however, in these same pregnancy discussions, we found that husbands' *changes* in negative emotion across time were associated with his less postpartum stress. That is, in the over-time analyses, we found that husbands' increases in negative emotion across the prenatal period were associated with (his) self-reports of lower postpartum stress. Positive emotion language was unrelated to reports of postpartum stress in both men and women. In the discussion, we touch on why general use of negative emotion words versus changes in negative emotion words, might be differently associated with postnatal outcomes for men. More specifically, we discuss why *changes* in negative emotion language appear to be more helpful for fathers in the postpartum period.

Postpartum Depression. We next examined reports of *postpartum depression* from both couple members. As shown in Table 3.4, the left and right panels reflect participants' use of positive and negative emotion words, respectively. The top panel reflects the way in which wives' own and her partner's postpartum depression predicts emotion language on average (the main effects of actor/partner depression) as well as across the prenatal period (interactions between time and actor/partner depression). The bottom panel reflects the way in which husbands' own and his partner's postpartum depression predicts emotion language on average and across time.

The significant main effects in Table 3.4 suggest that women who used more positive emotion reported more postpartum depression and, when both husbands and wives used more negative emotion, their partners reported greater levels of postpartum depression. These effects mirror the postpartum stress findings reported above, such that stable expressions of emotion language from oneself or a partner appear to be associated with worse psychological outcomes at the postpartum period. Over time analyses, however, suggest that prenatal increases in women's positive emotion words were associated with (her) self-reports of lower postpartum depression, although women reported more postpartum depression when husbands increased in positive emotion over the prenatal period. These across time analyses indicate that people may experience benefits from their own changes in emotion language across the transition to parenthood; however, people appear to be worse off when their partners' language changes over the transition to parenthood.

Postpartum Relationship Satisfaction. Finally, we examined reports of *postpartum relationship satisfaction*. In Table 3.5, the left and right panels reflect participants' use of positive and negative emotion words, respectively. The top panel reflects the way in which wives' own and her partner's postpartum relationship satisfaction predicts emotion language on average (the main effects of actor/partner relationship satisfaction) as well as across the prenatal period (interactions between time and actor/partner relationship satisfaction), and the bottom panel reflects the way in which husbands' own and his partner's postpartum relationship satisfaction predicts emotion language on average and across time.

There were two significant main effects of actor and partner relationship satisfaction: wives reported less satisfaction when they used more positive emotion and when their husbands used more positive emotion, which again speaks to our previous findings that stable levels of

emotion language are tied to less than ideal postpartum outcomes. Furthermore, across time, wives' increases in positive emotion words were associated with (her) higher relationship satisfaction and her husband's lower relationship satisfaction. Negative emotion language was unrelated to reports of postpartum relationship satisfaction in men and women. As with the previous set of across-time results above, positive outcomes appear to be tied to one's own changes in emotion language, but partners' changes in emotion language may not be as beneficial to postpartum outcomes.

Discussion

The goal of the current study was to examine dyadic and longitudinal connections between expectant parents' use of emotion words and self- and partner-reported postpartum outcomes. Most importantly, our findings provide insight into why some individuals might adjust better than others during the transition to parenthood. Some people might be more naturally inclined to increase or decrease in their own emotional expression as they discuss stressors and challenges related to parenthood and these changes appear to be associated with well-being in the postpartum period. We found three major themes from the results of the current study: 1) Individuals and their partners' average or stable levels of emotional expression were associated with more postpartum stress, more postpartum depression, and less postpartum relationship satisfaction, 2) Changes (increases or decreases) in individuals' emotion language was associated with self-reports of less postpartum stress, less postpartum depression, and greater postpartum relationship satisfaction and, 3) Individuals were more likely to experience worse postpartum outcomes when their partner displayed changes in emotion language across the prenatal period. Together, we found that expectant parents benefit the most postnatally from their own changes in positive and negative emotion language across the transition to parenthood.

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Why aren't average or stable levels of emotion language helpful?

The associations between men and women's baseline (average) levels of emotional expression (both positive and negative) and postpartum outcomes suggests that, at least in the case of expectant parents, stable levels of emotional expression across the transition to parenthood are associated with poor postpartum outcomes for themselves and their partners. For example, we found that men who expressed more negative emotion in general, and men whose wives expressed more negative emotion, reported higher levels of postpartum stress. Additionally, women reported less satisfaction and more depression when they used more positive emotion and when their husbands used more positive emotion.

Expectant parents might not benefit from stable expressions of emotion across the transition to parenthood because unchanging levels of emotion could suggest that individuals are not processing or are unaware of the ensuing stressors and challenges that parenthood will bring. For example, expectant parents who remain equally nervous or worried from the beginning of pregnancy to the end of pregnancy might feel overwhelmed in the postpartum time because they were unable to process and acknowledge these feelings prior to the arrival of the baby. On the other hand, people who become more excited or more nervous across the transition to parenthood might already be processing the pressures and challenges they will face and in turn, most likely experience better adjustment in the postpartum period.

Why are one's own changes in emotional expression helpful?

Our findings are consistent with research documenting that people feel better when they are able to express emotional material, even to a partner. For instance, individuals' experienced less anger and more forgiveness toward a partner when they wrote an emotionally expressive letter to a spouse who engaged in extramarital affairs (Gordon, Baucom, & Snyder, 2004). Both

husband and wives' increases in emotional expression over time predicted self-rated positive postpartum outcomes: Husbands' increases in negative emotion were associated with self-reports of less postpartum stress and wives' increases in positive emotion were tied to self-rated lower levels of depression and increases in relationship satisfaction. These results imply that men may have more to gain from expressions of negative emotion and women may have more to gain from expressions of positive emotion. Men appear to be less likely to share or express emotions because of the cultural narrative that men should be emotionally tough (McLean & Anderson, 2009). Alternatively, women are thought to be overly emotional and naturally able to share their emotions. Perhaps when men are able to express the more tough emotions, such as sadness or hurt, benefits are more pronounced for men compared to women because men's emotional expression occurs less often and is less accepted. Furthermore, only women's emotional expression was tied to indicators of relationship quality, which could mean that women's emotional expression is more closely tied to the outcomes of the relationship as a whole.

Why aren't partners' changes in emotional expression helpful?

Our findings provide preliminary support for the hypothesis that recipients (spouses) may not always benefit from a romantic partner's emotional expression in expected ways. Previous findings on this topic have been somewhat inconsistent, with some studies reporting that emotional expression brings people closer together (Christophe & Rimé, 1997) and other studies suggesting that people on the receiving end of emotions may feel worse (e.g., comparison process theory, Hatfield, Cacioppo, & Rapson, 1993; Beach & Tesser, 1995; Tesser, Millar, & Moore, 1988). Our findings are consistent with the theory of the social comparison process. We found partner effects only for changes in positive emotion language across the transition to parenthood. Wives' prenatal increases in positive emotion were associated with lower

relationship satisfaction in men and further, husbands' prenatal increases in positive emotion predicted higher postpartum depression in women. According to the comparison process model, people may feel threatened or even envious if a partner expresses emotions that are inconsistent with their own feelings, especially in situations that are self-relevant (Beach & Tesser, 1995; Tesser, Millar, & Moore, 1988). Thus, in the current study, partners' displays of positive emotion may have been detrimental to the health of men and women who feel less excited and more worried about parenthood compared to their partner.

Limitations and Future Directions

It is important to note the unique characteristics of our sample that could have influenced our results. First, our sample is relatively small with 27 couples and homogenous in terms of race, education, and socioeconomic status, so all findings should be interpreted with caution (Martin, Hamilton, Osterman, Curtin, & Mathews, 2013). The relatively small size of our sample may have limited our ability to detect significant prenatal changes in emotion words across time. It should be noted, however, that other studies have found dyadic effects between romantic couples in similar (even smaller) sample sizes (e.g., Burr, Hubler, Larzelere, & Gardner, 2013). Our sample limits us from making generalizations about race, class, and education and our findings might only be generalizable to a group of individuals with more social privilege and not the larger population of first-time expectant parents. Future research should attempt to replicate our findings in larger sample sizes of more diverse couples to determine if these associations can be extended to other contexts.

Moreover, two people tend to become more emotionally similar over time, and these similarities contribute to more cohesion, trust, and empathy in relationships (i.e., emotional contagion and convergence; Anderson, Keltner, & John, 2003; Hatfield et al., 1993; Sels,

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Ceulemans, Bulteel, & Kuppens, 2016). We did not account for individuals' relationships length; however, people in longer relationships may have been more similar to each other with respect to emotional expression. Future research should examine, or even control for, couples' rates of change in emotional expression over time to account for the natural conversion that may occur between two individuals.

Future research should also examine whether the beneficial effects of emotional expression persist over extended periods of time. In the current study, we made predictions about the associations between emotion language and outcomes immediately after the birth of a child. More extensive follow-up data across the transition to parenthood (and beyond) is necessary to capture patterns that occur throughout the larger postpartum period. It is also impossible to know from the current study the causal nature of emotional expression and postpartum outcomes. People who increased in emotional expression over the prenatal period may have been more adjusted to begin with. These limitations notwithstanding, the current study provides critical new information about the way emotional expression functions to predict health outcomes between couple members and over time.

Conclusion

The present research intended to provide strategies for expectant couples to express emotions in ways that maintain and even improve relationship satisfaction during major emotional changes, such as the transition to parenthood. Understanding the dyadic nature of emotional expression is important because romantic couples most likely endure stressful situations together and they should not be decontextualized in scientific research. By examining the antecedents of adjustment, researchers and clinicians can identify points of intervention that help people move through major life transitions in happy and healthy ways.

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Footnotes

1. Psychological measurements included at the prenatal period are not included in this report. We also measured hormones (testosterone, cortisol, estradiol, and progesterone) in this study; however, we do not include them in the current report because they are beyond the scope of our primary research question.

Table 3.1. *Descriptive Statistics and Correlations Among Positive and Negative Emotion Words*

	1	2	3	4	5	6	7	8	*M*	*SD*
1. Positive Emotion Words (T1)	**-.36**	-.32	.08	.15	-.19	-.11	-.22	-.33	3.60	3.09
2. Positive Emotion Words (T2)	-.23	**-.15**	.11	.39	-.16	-.17	-.21	.13	3.18	2.88
3. Positive Emotion Words (T3)	-.23	-.35	**.03**	-.03	.10	.29	-.28	-.16	3.39	3.47
4. Positive Emotion Words (T4)	-.27	-.30	.24	**.42***	.61**	.21	.01	-.20	4.23	3.38
5. Negative Emotion Words (T1)	-.14	.03	.29	.06	**.46***	.55*	.02	-.27	2.47	2.89
6. Negative Emotion Words (T2)	.54*	-.05	-.10	.28	.01	**-.03**	-.05	.01	2.12	2.58
7. Negative Emotion Words (T3)	.22	-.20	-.11	.29	.06	.08	**.43***	-.08	2.12	2.01
8. Negative Emotion Words (T4)	.15	-.14	-.50*	.08	.25	.03	-.10	**.28**	1.90	2.37
M	4.13	3.80	3.93	3.21	2.50	1.78	1.86	1.70		
SD	5.39	4.05	2.95	2.98	2.74	2.11	2.19	2.12		

Note. Means, standard deviations, and correlations among positive and negative emotion words are presented below the diagonal for women and above the diagonal for men; bolded values on the diagonal are within-couple correlations; T1 = Time 1, T2 = Time 2, T3 = Time 3, T4 = Time 4; * $p < .05$, ** $p \leq .01$.

Table 3.2. *Descriptive Statistics and Correlations Among Postpartum Variables*

	1	2	3	*M*	*SD*
1. Postpartum Perceived Stress (T5)	**.09**	.25	-.43*	2.53	.59
2. Postpartum Depression (T5)	.02	**.26**	-.27	1.45	.35
3. Postpartum Relationship Satisfaction (T5)	.09	.04	**.45***	7.45	1.77
M	2.48	1.61	7.59		
SD	.79	.49	1.75		

Note. Means, standard deviations, and correlations among postpartum variables are presented below the diagonal for women and above the diagonal for men; bolded values on the diagonal are within-couple correlations; T5 = Time 5; * *p* < .05.

Table 3.3. *Multilevel Models Predicting Changes in Positive and Negative Emotion Words from Postpartum Stress*

	Positive Emotion Words				Negative Emotion Words			
	b	*SE (B)*	*t*	*p*	*b*	*SE (B)*	*t*	*p*
Wives								
Time								
Actor Stress								
Partner Stress								
Time X Actor Stress								
Time X Partner Stress								
Husbands								
Time								
Actor Stress								
Partner Stress								
Time X Actor Stress								
Time X Partner Stress								

Note. $N = 27$ couples (54 individuals); Effects are reported as unstandardized regression coefficients; values correspond to average changes in positive and negative emotion words over time; Gender: -1 = Husband, 1 = Wife.

Table 3.4. *Multilevel Models Predicting Changes in Positive and Negative Emotion Words from Postpartum Depression*

	Positive Emotion Words				Negative Emotion Words			
	b	*SE (B)*	*t*	*p*	*b*	*SE (B)*	*t*	*p*
Wife								
Time								
Actor Depression								
Partner Depression								
Time X Actor Depression								
Time X Partner Depression								
Husband								
Time								
Actor Depression								
Partner Depression								
Time X Actor Depression								
Time X Partner Depression								

Note. $N = 29$ couples (58 individuals); Effects are reported as unstandardized regression coefficients; values correspond to average changes in positive and negative emotion words; Gender: -1 = Husband, 1 = Wife.

Table 3.5. *Multilevel Models Predicting Changes in Positive and Negative Emotion Words from Postpartum Relationship Satisfaction*

	Positive Emotion Words				Negative Emotion Words			
	b	*SE (B)*	*t*	*p*	*b*	*SE (B)*	*t*	*p*
Wife								
Time								
Actor Satisfaction								
Partner Satisfaction								
Time X Actor Satisfaction								
Time X Partner Satisfaction								
Husband								
Time								
Actor Satisfaction								
Partner Satisfaction								
Time X Actor Satisfaction								
Time X Partner Satisfaction								

Note. $N = 29$ couples (58 individuals); Effects are reported as unstandardized regression coefficients; values correspond to average changes in positive and negative emotion words; Gender: -1 = Husband, 1 = Wife.

Figure 3.1. Basic data structure. Prenatal laboratory sessions were held at approximately weeks 12, 18, 24, and 36 (T1 - T4). An at-home follow-up measure was conducted at approximately three months postpartum (T5).
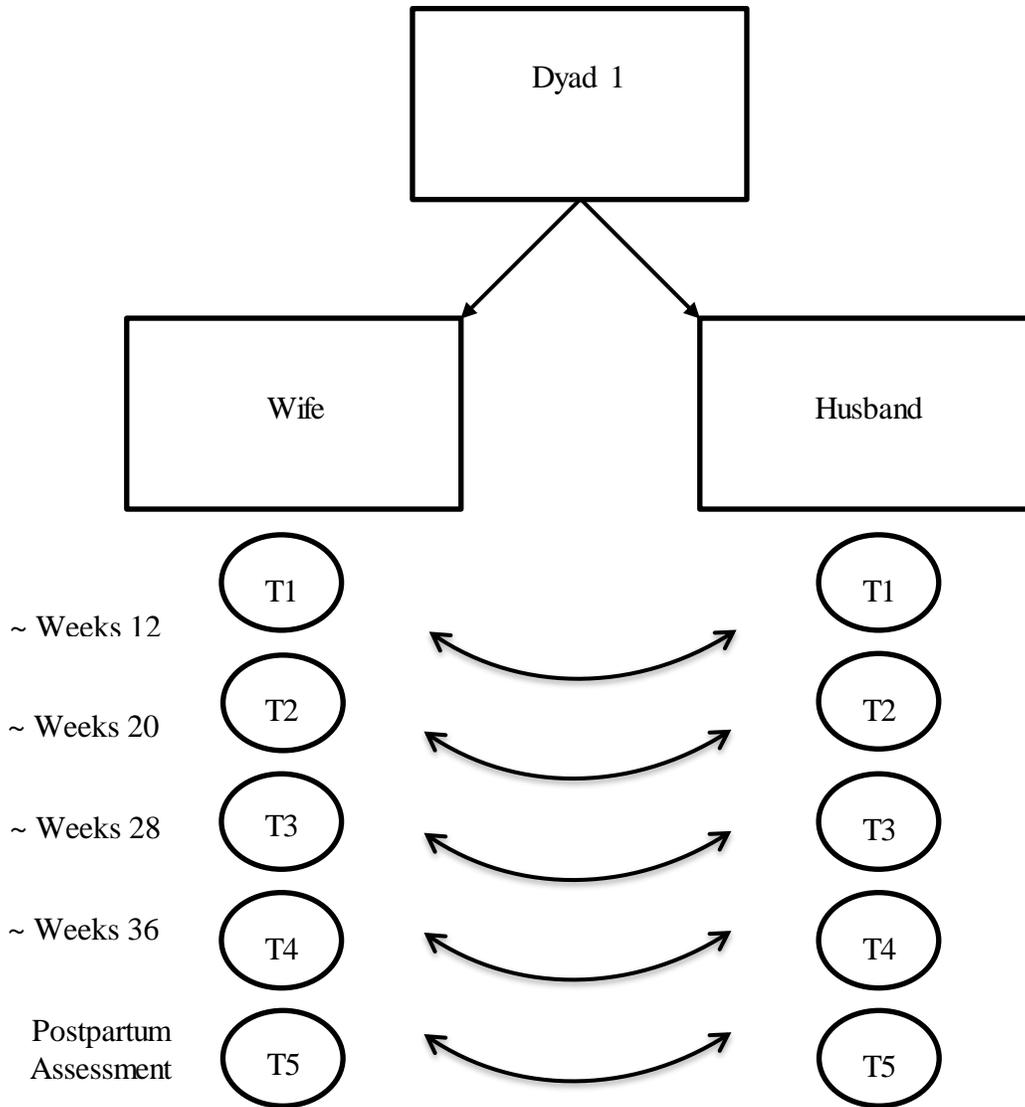
Figure 3.2. Analytical model. Actor-Partner Interdependence Model for over-time data (APIM; Kenny, Kashy, & Cook, 2006), illustrating changes in emotion language predicting postpartum outcomes.
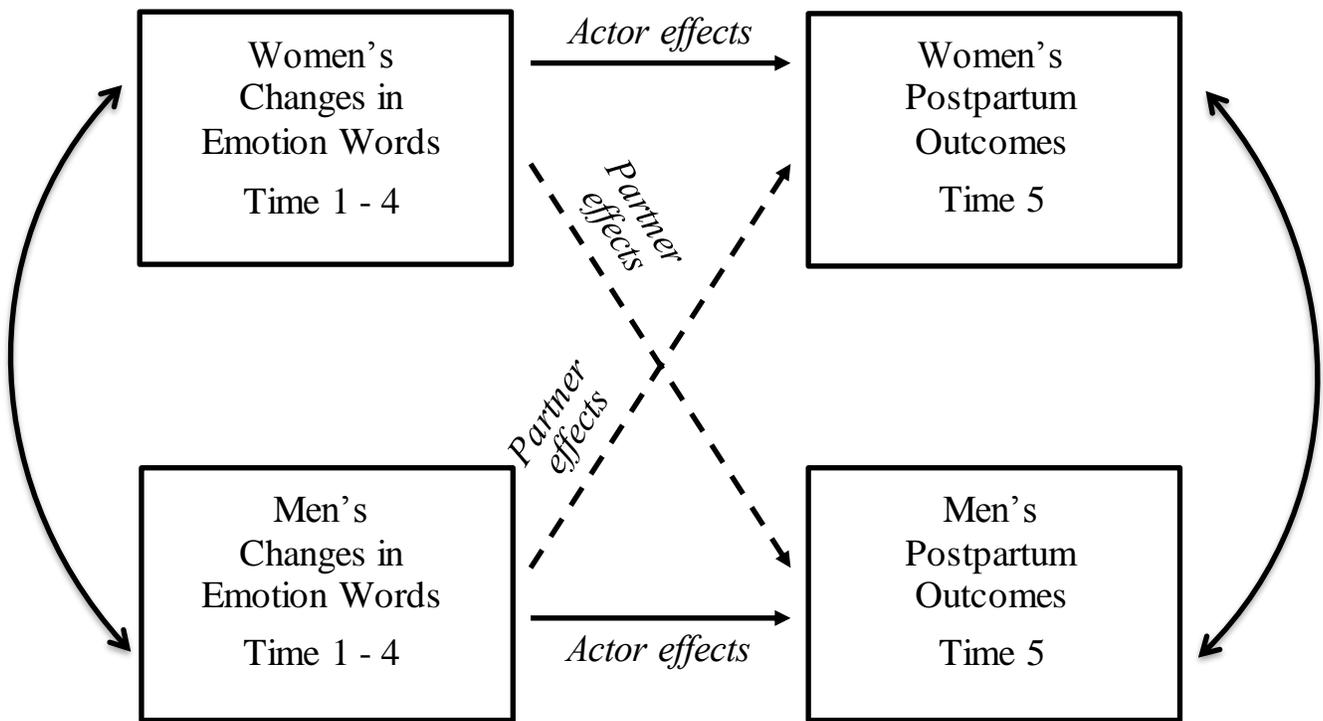
CHAPTER 5: General Discussion

The current research had three primary goals. The first goal was to examine moderators that explain why expression of emotions through language is helpful to some people and not others. The next goal was to test whether expression of emotions through language is beneficial throughout major life changes, such as the transition to parenthood. Third, the current research aimed to shed light on the dyadic and longitudinal nature of emotion language in close and intimate relationships. In the next section, I discuss the significance of the current results and more broad theoretical and mechanistic explanations for the current results that were not discussed in the independent papers.

Theoretical and Mechanistic Explanations that Might Drive Differences in the Association between Expression of Emotion through Language and Psychological Health

Emotion Granularity/Differentiation. Although the theory of emotion granularity/differentiation was not specifically tested in the current studies, emotion granularity is an individuals' ability to find the words to accurately describe how they feel (Barrett, Gross, Christensen, & Benvenuto, 2001; Kashdan, Barrett, & McKnight, 2015). More granular individuals tend to represent experiences with discrete positive and negative emotion labels (e.g., happiness, sadness) rather than general or global labels (e.g., pleasantness, unpleasantness), and greater emotion granularity is associated with psychological resilience (Barrett et al., 2001; Kashdan et al., 2015; Tugade, Fredrickson, & Barrett, 2004). Perhaps psychological adjustment was reflected in emotion language across all three studies because people who use such language are more in-tune with and precisely aware of their emotions. For instance, King and Miner

(2000) asked a group of individuals to write about the perceived benefits associated with a recent stressful experience ("please write about how you have changed or grown as a person as a result of the experience"). Those who naturally included more positive emotion words in their narratives, felt less bitter and more resolution over what happened to them. These findings suggest that people who naturally use emotion language may be more adjusted.

Affect Labeling. Kircanski, Lieberman, and Craske (2012) suggest that it may be helpful to have people name negative emotions (e.g., nervous, tense) as they discuss emotional content because simply putting one's feelings into words (affect labeling) can reduce the intensity of that emotion. Affect labeling also pushes people to recognize and accept emotions that they otherwise might ignore. It is possible that use (or increases) of negative emotion in Studies 1 and 3 was associated with benefits for people because, assuming that people use similar amounts of emotion language outside of the laboratory, repeated use of a negative emotion quiets that emotion. In other words, people become better able to express sadness or anger without the physiological sensations that accompany those emotions. Across time negative emotions may become less painful and easier to process.

Education Status, Intelligence, and Cognitive Complexity. Although indicators of intelligence were not tested as moderators in the current studies, there are reasons to expect these factors to play a role in the link between emotion language and psychological health. For instance, one study found that, within a sample of people with chronic illness, written disclosure promoted well-being *only* for more educated people (Junghaenel, Schwartz, & Broderick, 2008). Junghaenel et al. (2008)'s results point to level of education as a condition that influences the effectiveness of emotional expression, even among people who discuss similar experiences with chronic illness. Further, people's cognitive and emotional complexity, which refers to the ability

to experience and regulate emotions, might also explain the relationship between emotion language and positive health outcomes. It is possible that, across the current studies, people who used more emotion language were already emotionally complex and better able to regulate, work through, and express emotional material. Future research should control for indicators of intelligence or include these indicators as mediators in analyses to more fully understand the association between emotional expression and psychological health.

Developmental Considerations. In Studies 1 and 3, adults' use of emotion words was related to self-reports of psychological health, albeit in different directions; In Study 2, children's emotion language was unrelated to their psychological outcomes. These findings suggest that adults compared to younger people may have more to gain from emotional expression or that emotion words more strongly reflect adults' psychological state (or vice versa). In general, adults compared to children tend to be more aware of and in control of their emotions and therefore, may be better able to appraise, express, or regulate useful emotions. To the extent that adults are better able to accurately express how they feel, it would make sense that the link between emotion words and psychological health is stronger for adults than children. Future research should examine whether age plays a role in the extent to which people benefit from the use of emotion words as they describe stressful experiences.

Trauma Severity. In Study 1, severity of sexual abuse moderated the association between emotion language and psychological health. That is, participants who used more positive and negative emotion language had better psychological outcomes, *especially* when the abuse was more severe. In Study 3, *baseline* levels of positive and negative words were associated with expectant parents' well-being and these findings were in the opposite direction of Study 1, such that (baseline) expressions of more positive and negative emotion words were

linked with worse psychological and relational outcomes. My findings suggest that expressions of emotion might be associated with positive psychological health only under circumstances that are emotional and traumatic or that elicit more emotional avoidance. Moving forward, future research should continue to examine contextual factors, such as trauma severity or type of stressor (e.g., bereavement versus job strain) that can help to explain when and for whom emotional expressiveness is associated with positive health outcomes.

      Contextual Differences between Studies. It is important to note that each study in the current dissertation was based on a very different set of samples and each study had its own unique characteristics that could have influenced the results. In Study 1, participants were 55 adult survivors of childhood sexual abuse who were involved in the legal system as children. Participants in Study 1 were asked to recount their experiences of sexual abuse that had occurred approximately 13 years prior. I found that participants who used more positive and negative emotion language in their discussions of experiences with sexual abuse, had better psychological outcomes, *especially* when the abuse was more severe. In my specific sample of adult survivors of childhood sexual abuse, use of emotion language could have been associated with positive psychological outcomes because participants most likely talked much more about their abuse experiences during their participation in the legal system than adult survivors of childhood sexual abuse who were never involved in the legal system. Further, expressing emotional content may be particularly helpful and useful in the context of sexual assault because the experience is typically thought to elicit strong emotions, such as guilt, blame, fear, anxiety, and anger. Use of these types of emotions in language might suggest that survivors of sexual abuse are processing strong and uncomfortable emotions, which in turn may influence positive psychological health outcomes.

In Study 2, participants were 39 parentally bereaved children and their surviving caregivers, who took part in a "positive reminiscing" task designed for adults and children to recall positive memories about the deceased. Study 2 differed from Study 1 in that I was able to examine whether children's use of emotion language after trauma was associated with similar health outcomes. I found that children's own language was unrelated to their post-loss psychological outcomes. Age or emotional intelligence may play a role for why emotional expression was associated with helpful outcomes for adults in Study 1, but not for children in Study 2. The design of Study 2 additionally allowed me to measure emotional language at 6-months after children lost a parent, compared with Study 1, in which participants discussed sexual abuse experiences that had occurred 13 years earlier. That children's own emotion language was unrelated to their psychological outcomes at 6-months post loss could suggest that emotional expression is not helpful in the immediate aftermath of a trauma, but that after time passes, emotional expression becomes more closely tied to psychological health, as suggested by Study 1. In fact, we did find in Study 2 that caregivers' positive emotion words were inversely related to children's anxiety, depression, and avoidance, *only* when more time passed since the parent's death, which suggests that emotion expression may be most helpful after a certain window of time passes following a traumatic experience. Results from Study 2 begin to speak to the idea that people benefit from emotional expression only after a certain amount of time, such that caregivers' emotion language was associated with children's positive psychological health at approximately 100 days after the loss.

In Study 3, I examined emotion language in expectant parents across the transition to parenthood. Expectant parents' baseline expressions of emotion were actually associated with worse outcomes throughout the transition to parenthood; however, increases or decreases in

emotion language was associated with helpful postpartum outcomes. Results from Study 3 begin to speak to the types of contexts in which the expression of emotion is associated with better health outcomes. That is, in Study 1, adults baseline levels of emotional expression were associated with *less* depression as they discussed experiences of sexual abuse; however, in Study 3, expectant parents' baseline emotion words were associated with *more* postpartum depression as they discussed the stressors and challenges of parenthood. One explanation for contrary findings between Studies 1 and 3 is that sexual abuse most surely elicits stronger negative emotions compared with parenthood, and for sexual abuse survivors, it is probably more helpful to process these deep feelings (e.g., worry, nervousness) than it is for expectant parents. Interestingly, we found that expectant parents' postpartum outcomes were associated with changes in emotion words across the prenatal period. Increases in negative emotion across the prenatal period, for example, may reflect that expectant parents are becoming aware of the upcoming stressors of new parenthood as the birth of their baby gets closer.

In conclusion, from the results of all three of the current studies, it appears that adults may benefit the most from emotional expression after more severe traumas that elicit strong and difficult emotions, and that children's psychological health after trauma may rely on the extent to which caregivers are emotionally expressive. Further, the amount of time that passed since a trauma appears to be an important aspect to whether emotional expression is associated with benefits or not. It is also important to continue to examine emotion language as people discuss other types of traumas outside of sexual abuse and bereavement, to further tease apart whether the beneficial effects of emotional expression are generalizable to other types of stressors and contexts. Lastly, in contexts that are less stressful and occur over longer periods of time, such as the transition to parenthood, changes in emotion language may reflect that people are processing

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or managing the challenges that come along with these experiences. Future research should examine changes in language across other challenging and ongoing situations, such as the transition to a new job.

Implications

Tailored Interventions. Findings from the current research contribute to knowledge that could help clinicians to tailor disclosure treatments in order to produce the best possible outcomes for people (Bradley & Follingstad, 2001). In Study 1, I found that survivors of particularly severe childhood sexual abuse have more to gain from emotional expression. Thus, abuse severity should be a factor that is considered in treatment plans, especially for survivors of childhood sexual abuse. In Study 2, children's own emotion words were unrelated to their psychological heath; however, we found that caregivers' positive emotions words were tied to children's mental health after more time passed since the loss of a parent. From a clinical perspective, caregivers should be a priority in treatment plans for bereaved children. Lastly, findings from Study 3 show that changes in emotion language, rather than general use of emotion language, may predict better outcomes across life transitions. Therapies should focus to increase peoples' use of positive and negative emotion during major periods of adjustment.

Future Directions and Limitations

Other methods and tools in addition to the LIWC to measure emotional expression in participants' text. It should be noted that across all three of the current studies, the LIWC was used to measure participants' emotion words in narratives and free-response items. Previous research notes the LIWC, compared to human rater-coded emotional expression and other computerized text-analysis programs (e.g., Psychiatric Content Analysis and Diagnosis [PCAD]; Bantum & Owen, 2009), as a superior and valid tool for the identification of emotion in text. The

LIWC has been shown to be fast and reliable, inexpensive, and is able to analyze text from various forms of written or spoken language (see Pennebaker, Mehl, & Niederhoffer, 2003).

Despite the many advantages, there are known limitations to the LIWC as a method to analyze linguistic content. For instance, the LIWC is unable to account for the context in which emotion words occur. Words such as "like" and "good", for instance, have multiple meanings. The LIWC is unable to distinguish whether people intended for words such as "good" to describe their feelings or not (e.g., "I feel good" versus "That's very good"). When emotion language is manually content-coded versus computer text-analyzed, raters are able to further consider the phrases and sentences that are situated around emotion words, and this additional information can help researchers clarify how a person is using an emotion word (to describe their feelings or not).

Because of the LIWC program's inability to distinguish between multiple meanings of words, the LIWC tends to be overly sensitive to capturing emotion words compared to human raters, although both human ratings and LIWC ratings of emotion words are highly correlated (see Bantum & Owen, 2009; Pennebaker, Mehl, & Niederhoffer, 2003). The LIWC tends to over-identify emotional terms (both positive and negative), suggesting that words such as "good" are often categorized as positive emotion even when they are not used to describe emotion. For instance, Bantum and Owen (2009) found that in almost every instance (94%) the word "good" was coded by the LIWC as positive emotion when it was not deemed as emotion by manual raters. As suggested by the 2007 and later versions of the LIWC, in the current studies, we attempted to avoid the problem of having non-emotion words included in the emotion category by adding the qualifier "rr" to the beginning of words that have multiple meanings (e.g., rrlike);

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however, many words have multiple meanings and it is likely that some words were coded as emotion in instances when they should not have been.

Future research should include different types of methods (e.g., content analysis and text analysis software) in their examination of emotional content to better explore and get a more accurate picture of the relationship between emotional expression and improved psychological adjustment.

Causality. Although the current studies suggest that people may benefit from the use of emotional language under certain circumstances, it is important to note that the correlational nature of the data precludes any causal inferences. In all three of the studies, it is possible that better adjustment helped people use emotion language when talking about their experiences. One way to address questions about causality would be to randomly assign people to use certain kinds of words when describing their experiences. For example, based on findings from Study 1, it might be most helpful to prompt individuals who have experienced particularly severe abuse to include positive words and negative emotion words in their narratives. These shifts in language could promote healthy outcomes by allowing people to access emotions that they otherwise might avoid and be unable to process.

Longitudinal Designs. Studies 1 and 2 were cross-sectional in nature and health measures and open-ended responses were assessed at close points in time. Without multiple assessments across time, it is unclear whether the current studies captured anything more than just participants' transient moods. In Study 3, we assessed participants at multiple points throughout the transition to parenthood, and results from Study 3 suggest that *changes* in emotion language, rather than baseline or average levels, may be more important to individuals' health outcomes in times of stress. The longitudinal nature of Study 3 also made it possible to

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truly examine whether emotion language predicts health outcomes, which could not be concluded from Studies 1 and 2 because the psychological and health outcomes were collected before (albeit on the same day or in the previous few months) people discussed emotional experiences. In Study 3, expectant parents use of emotion language in the prenatal period significantly predicted interpersonal and intrapersonal outcomes at a three-month postpartum follow-up. Future research should examine whether the beneficial effects of emotion language persist over more extended periods of time that are greater than three months.

Generalizability. It is important to note that my findings may not generalize to all people who discuss experiences with childhood sexual abuse, bereavement, and parenthood. In Study 1, for instance, the sample of survivors of childhood sexual abuse had been through the legal system and were perhaps more practiced in recounting their experiences. In Study 2, the majority of bereaved children and primary caregivers were recruited through bereavement support groups (i.e., were simultaneously receiving help and support) and therefore, may have been more equipped with tools that help to process painful emotions. Furthermore, expectant parents in Study 3 had high levels of psychological well-being and relationship satisfaction, suggesting that the transition to parenthood was less stressful and more smooth for them. Future research should examine whether the benefits of emotional expression extend to people who may not have had prior opportunities to discuss their experiences or who have more trouble adapting to major life-changes.

CONCLUSION

The current research provides evidence that the positive connection between emotional expression and health benefits may not be as clear as once thought. Even *within* groups, some people may benefit to a greater extent than others as a function of individual or social factors.

Across three studies, I found that expression of good and bad emotions may help people process and move past stressful situations, but only under certain circumstances. Future research should continue to explore factors that moderate the disclosure-health connection so that interventions can be tailored to promote optimal outcomes for peoples' well-being and close relationships.

Findings from this dissertation were expected to make several novel contributions to emotion-related research by elucidating conditions and contexts in which expression of emotion is tied to psychological or interpersonal health. In some contexts, such as childhood sexual abuse, expressing both good and bad emotions may help people process and move past painful experiences, especially when the abuse is more severe (Study 1). Individuals' mental health outcomes may also be tied to others' emotional expression, such that caregivers' use of positive emotion over time is associated with fewer psychological problems for bereaved children (Study 2). Lastly, *changes* in emotional expression may be more closely tied to peoples' outcomes, rather than average or initial measures of emotional expression and furthermore, one's own psychological and relationship outcomes are likely tied to a partner's use of emotional expression (Study 3).

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APPENDIX

Table A.1. Words categorized by the LIWC as <u>positive</u> and <u>negative</u> emotion (see Pennebaker, Booth, & Francis, 2007). The asterisk (*) indicates that words with that particular stem are also categorized as positive or negative emotion.

Positive Emotion			Negative Emotion			
accept	freed*	partie*	abandon*	enrag*	maddening	snob*
accepta*	freeing	party*	abuse*	envie*	madder	sob
accepted	freely	passion*	abusi*	envious	maddest	sobbed
accepting	freeness	peace*	ache*	envy*	maniac*	sobbing
accepts	freer	perfect*	aching	evil*	masochis*	sobs
active*	frees*	play	advers*	excruciat*	melanchol*	solemn*
admir*	friend*	played	afraid	exhaust*	mess	sorrow*
ador*	fun	playful*	aggravat*	fail*	messy	sorry
advantag*	funn*	playing	aggress*	fake	miser*	spite*
adventur*	genero*	plays	agitat*	fatal*	miss	stammer*
affection*	gentle	pleasant*	agoniz*	fatigu*	missed	stank
agree	gentler	please*	agony	fault*	misses	startl*
agreeab*	gentlest	pleasing	alarm*	fear	missing	steal*
agreed	gently	pleasur*	alone	feared	mistak*	stench*
agreeing	giggl*	popular*	anger*	fearful*	mock	stink*
agreement*	giver*	positiv*	angr*	fearing	mocked	strain*
agrees	giving	prais*	anguish*	fears	mocker*	strange
alright*	glad	precious*	annoy*	feroc*	mocking	stress*
amaz*	gladly	prettie*	antagoni*	feud*	mocks	struggl*
amor*	glamor*	pretty	anxi*	fiery	molest*	stubborn*
amus*	glamour*	pride	apath*	fight*	mooch*	stunk
aok	glori*	privileg*	appall*	fired	moodi*	stunned
appreciat*	glory	prize*	apprehens*	flunk*	moody	stuns
assur*	good	profit*	argh*	foe*	moron*	stupid*
attachment*	goodness	promis*	argu*	fool*	mourn*	stutter*
attract*	gorgeous*	proud*	arrogan*	forbid*	murder*	submissive*
award*	grace	radian*	asham*	fought	nag*	suck
awesome	graced	readiness	assault*	frantic*	nast*	sucked
beaut*	graceful*	ready	asshole*	freak*	needy	sucker*
beloved	graces	reassur*	attack*	fright*	neglect*	sucks
benefic*	graci*	relax*	aversi*	frustrat*	nerd*	sucky
benefit	grand	relief	avoid*	fuck	nervous*	suffer
benefits	grande*	reliev*	awful	fucked*	neurotic*	Suffered
benefitt*	gratef*	resolv*	awkward*	fucker*	numb*	sufferer*
benevolen*	grati*	respect	bad	fuckin*	obnoxious*	suffering
benign*	great	revigor*	bashful*	fucks	obsess*	suffers
best	grin	reward*	bastard*	fume*	offence*	suspicio*
better	grinn*	rich*	battl*	fuming	offend*	tantrum*
bless*	grins	ROFL	beaten	furious*	offens*	tears

bold*	ha	romanc*	bitch*	fury	outrag*	teas*
bonus*	haha*	romantic*	bitter*	geek*	overwhelm*	temper
brave*	handsom*	safe*	blam*	gloom*	pain	tempers
bright*	happi*	satisf*	bore*	goddam*	pained	tense*
brillian*	happy	save	boring	gossip*	painf*	tensing
calm*	harmless*	scrumptious*	bother*	grave*	paining	tension*
care	harmon*	secur*	broke	greed*	pains	terribl*
cared	heartfelt	sentimental*	brutal*	grief	panic*	terrified
carefree	heartwarm*	share	burden*	griev*	paranoi*	terrifies
careful*	heaven*	shared	careless*	grim*	pathetic*	terrify
cares	heh*	shares	cheat*	gross*	peculiar*	terrifying
caring	helper*	sharing	complain*	grouch*	perver*	terror*
casual	helpful*	silli*	confront*	grr*	pessimis*	thief
casually	helping	silly	confus*	guilt*	petrif*	thieve*
certain*	helps	sincer*	contempt*	harass*	pettie*	threat*
challeng*	hero*	smart*	contradic*	harm	petty*	ticked
champ*	hilarious	smil*	crap	harmed	phobi*	timid*
charit*	hoho*	sociab*	crappy	harmful*	piss*	tortur*
charm*	honest*	soulmate*	craz*	harming	piti*	tough*
cheer*	honor*	special	cried	harms	pity*	traged*
cherish*	honour*	splend*	cries	hate	poison*	tragic*
chuckl*	hope	strength*	critical	hated	prejudic*	trauma*
clever*	hoped	strong*	critici*	hateful*	pressur*	trembl*
comed*	hopeful	succeed*	crude*	hater*	prick*	trick*
comfort*	hopefully	success*	cruel*	hates	problem*	trite
commitment*	hopefulness	sunnier	crushed	hating	protest	trivi*
compassion*	hopes	sunniest	cry	hatred	protested	troubl*
compliment*	hoping	sunny	crying	heartbreak*	protesting	turmoil
confidence	hug	sunshin*	cunt*	heartbroke*	puk*	ugh
confident	hugg*	super	cut	heartless*	punish*	ugl*
confidently	hugs	superior*	cynic*	hell	rage*	unattractive
considerate	humor*	support	damag*	hellish	raging	uncertain*
contented*	humour*	supported	damn*	helpless*	rancid*	uncomfortabl*
contentment	hurra*	supporter*	danger*	hesita*	rape*	uncontrol*
convinc*	ideal*	supporting	daze*	homesick*	raping	uneas*
cool	importan*	supportive*	decay*	hopeless*	rapist*	unfortunate*
courag*	impress*	supports	defeat*	horr*	rebel*	unfriendly
create*	improve*	suprem*	defect*	hostil*	reek*	ungrateful*
creati*	improving	sure*	defenc*	humiliat*	regret*	unhapp*
credit*	incentive*	surpris*	defens*	hurt*	reject*	unimportant
cute*	innocen*	sweet	degrad*	idiot	reluctan*	unimpress*
cutie*	inspir*	sweetheart*	depress*	ignor*	remorse*	unkind
daring	intell*	sweetie*	depriv*	immoral*	repress*	unlov*
darlin*	interest*	sweetly	despair*	impatien*	resent*	unpleasant
dear*	invigor*	sweetness*	desperat*	impersonal	resign*	unprotected
definite	joke*	sweets	despis*	impolite*	restless*	unsavo*
definitely	joking	talent*	destroy*	inadequa*	revenge*	unsuccessful*
delectabl*	joll*	tehe	destruct*	indecis*	ridicul*	unsure*
delicate*	joy*	tender*	devastat*	ineffect*	rigid*	unwelcom*
delicious*	keen*	terrific*	devil*	inferior*	risk*	upset*

deligh*	kidding	thank	difficult*	inhib*	rotten	uptight*
determina*	kind	thanked	disadvantage*	insecur*	rude*	useless*
determined	kindly	thankf*	disagree*	insincer*	ruin*	vain
devot*	kindn*	thanks	disappoint*	insult*	sad	vanity
digni*	kiss*	thoughtful*	disaster*	interrup*	sadde*	vicious*
divin*	laidback	thrill*	discomfort*	intimidat*	sadly	victim*
dynam*	laugh*	toleran*	discourag*	irrational*	sadness	vile
eager*	libert*	tranquil*	disgust*	irrita*	sarcas*	villain*
ease*	like	treasur*	dishearten*	isolat*	savage*	violat*
easie*	likeab*	treat	disillusion*	jaded	scare*	violent*
easily	liked	triumph*	dislike	jealous*	scaring	vulnerab*
easiness	likes	true	disliked	jerk	scary	vulture*
easing	liking	trueness	dislikes	jerked	sceptic*	war
easy*	livel*	truer	disliking	jerks	scream*	warfare*
ecsta*	LMAO	truest	dismay*	kill*	screw*	warred
efficien*	LOL	truly	dissatisf*	lame*	selfish*	warring
elegan*	love	trust*	distract*	lazie*	serious	wars
encourag*	loved	truth*	distraught	lazy	seriously	weak*
energ*	lovely	useful*	distress*	liabilit*	seriousness	weapon*
engag*	lover*	valuabl*	distrust*	liar*	severe*	weep*
enjoy*	loves	value	disturb*	lied	shake*	weird*
entertain*	loving*	valued	domina*	lies	shaki*	wept
enthus*	loyal*	values	doom*	lone*	shaky	whine*
excel*	luck	valuing	dork*	longing*	shame*	whining
excit*	lucked	vigor*	doubt*	lose	shit*	whore*
fab	lucki*	vigour*	dread*	loser*	shock*	wicked*
fabulous*	lucks	virtue*	dull*	loses	shook	wimp*
faith*	lucky	virtuo*	dumb*	losing	shy*	witch
fantastic*	madly	vital*	dump*	loss*	sicken*	woe*
favor*	magnific*	warm*	dwell*	lost	sin	worr*
favour*	merit*	wealth*	egotis*	lous*	sinister	worse*
fearless*	merr*	welcom*	embarrass*	low*	sins	worst
festiv*	neat*	well*	emotional	luckless*	skeptic*	worthless*
fiesta*	nice*	win	empt*	ludicrous*	slut*	wrong*
fine	nurtur*	winn*	enemie*	lying	smother*	yearn*
flatter*	ok	wins	enemy*	mad	smug*	
flawless*	okay	wisdom				
flexib*	okays	wise*				
flirt*	oks	won				
fond	openminded*	wonderf*				
fondly	openness	worship*				
fondness	opportun*	worthwhile				
forgave	optimal*	wow*				
forgiv*	optimi*	yay				
free	original	yays				
free*	outgoing					
freeb*	painl*					
	palatabl*					
	paradise					