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Are PTSD Treatment Choices and Treatment Beliefs Related to Depression Symptoms and Depression-Relevant Treatment Rationales?

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Abstract

Given high rates of depression and low rates of treatment utilization among individuals with posttraumatic stress disorder (PTSD), we examined how depression symptoms impact PTSD treatment beliefs and preference (prolonged exposure (PE), sertraline, or PE plus sertraline). We also examined whether PTSD treatment rationales tailored to individuals with symptoms of depression impact PTSD treatment preference/beliefs. Undergraduates ($N = 439$) were given an “imagine self” scenario where they either had symptoms of PTSD or PTSD and depression in the future. Trauma-exposed community members ($N = 203$) reported their own PTSD and depression symptoms. All participants watched standardized treatment rationales for PE and sertraline that were systematically manipulated to include information on depression or not. Across both samples, depression symptoms were associated with significantly increased odds of selecting combination treatment relative to PE alone. For those in the community sample who received the depression-relevant treatment rationale, higher depression symptoms were associated with significantly greater PE credibility and more positive reactions toward PE. Taken together, depression may be associated with a greater preference for combination treatment. However, treatment providers may be able to improve treatment beliefs about PE by offering a treatment rationale that explains that PE tends to help improve symptoms of PTSD and depression.

Keywords

Posttraumatic stress disorder; Depression; Treatment choice; Treatment Rationales; Sertraline; Prolonged exposure

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Cognitive-behavioral therapies (CBTs; see Bisson & Andrew, 2007) and selective serotonin reuptake inhibitors (SSRIs; see Stein, Ipser, & Seedat, 2006) are two empirically-supported treatments for PTSD. More specifically, within CBT, prolonged exposure (PE) has undergone some of the most rigorous evaluation (see Powers, Halpern, Ferenschak, Gillihan, & Foa, 2010); and of the SSRIs, sertraline is one of two FDA approved medications for the treatment of PTSD (Brady et al., 2000; Davidson, Rothbaum, van der Kolk, Sikes, & Farfel, 2001). Despite the availability of effective treatment options, few individuals with PTSD seek treatment. For example, based upon data from the National Comorbidity Survey Replication, only 65% of individuals with PTSD ever make treatment contact (Wang et al., 2005). Furthermore, those who eventually seek treatment often wait many years, with a mean time to treatment contact of twelve years following PTSD onset (Wang et al., 2005). Of those seeking treatment, there is often premature attrition. In research settings, for example, dropout rates range from 0% to 34% (with a mean of approximately 24%) for exposure-based treatments (Hembree et al., 2003) and 13% to 64% for SSRIs (Albucher & Liberzon, 2002). In community settings, dropout rates are likely even higher (e.g., Swift & Greenberg, 2012). Although low rates of treatment utilization and high rates of attrition are not specific to PTSD, in the face of effective treatments for PTSD, further research into the factors affecting treatment seeking and treatment engagement for individuals with PTSD is called for.

In particular, treatment preferences may have a significant impact on both treatment seeking and treatment engagement. When preferred and provided treatment modalities match, participants tend to be more adherent with treatment and more likely to have a faster and greater treatment response (Swift, Callahan & Vollmer, 2011). Thus, by understanding individuals' treatment preferences, and the beliefs underlying those preferences, we may gain insight into the factors facilitating and inhibiting treatment seeking and treatment adherence for PTSD.

One variable that may have an important influence on treatment preference among individuals with PTSD is major depressive disorder (MDD). MDD co-occurs in just over half of individuals with PTSD (Rytwinski, Scur, Youngstrom & Feeny, 2013) and is associated with greater distress and impairment than PTSD alone (e.g., Blanchard, Buckley, Hickling, & Taylor, 1998; Ikin, Creamer, Sim, & McKenzie, 2010; Momartin, Silove, Manicavasager, & Steel, 2004; Nixon, Resick, & Nishith, 2004; Post, Zoellner, Youngstrom, & Feeny, 2011). Despite research suggesting that both sertraline (e.g., Brady & Clary, 2003) and PE (e.g., Hageraars, van Minnen & Hoogduin, 2010; van Minnen, Arntz & Keijsers, 2002) may be effective treatments for individuals with co-occurring PTSD and MDD, relative to individuals with PTSD alone, individuals with co-occurring PTSD and depression may shy away from psychotherapy because they may not have the energy or motivation to engage in psychotherapy (Feeny, Zoellner, Mavissakalian, & Roy-Byrne, 2009). In keeping with this finding, although individuals with PTSD tend to prefer PE over sertraline (e.g., Feeny et al., 2009b), when given the choice of sertraline, PE, or no treatment, depression symptoms were associated with increased positive reactions to sertraline and reduced positive reactions to PE among trauma-exposed women (Feeny, Zoellner, & Kahana, 2009). Similarly, among treatment seeking individuals with PTSD, individuals with MDD were more likely to choose sertraline than those without, though regardless there was a preference

for PE (Feeny et al., 2009b). Thus, although both PE (e.g., Hageraars et al., 2010; van Minnen et al., 2002) and sertraline (Brady & Clary, 2003) have been shown to be effective treatments for individuals with co-occurring PTSD and depression, both symptoms of depression and an MDD diagnosis appear to be associated with more positive beliefs about, and a greater preference for, sertraline.

In addition to the impact of depression on PTSD treatment preference, a clinician's description of a treatment, that is a treatment rationale, may have a significant impact on treatment preference and beliefs. Specifically, if a treatment rationale helps the patient understand how the treatment is relevant to them, they may have greater treatment satisfaction, adherence, and outcomes. Consistent with this notion, greater acceptance of the treatment rationale has been associated with lower depression severity following cognitive-behavioral therapy for depression (Addis & Jacobson, 2000). Interestingly, however, the limited research examining PTSD treatment rationale presentation suggests that adding more information to a treatment rationale has a very limited impact on treatment beliefs (Feeny et al., 2009a). In particular, adding treatment mechanism information increased positive personal reactions to PE and decreased participants' chance of selecting sertraline, although the magnitude of these effects was small (Feeny et al., 2009a). However, one plausible explanation for these small effects is that the treatment rationales were not tailored to a particular subgroup of patients, like those with co-occurring PTSD and depression.

To date, no studies have examined whether tailoring PTSD treatment rationales to individuals with co-occurring PTSD and depression impacts treatment beliefs or preferences. However, research on depression, as well as a variety of physical health conditions (e.g., asthma, diabetes, and hypertension), has shown that patient education about the disease process and the mode of action of treatment can significantly improve treatment adherence (e.g., van Dulmen et al., 2007). Although not explicitly tested, it is assumed that patient education improves adherence, at least in part, by making the patient feel more positively about the treatment (e.g., that the treatment is credible and could be helpful). Thus, individuals with co-occurring PTSD and MDD may have more positive beliefs about PTSD treatments if they are provided with education about the fact that depression frequently co-occurs with PTSD and that PE and sertraline tend to be associated with improvements in both PTSD and depression symptoms. This line of research could provide insight into ways to tailor PTSD treatment rationales to individuals with symptoms of depression, which may ultimately improve treatment seeking and adherence.

In the current study, we examined whether systematically tailoring PTSD treatment rationales to include information on co-occurring PTSD and depression impacted treatment preference and beliefs. We utilized two large, complementary samples: an undergraduate sample and a trauma-exposed community sample. A sample of undergraduate students who were selected regardless of their history of trauma exposure is important to study for several reasons. First, how individuals perceive treatment options, regardless of their history of trauma exposure, tells us considerable information about pre-existing biases individuals may have about seeking mental health treatment. Second, a young adult sample, in particular, is at high risk for trauma exposure. For example, approximately half of first sexual assaults occur before the age of 18 and an additional 29.4% occur between the ages of 18 and 24

(Tjaden & Thoennes, 1998). They are also at high risk of developing depression; estimates suggest over 8% of individuals aged 18 to 22 have experienced a depressive episode in the past year (Substance Abuse and Mental Health Services Administration, 2012). Thus, understanding treatment preference in this age group is particularly important. However, we also wanted to maximize the generalizability and clinical applicability of our findings. Thus, we also collected a sample of trauma-exposed community members. Both samples watched standardized, videotaped PE and sertraline treatment rationales that either focused solely on PTSD symptoms or on both PTSD and depression symptoms. In the undergraduate sample, using a perspective taking paradigm (Davis et al., 2004), participants were asked to imagine in the future that they had either PTSD or co-occurring PTSD and MDD (PTSD+MDD) symptoms. In the community sample, participants reported their own PTSD and depression symptoms. Both reactions to PE and sertraline and treatment preference among PE, sertraline, combined PE and sertraline, or no treatment were assessed. We predicted that depression (defined as individuals assigned to the PTSD+MDD instruction condition in the undergraduate sample and those with higher self-reported depression symptoms in the community sample) would be associated with more positive beliefs about sertraline, less positive beliefs about PE, and a greater preference for sertraline or the combined treatment option. Furthermore, rationale type would interact with symptoms of depression such that individuals who received the depression-relevant treatment rationale and had symptoms of depression would have more positive beliefs about both PE and sertraline and a greater chance of selecting the combination treatment.

Method: Undergraduate Sample (Study 1)

Undergraduate Participants

Four hundred and thirty-nine individuals (57.8% women) were recruited via undergraduate psychology subject pools at two large metropolitan universities. Inclusion criteria included being between the ages of 18 and 65 years old and fluent in English.

Demographic information can be seen in Table 1. Within this sample, approximately 51.9% ($n = 228$) reported experiencing at least one or more traumatic events on the Posttraumatic Stress Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997). Of these, allowing for multiple events to be experienced by one person, 30.3% reported a life-threatening illness, 46.9% reported a serious accident, 36.8% a natural disaster, 33.8% a non-sexual assault, 23.2% a sexual assault, 7.8% combat, torture, or imprisonment, and 21.1% reported other traumatic events. Following strict adherence to the DSM-IV Criterion A event on the PDS, 36.5% ($n = 159$) of the participants had qualifying traumatic events. Of these, for the worst trauma experiences, 18.7% reported a life-threatening illness, 28.4% reported a serious accident, 5.2% a natural disaster, 21.9% a non-sexual assault, 5.1% a sexual assault, 0.6% combat, torture, or imprisonment, and 20.0% reported other traumatic events.

In regard to prior psychiatric treatment, 20.5% had been in psychotherapy and 9.7% had been on a psychotropic medication. In total, 22.8% of the sample had been in psychotherapy and/or received psychotropic medication.

Materials

Personal “Imagine Self” Vignette—Participants were randomized to read one of two “if this happened to you, what would you do” scenarios, based on an “imagine self” perspective as this form of perception taking is associated with self-related cognitions (Davis et al., 2004). In the PTSD only vignette, we described symptoms of PTSD. In the PTSD+MDD vignette, we described symptoms of major depressive disorder (MDD) in addition to PTSD. Thus, as shown below, all individuals received the PTSD only vignette. Individuals who were assigned to the PTSD+MDD vignette also received an additional paragraph describing symptoms of MDD.

[Start of both vignettes:] Please imagine that you are 25 years old. You are seeking treatment because you are experiencing symptoms related to a physical assault (mugging) that occurred six years earlier during college. You are currently having recurrent thoughts about the assault and intense emotional reactions when reminded of it. You have been persistently avoiding situations, thoughts, and feelings related to the assault, and you are only sleeping a few hours per night. You have great difficulty concentrating and are feeling on edge most of the time.

[Additional information included in the PTSD+MDD vignette:] In addition, you have been feeling down and depressed consistently since the assault. You are so down that you have been missing days at work, you have not been seeing friends, and you are having trouble in your relationship. You are having thoughts that life is not worth living anymore.

[Ending for both vignettes:] You are considering seeking help. You have narrowed your choices to three treatment options: psychotherapy (prolonged exposure therapy), medication (Zoloft), or a combined treatment of the two. In addition, you may still choose not to seek treatment.

Treatment rationales—Using a standardized script, male or female medical professionals provided videotaped treatment rationales for both PE and sertraline. Each rationale was divided into three sections: background information, treatment procedures, and treatment side effects. The rationales did not differ in terms of sentence structure, grade level, and reading ease. Furthermore, the rationales were written so that wording was matched where possible.

In total there were four different rationales: a standard rationale for PE, a standard rationale for sertraline, a depression-relevant rationale for PE, and a depression-relevant rationale for sertraline. The depression-relevant rationales contained the following information that was not included in the standard rationales.

[Additional depression information in the treatment rationales] Furthermore, many people who have PTSD also experience symptoms of depression. These symptoms can include feelings of sadness, worry, guilt, worthlessness, and hopelessness. For some, they even feel like life is no longer worth living. People with depression often have physical symptoms as well, such as fatigue, trouble sleeping, and

problems concentrating. [Prolonged exposure therapy/Zoloft] can help reduce symptoms of both PTSD and trauma-related depression.

Other than the addition of the above paragraph, the standard rationales and depression-relevant rationales were identical. Please see the appendix for the full text of the rationales.

Measures

Self-report psychopathology measures—To assess general psychopathology, participants completed a battery of commonly used and well validated self-report questionnaires. We utilized the PDS (Foa et al., 1997) to assess symptoms of PTSD. The PDS has high internal consistency ($\alpha = .92$), good test-retest reliability ($\kappa = .74$) over a three-week period, and good agreement (82%) with clinician administered measures of PTSD (Foa et al., 1997). To assess self-reported symptoms of depressions, we used the Quick Inventory Depressive Symptomatology: Self-Report (QIDS-SR16; Rush et al., 2003). The QIDS-SR 16 has good internal consistency ($\alpha = .86$) and is highly correlated with other self-report and interview measures of depression (Rush et al., 2003). Means, standard deviations, and ranges for the PDS and QIDS-SR are presented in Table 1.

Treatment credibility and personal reactions—To assess perceptions of treatment credibility and personal attitudes concerning the treatment descriptions, both the Credibility Scale (CS; Addis & Carpenter, 1999) and Personal Reactions Scale (PRS; Addis & Carpenter, 1999) were used. The CS contains 7 items (e.g., “How logical does this therapy seem to you?”) rated on a 7-point scale from 1 (*not at all*) to 7 (*extremely*) with higher scores indicating higher credibility. Overall, the credibility scale assesses how much the participant perceives the treatment to be logical, scientifically based, and effective. Personal Reactions to the Rationales (PRR) contains 5 items (e.g., “If you had PTSD and went for treatment, how helpful do you think this therapy would be for you?”) rated on a 7 point scale from 1 (*not at all*) to 7 (*extremely*) with higher scores indicating more positive personal reactions. Overall, the PRR scale assesses how much the participant perceives the treatment will help them personally by improving their symptoms and increasing their ability to understand and cope with their symptoms. In the current sample, internal consistency for these measures was excellent: CS: $\alpha = .90$ PE, $\alpha = .87$ sertraline; PRS: $\alpha = .93$ PE, $\alpha = .88$ sertraline.

Forced choice—To examine treatment choice, a single question was utilized counterbalancing the order of presentation in the question regarding the individual therapy, medication, combination, and no treatment: “If you had a choice between [psychotherapy, medication], [medication, psychotherapy], both treatments, or no treatment at all to help you with trauma related symptoms which would you choose?”

Design

This was a 2×2 between-subjects design, with depression symptoms (PTSD only “imagine self” vignette versus PTSD+MDD “imagine self” vignette) and rationale (standard versus depression-relevant) being between-subjects factors and dependent variables being

credibility of PE and sertraline (CS), personal reactions to PE and sertraline (PRR), and forced choice (PE alone, sertraline alone, both, neither).

Procedure

After informed consent procedures, participants were asked to complete demographic information, information about prior treatment experience, and self-report measures asking about trauma exposure, PTSD, and depression. Based on counterbalancing procedures, participants either read the PTSD only “imagine self” vignette or the PTSD+MDD “imagine self” vignette. After reading the vignette, participants were asked to answer a multiple choice question regarding the content of the vignette to ensure that they had read and understood the vignette. If they answered the question incorrectly, they were asked to re-read the vignette and re-answer the question. Participants then either viewed the standard sertraline and PE treatment rationales or the depression-relevant sertraline and PE treatment rationales. The order of the rationales and the gender of the clinicians presenting the treatment rationales were also counterbalanced. Participant responses were given in private on a computer, not to a research staff member. After viewing each of the rationales, participants rated the credibility of and their personal reactions to each treatment. Finally, participants chose among PE, sertraline, both treatments, or no treatment. Participants were debriefed and received course credit for their participation.

Method: Community Trauma-exposed Sample (Study 2)

Community Trauma-exposed Sample Participants

Two hundred and three individuals (57.9% women) were recruited via online classified advertisements, local postings, and study referrals from local agencies for individuals who had experienced a traumatic event at two large metropolitan universities.

Demographic information can be seen in Table 1. Within this sample, 96.6% ($n = 196$) reported experiencing one or more traumatic events on the PDS (Foa et al., 1997). Of these, allowing for multiple events to be experienced by one person, 25.5% reported a life-threatening illness, 40.3% reported a serious accident, 14.3% a natural disaster, 58.1% a non-sexual assault, 57.1% a sexual assault, 35.2% combat, imprisonment, or torture, and 33.7% reported other traumatic events. Following adherence to the DSM-IV Criterion A event on the PDS, 72.4% ($n = 139$) of the participants had qualifying traumatic events. For the worst trauma experienced, 5.2% reported a life-threatening illness, 10.4% reported a serious accident, 1.5% a natural disaster, 26.0% a non-sexual assault, 33.3% a sexual assault, and 8.2% combat, torture, or imprisonment, and 15.6% other traumatic events.

In regard to prior psychiatric treatment, 65.0% had been in psychotherapy and 55.7% had been on a psychotropic medication. In total, 72.4% of the sample had been in psychotherapy and/or received psychotropic medication.

Materials

Given that the sample was trauma exposed, no vignettes were provided. Treatment rationales were the same as the rationales used in Study 1.

Measures

Self-report psychopathology measures—In keeping with the undergraduate sample, we used the PDS and the QIDS-SR.

Treatment credibility and personal reactions and forced choice—These measures were identical to the measures used in Study 1. The internal consistency of the treatment credibility and personal reactions scale was excellent in this sample (CS: $\alpha = .94$ PE, $\alpha = .92$ sertraline; PRS: $\alpha = .96$ PE, $\alpha = .96$ sertraline).

Design

In keeping with the undergraduate sample, in a between-subjects design, rationale type (standard versus depression-relevant) and depression symptoms (QIDS severity, continuous variable) were the independent variables. The dependent variables were the same as those in the undergraduate sample: credibility of PE and sertraline (CS), personal reactions to PE and sertraline (PRR), and forced choice (PE alone, SER alone, both, neither).

Procedure

Procedures mirrored those used in Study 1. The only differences were that symptom vignettes were not provided, instead participants were asked to think of their own trauma and related symptoms, and they received \$20/hour for their participation.

Results

Demographic, Psychopathology Factors, and Treatment Preference

Before conducting the main analyses, gender, experience of a Criterion A trauma, PTSD diagnostic status, and prior treatment history (previous medication and/or therapy for a mental health condition versus no previous treatment for a mental health condition) were examined to see if they influenced treatment preference (PE, SER, PE+SER, No treatment). No significant differences were found for gender, Criterion A status, or PTSD diagnostic status. Additionally, in the undergraduate sample, the association between prior treatment history and treatment choice was not significant. However, in the community sample, there was an association between prior treatment history and treatment choice, $\chi^2(2, N = 178) = 12.27, p = .002$. Individuals with a prior treatment history were significantly more likely to select combination treatment, and significantly less likely to select PE, than those without a prior treatment history. Thus, we controlled for prior treatment history across analyses.¹

Treatment Choice, Depression, and Depression-relevant Rationales

To examine whether depression (“imagine self” vignette type: PTSD only versus PTSD +MDD in the undergraduate sample; QIDS severity in the community sample) and depression-relevant treatment rationales (standard or depression-relevant) were related to PTSD treatment choice, we conducted multinomial logistic regression analyses. We first controlled for prior treatment history and then entered depression and treatment rationale

¹We also ran the analyses for the undergraduate sample without controlling for prior treatment history. The results did not substantially change.

type. The interaction between depression and rationale type was added last. Our dependent variable was treatment choice (PE, SER, or PE+SER). Because few individuals selected no treatment, it was excluded from the analyses. PE was entered as the reference category.

Undergraduate sample: Treatment choice—The main effects model significantly predicted treatment choice, $\chi^2(N = 401, 6) = 12.23, p = .05$. Depression was the only significant predictor in this model, $\chi^2(N = 401, 2) = 6.42, p = .04$. Specifically, after controlling for treatment history, the odds of selecting the combination treatment relative to PE were 1.70 times greater for those who received the PTSD+MDD “imagine self” vignette than those that only received the PTSD vignette, Wald $\chi^2(N = 401, 1) = 6.17, p = .01$. There were no other significant main effects or interactions.

Community sample: Treatment choice—In keeping with the results for the undergraduate sample, the main effects model significantly predicted treatment choice, $\chi^2(N = 178, 6) = 31.02, p < .01$. Depression was the only significant predictor in the model, $\chi^2(N = 178, 2) = 18.21, p < .01$. After controlling for treatment history, higher depression symptoms were associated with increased odds of selecting PE+SER relative to PE alone, $\exp(B) = 1.15$, Wald $\chi^2(1) = 15.39, p < .01$. Additionally, greater depression symptoms were also associated with increased odds of selecting sertraline alone relative to PE alone, $\exp(B) = 1.13$, Wald $\chi^2(1) = 5.69, p = .02$. There were no other significant findings.

Treatment Beliefs, Depression, and Depression-relevant Rationales

In order to gain a better understanding of what aspects of treatment preference depression and depression-relevant treatment rationales impact, we conducted linear regression analyses with treatment credibility of PE and sertraline (CS; e.g., “Is the treatment logical?”) and personal reactions to PE and sertraline (PRS; e.g., “Would you recommend this treatment to a friend?”) as dependent variables. In keeping with the prior analyses, we first controlled for prior treatment history. Depression (“imagine self” vignette type: PTSD only versus PTSD+MDD in the undergraduate sample; QIDS severity in the community sample) and rationale type (standard or depression relevant) were entered in the second step and the interaction between depression and treatment rationale type were then entered in the third step.

Undergraduate sample: Treatment beliefs—The overall model was not significant for PE credibility (CS), $F(4, 418) = 1.22, p = .30$, personal reactions toward PE (PRS), $F(4, 418) = .81, p = .52$, sertraline credibility (CS), $F(4, 422) = 1.77, p = .13$ or personal reactions toward sertraline (PBS), $F(4, 422) = .64, p = .64$. Thus, for the undergraduate sample, contrary to our hypotheses, neither the “imagine self” vignette type nor the depression rationale strongly influenced treatment beliefs.

Community sample: Treatment beliefs—For PE credibility (CS), the overall model was significant, $F(4, 192) = 3.33, p = .01, R^2 = .07$. More specifically, there was a significant interaction between depression (QIDS) and whether or not individuals received the depression-relevant rationale, $\beta = .37, p = .02$. Simple slopes analyses (Aiken & West, 1991) revealed that for those who received the depression-relevant rationale, depression

scores were positively associated with higher PE credibility, $\beta = .23, p = .03$. However, for those who received the standard rationale, depression scores were not significantly associated with PE credibility, $\beta = -.11, p = .29$.

Similarly, the overall model significantly predicted positive personal reactions toward PE (PRS), $F(4, 191) = 4.01, p = .004, R^2 = .08$. Again, there was a significant interaction between depression (QIDS) and rationale type, $\beta = .35, p = .02$. For individuals who received the depression-relevant rationale, higher QIDS scores were associated with more positive personal reactions toward PE, $\beta = .21, p = .05$. However, for those who received the standard rationale, depression symptoms were not significantly associated with personal reactions toward PE, $\beta = -.11, p = .28$.

For sertraline credibility (CS), the overall model was significant, $F(4, 194) = 2.63, p = .04, R^2 = .05$. However, none of the individual predictors were significant, $ps > .27$. The overall model was not significant for personal reactions toward sertraline (PRS), $F(4, 191) = 1.62, p = .17, R^2 = .03$.

Overall, providing depression-relevant treatment rationales for individuals with symptoms of depression may enhance positive beliefs about PE. Interestingly, this interaction was not found for beliefs about sertraline.

Discussion

Given high rates of PTSD and MDD co-occurrence (e.g., Rytwinski et al., 2013), its associated burden (e.g., Post et al., 2011), and the fact that individuals with PTSD often fail to seek treatment (e.g., Wang et al., 2005), we examined whether co-occurring PTSD and depression was related to treatment preference/beliefs and whether treatment rationales that were tailored to symptoms of depression impacted PTSD treatment choice or beliefs. In both samples, depression was associated with a preference for combined treatment over PE alone. Consistent with the depression literature (Lin et al., 2005; Kocsis et al., 2009), where depression symptoms have been associated with a desire for combined psychotherapy and pharmacology, the present study suggests this pattern of findings may also be the case for PTSD treatment. Notably, this preference for a combined treatment was in the *absence* of any information being provided that a combined treatment would be more effective than a monotherapy. One possible explanation for this finding is that individuals believe that two treatments will be more effective than one. Alternatively, Feeny and colleagues (2009b) hypothesized that individuals with co-occurring PTSD and MDD may be less likely to select PE alone because they do not have the energy or motivation to enter into psychotherapy or are convinced of a more biologic etiology hypothesis for depression symptoms that is consistent with serotonergic medications. However, in addition to these cognitions, many individuals also believe that talking about a trauma is an important component of treatment (Cochran, Pruitt, Fukuda, Zoellner, & Feeny, 2008; Zoellner et al., 2003). Although further research is needed to understand the motivation underlying treatment choice, this finding suggests that individuals with co-occurring PTSD and depression may select combination treatment because it allows them the ability to reconcile these two competing beliefs (i.e.,

that they want to talk about their trauma, but do not feel they can do it without the help of something like medication).

At least for the trauma-exposed individuals, there was also evidence that for those who received the depression-relevant treatment rationales, greater symptoms of depression were associated with significantly more, albeit small in magnitude, positive beliefs about PE. Interestingly, despite this effect, there was no evidence that the treatment rationale was associated with any change in treatment choice. One likely explanation for this finding is that, although the depression rationales were associated with more positive beliefs about PE for individuals with depression, these changes in beliefs were not substantial enough to impact choice. In keeping with this logic, it is important to remember that the manipulation of the treatment rationales was relatively small, consisting of only the addition of a few sentences about depression in the context of a much longer treatment rationale. The fact that it had any influence on treatment beliefs is encouraging. If participants had have been offered a more extensive depression-relevant rationale (e.g., one that was tailored to their individual depression symptoms and allowed them to ask questions as they would when visiting a treatment provider), they may have shown a larger change in beliefs and potentially also changes in treatment choice. On the other hand, from a practical perspective, there are times when addressing treatment beliefs is more important than changing treatment choice (e.g., no other options available, no strong preference). In these instances, it may be particularly important to address treatment beliefs of patients who are uncertain about or have negative views of the available treatment as poor “buy in” to the treatment rationale is associated with a high risk of premature attrition and also minimal engagement, which can negatively affect outcomes (e.g., Addis & Carpenter, 1999; Addis & Jacobson, 2000; Ilard & Craighead, 1994; Swift et al., 2011). This lack of “buy in” may be particularly prevalent among individuals who are experiencing feelings of hopelessness associated with depression (e.g., “I’ll try psychotherapy because my family wants me to but I don’t think anything will help me.”). Although not explicitly tested in the current study, providing patients with a brief rationale tailored to their depression symptoms may increase hope, which has been associated with better PTSD and depression treatment outcomes (Gilman, Schumm, & Chard, 2011).

Additionally, in the current study, there was no evidence that the depression-relevant treatment rationales impacted beliefs about sertraline alone. Why might this be? First, one might predict that this was due to a ceiling effect. Potentially, sertraline beliefs started out so positive that there was no room for them to improve. This does not appear to be the case. The mean sertraline credibility and personal reactions ratings were approximately at the center of the rating scale. Alternatively, and more likely, participants may be more familiar with sertraline due to aggressive advertising campaigns surrounding antidepressant medications than they were with PE prior to beginning the study. Thus, they may have had more strongly held, pre-existing beliefs about sertraline than about PE when they entered the study, which may have made their beliefs more resistant to change.

In interpreting these results, there are several limitations that should be kept in mind. First, only the trauma-exposed community sample demonstrated an interaction between depression-augmented treatment rationales and depression symptoms in predicting beliefs

about PE. One explanation for this finding is that the undergraduate sample had difficulty envisioning themselves in a situation where they were selecting a treatment. However, the depression “imagine self” vignette manipulation (i.e., the depression-relevant versus standard vignette) was associated with a change in treatment choice in the undergraduate sample. Instead, the disparate findings between samples may suggest that the depression-rationale is more useful in a sample that is actually experiencing symptoms of depression. Second, as would be expected, depression and PTSD severity were highly correlated in the community sample ($r = .75, p < .001$). Thus, it is plausible that overall symptom severity, rather than depression per se, was driving our results. However, if this was the case, we would not expect the manipulation of the depression rationale to impact treatment beliefs. Third, the sertraline rationale contained the following sentence which was not included in the PE rationale, “You will not have to stop other types of medications or talk therapies you are currently involved in.” Although it is possible that the addition of this sentence may have caused participants to favor sertraline and shy away from PE, this does not appear to be the case because participants who were most likely to be taking psychotropic medications or to be in psychotherapy (i.e., those with a previous treatment history and those with greater depression symptoms) showed a preference for combination treatment. Fourth, systematic content manipulation and the use of forced choice limits participants’ treatment options that could be examined. However, the treatments used in the current study are some of the most well-researched, empirically-supported treatments for PTSD (e.g., Brady et al., 2000; Davidson et al., 2001; Powers et al., 2010), represent two broad option categories (e.g., psychotherapy versus pharmacotherapy), and provide important information about how depression affects PTSD treatment preference and beliefs. Fifth, as alluded to in the treatment rationale section, digital videos of treatment rationales are not the same as face-to-face treatment rationales that are often provided to patients. However, we attempted to make our rationales as similar to fact-to-face interactions as possible. Furthermore, it would generally be expected that face-to-face treatment rationales would only have provided even larger effects. Finally, although both PE (e.g., Hagenaars et al., 2010; van Minnen et al., 2002) and sertraline (e.g., Brady & Clary, 2003) are effective treatments for individuals with co-occurring PTSD and depression, there are no published randomized controlled trials comparing the efficacy of these two treatments. Thus, we were unable to include information about the relative efficacy of the two treatments in the rationales, which could impact treatment beliefs and/or choice. However, the rationales reflect the current state of the research and include the information that could realistically be provided to patients seeking treatment for co-occurring PTSD and depression.

In conclusion, despite the fact that co-occurring PTSD and depression is common (Rytwinski et al., 2013) and associated with increased distress relative to PTSD alone (e.g., Blanchard et al., 1998; Ikin et al., 2010; Momartin et al., 2004; Nixon et al., 2004; Post et al., 2011), there is little research examining how depression influences PTSD treatment seeking. Our results suggest that depression symptoms may be associated with a greater preference for combined psychotherapy and pharmacotherapy PTSD treatment. Furthermore, we are aware of no other study to date that has examined the impact of tailoring PTSD treatment rationales to individuals with PTSD and depression. PTSD treatment rationales tailored to include information about symptoms of depression may be

associated with more positive beliefs about PE for individuals with symptoms of depression. When individuals with co-occurring PTSD and depression symptoms are hesitant about entering into PE, providing them with the option of combination treatment and/or providing a treatment rationale that is tailored to their depression symptoms may make them feel more positively about treatment, which could ultimately lead to greater treatment adherence and treatment outcomes. In some settings (e.g., psychotherapy offices), treatment providers are likely already engaging in these types of discussions. However, in other setting where face-to-face patient and treatment provider interactions are limited (e.g., primary care settings) or are non-existent (e.g., informational brochures), it may be particularly important to add information about depression in PTSD treatment. This study also opens the door for further research into whether these findings can be extrapolated beyond depression. Ultimately, this work sheds further light on the fact that depression is a critical consideration when providing PTSD treatment options as it may significantly impact treatment preference, which significantly impacts treatment adherence and outcomes (e.g., Addis & Carpenter, 1999; Addis & Jacobson, 2000; Ilard & Craighead, 1994; Swift et al., 2011).

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Appendix: Treatment Rationales

Prolonged Exposure Rationale

Let me tell you about prolonged exposure. Prolonged exposure is a type of cognitive behavioral treatment that targets a number of trauma-related difficulties. Prolonged exposure is an individual therapy that is often quite helpful in reducing posttraumatic stress disorder (or PTSD). Results of several controlled studies have shown that it significantly improves PTSD symptoms related to a wide variety of traumatic events. [Counterbalancing for depression: Furthermore, many people who have PTSD also experience symptoms of depression. These symptoms can include feelings of sadness, worry, guilt, worthlessness, and hopelessness. For some, they even feel like life is no longer worth living. People with depression often have physical symptoms as well, such as fatigue, trouble sleeping, and problems concentrating. Prolonged exposure therapy can help reduce symptoms of both PTSD and trauma-related depression.]

Some experts suggest that chronic PTSD is a complicated problem that reflects a failure of the usual recovery processes that affect our ability to cope with, and adapt to, stressful events. Specifically, research suggests that most people show PTSD symptoms, such as intrusive thoughts about the traumatic event and avoidance of trauma reminders, right after the event. However, with time, some people's initial symptoms subside, while others do not. In addition, researchers have argued that because individuals with PTSD have difficulty emotionally “processing,” or digesting the traumatic event, they continue to be very fearful of non-dangerous trauma-related situations and objects (for example, the bedroom where an

assault occurred). Consistent with this idea, studies have shown that individuals with PTSD view the world as extremely dangerous and themselves as particularly incompetent. Accordingly, cognitive behavioral therapy such as prolonged exposure is thought to be useful in treating chronic PTSD because it is helpful in promoting emotional processing of the traumatic event through approaching trauma-related memories and situations. So, because PTSD may be a disorder of failed emotional processing, prolonged exposure may be a particularly rational treatment option.

Let me give you an example. Our memories are like complicated file cabinets. Past experiences are filed into proper drawers, and this is how we organize and make sense of them. But in what file drawer can you file a trauma? How do you make sense of it? For people with PTSD, their traumatic experience has been incorrectly (or incompletely) filed. What prolonged exposure seems to do is to help people to be able to organize the distressing memories so that they can find a drawer for them and move on. In any case, prolonged exposure can be quite helpful in reducing trauma related difficulties.

In this treatment for PTSD, you meet once a week for 10 weeks with your therapist for about 90 minutes each time. The procedures in this treatment include: learning about common reactions to trauma, breathing retraining (a form of relaxation), imaginal exposure, which is repeatedly recounting the memory of your trauma, and in vivo exposure, or gradual confrontation with safe situations that you are avoiding because they remind you of the trauma or because you think they are dangerous. In other words, you are encouraged to approach the memory of your trauma through repeatedly telling the story to your therapist and gradually approaching safe situations you are avoiding because they remind you of the trauma and make you upset. Imaginal and in vivo exposure will help you realize that the traumatic memory is not dangerous, that situations you thought were dangerous are actually safe, and that you can handle stress successfully. In this program, you are assigned “homework” so you can practice between sessions the things you learn in therapy. Your therapist works with you to take treatment at your own pace. At the end of 10 weeks, you stop treatment. If you have done well, generally we will recommend that you continue to practice what you learned in treatment. If necessary, “booster” sessions are available on an as-needed basis.

The risks associated with prolonged exposure are mild to moderate discomfort when exposed to anxiety-provoking images, situations, and places. Possible side effects include: temporary increases in anxiety, PTSD symptoms, and depression. Generally however, prolonged exposure is well tolerated, with only mild and temporary side effects.

Sertraline Rationale

Let me tell you about Zoloft. Zoloft (or sertraline) is a type of medication called an SSRI, or selective serotonin reuptake inhibitor, that targets a number of trauma-related difficulties. Zoloft is an antidepressant medication that is often quite helpful in reducing posttraumatic stress disorder (or PTSD). Results of several controlled studies have shown that it significantly improves PTSD symptoms related to a wide variety of traumatic events. [Counterbalance for depression: Furthermore, many people who have PTSD also experience

symptoms of depression. These symptoms can include feelings of sadness, worry, guilt, worthlessness, and hopelessness. For some, they even feel like life is no longer worth living. People with depression often have physical symptoms as well, such as fatigue, trouble sleeping, and problems concentrating. Zoloft can help reduce symptoms of both PTSD and trauma-related depression.

Some experts suggest that chronic PTSD is a complicated problem that reflects changes in many of the brain systems that affect our ability to cope with, and adapt to, stressful events. Specifically, research suggests that in a person with PTSD, the brain's anxiety centers have been overactivated by the trauma, and they continue to be too active even after the traumatic event has ended. In addition, researchers have argued that because individuals with PTSD have difficulty with overactive anxiety centers, they continue to be very fearful of non-dangerous trauma-related stimuli (for example, the bedroom where an assault occurred). Consistent with this idea, studies have shown that individuals with PTSD have different levels and balances of various brain chemical messengers located in these anxiety centers. Accordingly, selective serotonin reuptake inhibitors (or SSRIs) such as Zoloft are thought to be useful in treating chronic PTSD because serotonin can exert a powerful effect on the brain centers controlling anxiety and may be able to correct some of these changes. So, because PTSD may be a disorder of brain chemical messengers, Zoloft may be a particularly rational treatment option.

Let me give you an example. Our brains have a complicated set of alarm systems that go off whenever we are in danger. Our heart speeds up, muscles tense, we feel anxious, more alert, and ready to fight, or flight or freeze. For people with PTSD, it's like that alarm system never turns off, it keeps on sounding, and then it takes on a life of its own. What Zoloft seems to do is to shut off, or at least turn down, this alarm system and keep it from constantly running. In any case, Zoloft can be quite helpful in reducing trauma related difficulties.

In this treatment for PTSD, you will meet once a week for 10 weeks with your psychiatrist for up to 30 minutes each time. Prior to starting Zoloft you will be asked to stop other antidepressants you are taking. You will not have to stop other types of medications or talk therapies you are currently involved in. In this treatment, you will not talk extensively about your traumatic experience or systematically confront situations or places that you are avoiding. The procedures in this treatment include: taking individually adjusted doses of Zoloft within the recommended dose range of 50 to 200 milligrams per day, and being seen weekly by a psychiatrist who will offer general encouragement and support, monitor your response to medication, and record any side effects you are experiencing. In other words, your psychiatrist will adjust the dose of Zoloft with the aim of maximizing its helpfulness and minimizing any side effects. Zoloft will decrease the physical and emotional impact of your traumatic memories by reducing the over-activity in your brain's anxiety centers. We will work with you to take treatment at your own pace. Your treatment program will be designed together by you and your psychiatrist. At the end of 10 weeks, you will either stay on or stop this medication. If you have done well, generally we will recommend that you will stay on the medication optimally for at least a year and meet with your psychiatrist

every three months. If necessary, you can also come in to discuss adjustments to your medication on an as needed basis.

The risks associated with Zoloft are mild to moderate side effects, or transient withdrawal symptoms if Zoloft is quickly discontinued. Possible side effects include: loose stools, sweating, nausea, and headaches. Generally, however, Zoloft is well tolerated, with only mild and temporary side effects.

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Highlights

- Depression symptoms were associated with likelihood to select combination PTSD treatment.
- In trauma-exposed sample, depression rationales X depression symptoms predicted PE beliefs.
- Depression rationales X depression symptoms did not significantly predict sertraline beliefs.

Table 1

Means, Standard Deviations, Percentages and Ranges on Demographic Variables and Psychopathology Measures.

Demographic and Psychopathology	Undergraduate Sample (<i>N</i> = 439) <i>M</i> (<i>SD</i>) or %	Community Sample (<i>N</i> = 203) <i>M</i> (<i>SD</i>) or %
Age, Range 18 – 65	19.00 (1.35)	38.92 (12.53)
Ethnicity		
Caucasian	57.0%	35.0%
Asian or Asian American	27.9%	1.0%
African American	3.7%	55.5%
Hispanic	3.7%	5.5%
Other	7.7%	3.0%
PTSD Diagnosis (PDS)	14.7%	45.7%
PTSD Severity (PDS) ^a , Range 0 – 51	6.69 (8.22)	21.48 (13.71)
Depression (QIDS-SR), Range 0 - 27	5.33 (3.70)	10.23 (5.89)

Note.

^aBased on those participants who had experienced a traumatic event and completed the PDS. Undergraduate: *n* = 227; Community *n* = 187. PDS = Post-Traumatic Stress-Diagnostic Scale, QIDS = Quick Inventory of Depressive Symptomatology.