HOSTILE INTERPRETATION BIAS AND PSYCHOLOGICAL TREATMENT DROPOUT: A PRELIMINARY INVESTIGATION

By

CASSANDRA PAIGE KRUG

Bachelor of Science in Psychology
Oklahoma State University
Stillwater, Oklahoma
2015

Master of Science in Psychology
Oklahoma State University
Stillwater, Oklahoma
2017

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Dissertation Approved:

Tony T. Wells, Ph.D

Dissertation Adviser

Stephanie Sweatt, Ph.D.

Misty Hawkins, Ph.D.

Carrie Winterowd, Ph.D.

Name: CASSANDRA PAIGE KRUG

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Abstract: Despite the recent advances in psychological treatment, treatment dropout remains a major problem across empirically supported therapeutic modalities (Swift & Greenberg, 2012). A contributing fact to treatment dropout is a weakened therapeutic relationship (Lorr, 1965). Hostile interpretation bias, the tendency to interpret ambiguous information as hostile or threatening, is a common component of many psychological disorders, which may contribute to the development of the therapeutic relationship. The current study examined the relationships between hostile interpretation bias, the therapeutic relationship, and treatment dropout. Participants (131; 79.4% Female) completed questionnaires related to past psychological treatment experiences, psychological symptoms, and a hostile interpretation bias task. There was a significant relationship between therapeutic relationship and treatment dropout but the other relationships were not significant. Our results add to prior research indicating the importance of the therapeutic relationship in treatment dropout. Although there were non-significant relationships between hostile interpretation bias, therapeutic relationship, and treatment dropout; exploratory results revealed that symptoms of psychological disorders, perceived barriers to treatment, and attitudes towards treatment are significantly associated with treatment dropout. These factors represent intriguing areas for future research in treatment dropout.

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CHAPTER I

INTRODUCTION

There are now a substantial number of empirically supported psychological treatments for a range of psychological disorders (Bullis, Fortune, Farchione, & Barlow, 2014; Gotnik et al., 2015; Mitchell, Gehrman, Perlis, & Umscheid, 2012). Despite this progress in the development of empirically supported treatments, treatment dropout remains a substantial barrier to favorable treatment outcomes with approximately one in five clients prematurely ending treatment (Swift & Greenberg, 2012). This is an important issue given that most treatments are efficacious only if clients attend sessions and, as such, requires a better understanding of the factors that contribute to client dropout.

One major factor that contributes to treatment dropout is a weakened therapeutic relationship (Lorr, 1965). The therapeutic relationship is an important part of mental health treatment regardless of the type of treatment (Lambert & Barley, 2001). Among the many factors that can affect the therapeutic relationship, cognitive biases may play an important role. Cognitive models posit that memory, interpretation, and attention are biased towards negative information in individuals with emotional and other disorders (Beck, 1976).

Interpretation bias may be particularly relevant to the therapeutic relationship as how a client interprets the therapist's words and actions is likely to affect the relationship. Specifically, a tendency to interpret the therapist's words and actions in a negative way may result in a weaker therapeutic relationship, resulting in early treatment dropout.

A type of negative interpretation bias that appears promising in the study of treatment dropout is *hostile interpretation bias*, that is, the tendency to interpret another's behavior as hostile or threatening. Hostile interpretation bias is associated with a range of psychological disorders including depression, generalized anxiety, social anxiety, and several Cluster B personality disorders (Smith et al., 2016; Deschenes, Dugas, & Gouin, 2015; Lingiardi, Filippucci, & Baiocco, 2005). Greater hostile interpretation bias is also associated with state angry mood, low social support, and a range of behaviors that negatively affect social relationships such as conflict avoidance and excessive reassurance seeking (Krug & Wells, 2019).

Treatment Dropout, the Therapeutic Relationship, and Anger/Hostility

Treatment Dropout

Treatment dropout is broadly defined as a discontinuation of treatment prior to recovering from the problems that led an individual to seek treatment (Swift & Greenberg, 2012). At the same time, there are varying definitions of treatment dropout across the literature, making this concept particularly challenging to examine consistently across studies and treatments (Hatchett & Park, 2003; Swift & Greenberg, 2012). Although there is variability in how treatment dropout is defined, there is a consensus that treatment dropout has been, and continues to be, a problem for psychotherapy (Wierzbicki & Pekarik, 1993; Swift & Greenberg, 2012). For example, a recent meta-analysis of treatment dropout in 115 studies of cognitive behavioral therapy revealed that approximately 16% of participants dropout in the pretreatment phase, and a further 26% dropout during the active treatment phase (Fernandez, Salem, Swift, & Ramtahal, 2015). Given

these high rates of dropout, identifying factors associated with increased treatment dropout are important to improving treatment retention.

Therapeutic Relationship and Treatment Dropout

A large body of research has demonstrated that a stronger therapeutic relationship between therapist and client is associated with improved treatment outcome (Beckham, 1992; Roos & Werbart, 2013). This is true across a range of therapy modalities, diagnoses, and treatment outcome measures (Lambert & Barley, 2001). A specific way that the therapeutic relationship may affect treatment outcome and client well-being is through treatment dropout.

A meta-analysis examining dropout and therapeutic relationship broadly also found that a strong therapeutic relationship early in treatment was associated with lower rates of treatment dropout (Sharf et al., 2010). Specifically, six of the 11 studies included in the meta-analysis assessed for client report of therapeutic relationship, and these 6 studies demonstrated that, generally, a weaker client-rated therapeutic relationship was related to increased early treatment dropout.

A subsequent qualitative review of 44 studies demonstrated that overall, patients/participants with a strong therapeutic relationship in mental health treatment had lower dropout rates and more symptom alleviation than those who reported weaker therapeutic relationships (Roos & Werbart, 2013). Importantly, this review examined the specific therapist-client relationship factors that contribute to treatment dropout in several studies. One main factor that the review suggests impacts treatment dropout is client report of dissatisfaction with the therapist's competence, trustworthiness, and the way therapists handled problematic issues. Another important factor the review concludes has strong associations with treatment dropout are client reported conflicts in the therapeutic relationship and negative processes in therapy. As

such, client perceptions of, and feelings toward, the therapist are critical components related to treatment dropout.

These reviews demonstrate the importance of the client-rated strength of the therapeutic relationship in treatment dropout. This raises the question as to what factors may affect the client's perception of the therapist and therapeutic relationship. Undoubtedly, a large number of factors could be relevant, but client anger and hostility may be particularly useful to examine.

Anger and Hostility and the Therapeutic Relationship

Increased expression of anger and hostility has a negative effect on a broad range of social relationships including marriage (Newton & Kiecolt-Glaser, 1995), peer relationships (Pope & Bierman, 1999), and workplace relationships (O'Neill et al., 2009). Similarly, anger is hypothesized to have a negative effect on therapeutic relationships. For example, Deffenbacher (2011) suggested that, in cognitive behavioral therapy, clients with anger issues may perceive the introduction of typical therapy procedures (for example, traditional cognitive behavioral change strategies, problem solving, etc.) as evidence that they are not listened to, understood, or believed. As such, he argued that clients with anger problems need additional time spent on developing rapport and a strong therapeutic relationship prior to the introduction of skills and strategies to help with the presenting problem(s).

Despite the clear rationale for the importance of anger and hostility to the therapeutic relationship, we could find only two studies that have directly examined this association. In a study of 71 patients with chronic pain, anger and hostility were negatively correlated with patients' assessment of the therapeutic relationship (Burns et al., 1999). In a qualitative examination of therapist experiences with being the target of client hostile behaviors, poorer therapeutic relationship was associated with hostile anger events and increased likelihood that the events went unresolved (Hill et al., 2003).

Given the theoretical importance of anger in the therapeutic relationship and the limited qualitative and quantitative research indicating that anger has a negative effect on the therapeutic relationship, anger represents an important factor to assess in predicting difficulties with the therapeutic relationship and potential treatment dropout. As discussed below, interpretation bias may be a particularly important aspect of anger to investigate in the context of the therapeutic relationship.

Hostile Interpretation Bias

Hostile interpretation bias plays a key role in the integrated cognitive model of trait anger and anger expression (Wilkowski & Robinson, 2010). Anger expression can result in aversive social consequences, which in turn reinforce the automatic interpretation of social information as hostile. According to this cognitive model, while other, more effortful cognitive processes can modulate the intensity of angry and hostile reactions, hostile interpretation bias is an important early component of the feeling and expression of anger that can contribute to negative social outcomes.

Early research examining hostile interpretation bias has focused on the relationship between anger or aggression and hostile interpretation (e.g., Nasby, Hayden, & dePaulo, 1980; Epps & Kendall 1995). More recently, research has expanded to evaluate hostile interpretation bias across a range of psychological problems and disorders, indicating that it is relevant for the therapeutic relationship beyond the treatment of anger/aggression. There is evidence that hostile interpretation bias is evident in mood disorders, anxiety disorders, personality disorders, and post-traumatic stress disorder (Smith et al., 2016; Deschenes, Dugas, & Gouin, 2015; Ehlers & Clark, 2000; Lobbestael, Cima, & Arntz, 2013; Domes et al., 2008). See Chapter II for a full review of this literature.

Hostile interpretation bias is likely to be encountered frequently in the context of psychotherapy. Notably, hostile interpretation bias can affect an individual's ability to interact with others, thus making it important to examine within the context of the therapeutic relationship. Although they have not been explicitly studied together, hostile interpretation bias may have an effect on the client and therapist's ability to form a strong therapeutic relationship. In turn, a weaker therapeutic relationship may lead to increased likelihood of treatment dropout.

Current Study

There have been major advancements in our treatment of psychological disorders in the last 50 years, but treatment dropout remains a problem across disorders and treatment modalities (Swift & Greenberg, 2012). The therapeutic relationship has a strong effect on treatment dropout and client perceptions of the therapist play an important role in the therapeutic relationship (Sharf et al., 2010). Moreover, the tendency to interpret ambiguous information in a hostile or threatening way is common across a range of disorders and mood states (Wilkowski & Robinson, 2010). Though hostile interpretation bias has not been studied in the context of the therapeutic relationship and treatment dropout, the literature reviewed above provides evidence that such an interpretation bias may negatively affect the therapeutic relationship and treatment dropout. The current study sought to fill a gap in the literature in interpretation bias and how it impacts treatment dropout in people who sought psychological treatment at some point in their lives. The current study examined individuals with a history of psychological treatment to assess hostile interpretation bias and factors related to treatment dropout. Specifically, the current study evaluated whether hostile interpretation bias is associated with treatment dropout and whether this relationship may be at least partially explained by effects on the therapeutic relationship.

Hypotheses for the study were:

1a. Hostile interpretation bias would be negatively associated with strength of the therapeutic relationship. 1b. Hostile interpretation bias would be positively associated with treatment dropout.

2. Strength of the therapeutic relationship would be negatively associated with treatment dropout.

3. Hostile interpretation bias would be indirectly associated with dropout through therapeutic relationship.

CHAPTER II

REVIEW OF THE LITERATURE

Overview

There are now a substantial number of empirically supported psychological treatments for a range of psychological disorders (Bullis, Fortune, Farchione, & Barlow, 2014; Gotnik et al., 2015; Mitchell, Gehrman, Perlis, & Umscheid, 2012). Despite this progress in the development of empirically supported treatments, treatment dropout remains a substantial barrier to favorable treatment outcomes with approximately one in five clients prematurely ending treatment (Swift & Greenberg, 2012). This is an important issue given that most treatments are efficacious only if clients attend sessions and, as such, requires a better understanding of the factors that contribute to client dropout.

One major factor that contributes to treatment dropout is a weakened therapeutic relationship (Lorr, 1965). The therapeutic relationship is an important part of mental health treatment regardless of the type of treatment (Lambert & Barley, 2001). Among the many factors that can affect the therapeutic relationship, cognitive biases may play an important role.

Cognitive models posit that memory, interpretation, and attention are biased towards negative information in individuals with emotional and other disorders (Beck, 1976). Interpretation bias may be particularly relevant to the therapeutic relationship as how a client interprets the therapist's words and actions is likely to affect the relationship. Specifically, a tendency to interpret the therapist's words and actions in a negative way may result in a weaker therapeutic relationship, resulting in early treatment dropout.

A type of negative interpretation bias that appears promising in the study of treatment dropout is *hostile interpretation bias*, that is, the tendency to interpret another's behavior as hostile or threatening. Hostile interpretation bias is associated with a range of psychological disorders including depression, generalized anxiety, social anxiety, and several Cluster B personality disorders (Smith et al., 2016; Deschenes, Dugas, & Gouin, 2015; Lingiardi, Filippucci, & Baiocco, 2005). Greater hostile interpretation bias is also associated with state angry mood, low social support, and a range of behaviors that negatively affect social relationships such as conflict avoidance and excessive reassurance seeking (Krug & Wells, 2019). Below we thoroughly review the literature on how the therapeutic relationship, hostile interpretation bias, and their relationship with each other may contribute to treatment dropout.

Treatment Dropout, the Therapeutic Relationship, and Anger/Hostility

Treatment Dropout

Treatment dropout is broadly defined as a discontinuation of treatment prior to recovering from the problems that led an individual to seek treatment (Swift & Greenberg, 2012). At the same time, there are varying definitions of treatment dropout across the literature, making this concept particularly challenging to examine consistently across studies and treatments (Hatchett & Park, 2003; Swift & Greenberg, 2012). Although there is variability in how treatment dropout

is defined, there is a consensus that treatment dropout has been, and continues to be, a problem for psychotherapy (Wierzbicki & Pekarik, 1993; Swift & Greenberg, 2012).

For example, an early meta-analysis of 125 treatment outcome studies of psychotherapy found a dropout rate of approximately 47% with a 95% confidence interval of approximately 43%-51% (Wierzbicki & Pekarick, 1993). A more recent meta-analysis of treatment dropout in 115 studies of cognitive behavioral therapy revealed that approximately 16% of participants dropout in the pretreatment phase, and a further 26% dropout during the active treatment phase (Fernandez, Salem, Swift, & Ramtahal, 2015). Given these high rates of dropout, identifying factors associated with increased treatment dropout are important to improving treatment retention. As discussed in the following section, the therapeutic relationship is a foundational component to all psychological treatments and therapies and is thus, an important area to examine in relation to treatment dropout.

Therapeutic Relationship and Treatment Dropout

A large body of research has demonstrated that a stronger therapeutic relationship between therapist and client is associated with improved treatment outcome (Beckham, 1992; Roos & Werbart, 2013). This is true across a range of therapy modalities, diagnoses, and treatment outcome measures (Lambert & Barley, 2001). A specific way that the therapeutic relationship may affect treatment outcome and client well-being is through treatment dropout.

The therapeutic relationship involves the client's perceptions of the therapist and their relationship in addition to the therapist's perceptions of the relationship and client. As such, assessing both client and therapist perceptions of the therapeutic relationship may be beneficial for general assessment of the relationship. However, assessing the client's perceptions of the therapist and of the relationship may be particularly important when evaluating the association between therapeutic relationship and treatment dropout. For example, an early study on

psychological treatment dropout focused on client-therapist congruence in the first session (Beckham, 1992). Specifically, lower client perceived congruence with the therapist at the intake session was predictive of early treatment dropout. This suggests that the client's first impressions of the therapist, rather than congruence built from multiple sessions of rapport building, is important for treatment continuation.

A meta-analysis examining dropout and therapeutic relationship broadly also found that a strong therapeutic relationship early in treatment was associated with lower rates of treatment dropout (Sharf et al., 2010). Specifically, six of the 11 studies included in the meta-analysis assessed for client report of therapeutic relationship, and these 6 studies demonstrated that, generally, a weaker client-rated therapeutic relationship was related to increased early treatment dropout.

A subsequent qualitative review of 44 studies demonstrated that overall, patients/participants with a strong therapeutic relationship in mental health treatment had lower dropout rates and more symptom alleviation than those who reported weaker therapeutic relationships (Roos & Werbart, 2013). Importantly, this review examined the specific therapist-client relationship factors that contribute to treatment dropout in several studies. One main factor that the review suggests impacts treatment dropout is client report of dissatisfaction with the therapist's competence, trustworthiness, and the way therapists handled problematic issues. Another important factor the review concludes has strong associations with treatment dropout are client reported conflicts in the therapeutic relationship and negative processes in therapy. As such, client perceptions of, and feelings toward, the therapist are critical components related to treatment dropout.

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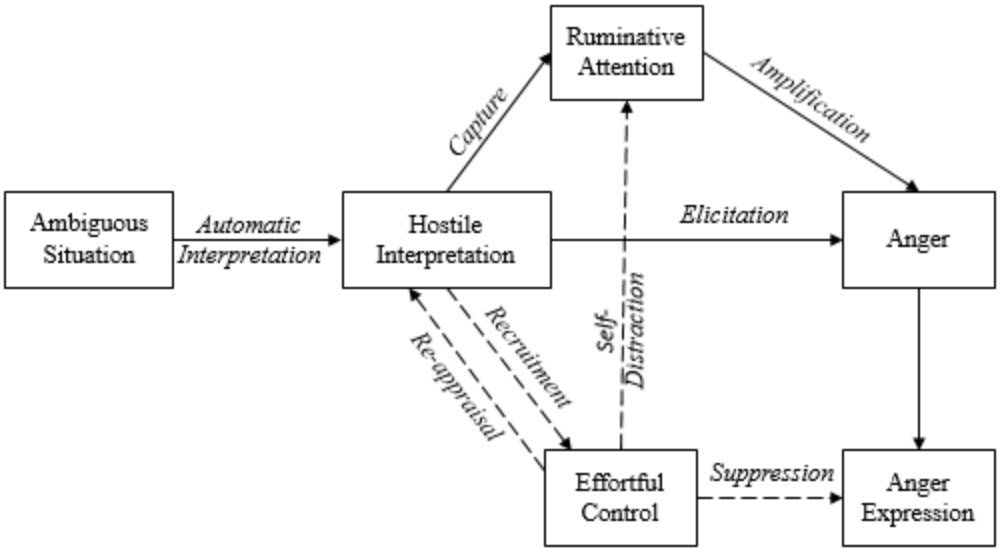
Despite the clear rationale for the importance of anger and hostility to the therapeutic relationship, we could find only two studies that have directly examined this association. In a study of 71 patients with chronic pain, anger and hostility were negatively correlated with patients' assessment of the therapeutic relationship (Burns et al., 1999). In a qualitative examination of therapist experiences with being the target of client hostile behaviors, poorer therapeutic relationship was associated with hostile anger events and increased likelihood that the events went unresolved (Hill et al., 2003).

Given the theoretical importance of anger in the therapeutic relationship and the limited qualitative and quantitative research indicating that anger has a negative effect on the therapeutic relationship, anger represents an important factor to assess in predicting difficulties with the therapeutic relationship and potential treatment dropout. As discussed below, interpretation bias may be a particularly important aspect of anger to investigate in the context of the therapeutic relationship.

Hostile Interpretation Bias

Hostile interpretation bias plays a key role in the integrated cognitive model of trait anger and anger expression (Wilkowski & Robinson, 2010). Specifically, the integrated cognitive model posits that a tendency to interpret situations as hostile leads to increased feelings of anger and subsequent anger expression. Anger expression can result in aversive social consequences, which in turn reinforce the automatic interpretation of social information as hostile. According to this cognitive model, while other, more effortful cognitive processes can modulate the intensity of angry and hostile reactions, hostile interpretation bias is an important early component of the feeling and expression of anger that can contribute to negative social outcomes (see Figure 1).

Figure 1. An integrative cognitive model of hostile interpretation bias and anger adapted from Wilkowski & Robinson (2010). Note: Solid lines depict pathways that anger and anger expression are increased, and dotted lines depict pathways that anger and anger expression are decreased.



A large body of empirical research supports the integrated cognitive model. The earliest study to specifically investigate hostile interpretation bias was conducted by Nasby and colleagues (1980). When presented with a photograph that depicted a range of affectively charged social situations, aggressive boys tended to rate the behaviors as hostile in nature. Specifically, the authors found that attribution to infer hostility was related to increased aggressiveness in the adolescents. This study provided early evidence of interpretation bias in the context of anger and aggression. Since then, many studies have found similar results in children/adolescents, and adults (e.g., Orobio de Castro et al., 2002; Klein Tuente, Bogaerts & Veling, 2019).

Furthermore, Epps and Kendall (1995) found that individuals with anger and hostility are more likely to interpret ambiguous and non-ambiguous situations as hostile in nature. Participants were 172 undergraduates who were stratified by age and high vs low levels of anger/aggression.

When presented with hostile, ambiguous, and benign scenarios, participants who were high in anger/aggression indicated higher interpretations of hostility in all scenarios compared to participants in the low anger/aggression group. Importantly, among the high anger/aggression group, even non-affectively charged ambiguous scenarios were interpreted as more hostile. The results suggest that ambiguous situations are interpreted in a hostile manner similar to how the overt hostile scenarios are interpreted.

Early research examining hostile interpretation bias has focused on the relationship between anger or aggression and hostile interpretation (e.g., Nasby, Hayden, & dePaulo, 1980; Epps & Kendall 1995). More recently, research has expanded to evaluate hostile interpretation bias across a range of psychological problems and disorders, indicating that it is relevant for the therapeutic relationship beyond the treatment of anger/aggression. For example, a diagnosis of Major Depressive Disorder (MDD) is associated with increased hostile interpretation bias compared to a group without a psychiatric diagnosis (Smith et al., 2016). In the same paper, depression symptom severity was positively associated with hostile interpretation bias among a treatment seeking sample.

Hostile interpretation bias is also evident in anxiety disorders, with evidence that individuals with generalized anxiety and social anxiety interpret ambiguous social situations as threatening/hostile compared to non-anxious individuals. Specifically, participants with self-reported generalized anxiety symptoms had higher rates of hostile attributions when presented with aversive and ambiguous social scenarios (Deschenes, Dugas, & Gouin, 2015). Additionally, individuals high in social anxiety were more likely to rate a neutral face as angry or disgusted than those low in social anxiety (Yoon & Zinbarg, 2008).

Individuals with posttraumatic stress disorder (PTSD) often have reactive anger towards others due to an increased vigilant state to detect, interpret, and react to perceived threatening or

hostile situations in a way that they perceive will protect them from additional victimization. As such, PTSD is associated with a tendency to be vigilant for and interpret social situations as threatening or hostile (Ehlers & Clark, 2000).

There is also evidence of hostile interpretation bias in personality disorders. For example, in a study examining antisocial personality disorder and hostile interpretation bias, 66 male participants who were assessed for antisocial personality disorder were presented with various scenarios of social situations (Lobbestael, Cima, & Arntz, 2013). Participants with antisocial personality disorder had higher hostile interpretation bias and, in this group, hostile interpretation bias was predictive of reactive aggression. Antisocial personality characteristics has also been associated with an increased likelihood of interpreting ambiguous facial expressions as hostile among incarcerated offenders (Schonenberg & Jusyte, 2014).

Borderline personality disorder has also been associated with hostile interpretation bias of ambiguous facial expression. Specifically, women with borderline personality disorder (BPD) are more likely to label an ambiguous face as displaying anger (Domes et al., 2008). In another study, women with BPD were more likely to infer hostility in film clips of individuals engaging in benign actions (Barnow et al., 2009).

As a whole, this literature indicates that hostile interpretation bias is found across a wide range of psychological disorders. As such, it is likely to be encountered frequently in the context of psychotherapy. Notably, hostile interpretation bias can affect an individual's ability to interact with others, thus making it important to examine within the context of the therapeutic relationship. Although they have not been explicitly studied together, hostile interpretation bias may have an effect on the client and therapist's ability to form a strong therapeutic relationship. In turn, a weaker therapeutic relationship may lead to increased likelihood of treatment dropout.

CHAPTER III

METHODOLOGY

Participants

We recruited 131 participants (Age: $M = 20.14$; $SD = 2.31$) from the university research subject pool (SONA). See Table 1 for sample demographics. Participants were sampled based on their response to a pre-screener question that assessed for a history of psychological treatment. An *a priori* power analysis based on the strength of the relationship between therapeutic relationship and treatment dropout ($d = .55$; Sharf et al., 2010) indicated that 84 participants were needed to achieve a power of .80 at $\alpha = .05$. Thus, we were overpowered to detect this effect.

Table 1.

Sample Characteristics (n = 131)	*n*	*%*
Gender		
Female	104	79.4
Male	23	17.6
Transgender Male	1	.8
Transgender Female	1	.8
Genderqueer/Gender Nonconforming	1	.8
Race/ethnicity		
American Indian/Native American	12	9.2
Asian	2	1.5
Black/African American	6	4.6
Caucasian/White	96	73.8
Hispanic/Latino	16	12.2
Multiple	13	10.0
Sexual Orientation		
Heterosexual/Straight	96	73.3
Gay-Lesbian	6	4.6
Bisexual	23	17.6
Asexual	4	3.1

Questionnaires

Demographics

Participants completed a detailed demographics form to assess for basic demographic information.

Treatment Dropout

Treatment dropout was defined as failure to attend a therapy session without discussing with one's therapist prior to discontinuing attendance (Wierzbicki & Pekarik, 1993). Participants were instructed to answer the questions of the survey based on their most recent experience with psychological treatment. Given that there are no current standard psychological treatment questionnaires that assess for treatment dropout, treatment dropout was determined by a combination of questions. These questions assessed for how it was decided that therapy should end, who decided therapy should end, and whether the participant's therapist thought they should end treatment. The following factors were assessed to determine whether participants were classified as having dropped out of treatment: (a) if they indicated that they decided to end therapy (as opposed to a decision by the therapist or a mutual decision), (b) they did not inform the therapist of their intent to end therapy, (c) and if their therapist thought they should stay in treatment. If participants indicated criterion 'a' in combination with 'b' and/or 'c', they will be classified as dropout. A complete list of questions and classification instructions can be found in Appendix A.

Helping Alliance Questionnaire-II Revised.

The Helping Alliance Questionnaire-II (HAQ-II) is a measure that assesses for the quality of the therapeutic relationship (Luborsky et al., 1996). The questionnaire was adapted to assess for the participants' retrospective assessment of their therapeutic relationship. Participants were asked to think about the most recent time they were in psychological treatment before answering the questionnaire. Each question was adapted to be asked in the past tense. Each item is rated on a 6-point Likert scale with answers ranging from "Strongly Disagree" to "Strongly Agree". Low scores reflect a weaker therapeutic relationship. Negatively worded items are reversed scored. Internal consistency for the current study was excellent (α = .93).

Word Sentence Association Paradigm - Hostile

All participants completed the Word Sentence Association Paradigm- Hostile (WSAP-H; Dillon, Allan, Cougle, & Fincham, 2016) computer task designed to assess for hostile interpretation bias. There are 16 sentences that describe a socially ambiguous situation that would occur in day-to-day life. Each sentence is presented twice but never in sequence for a total of 32 items. Each sentence is paired with a neutral or hostile word. The participant was instructed that sentences will appear on the screen one at a time and to read each sentence and then the word below it. For example, a participant saw the sentence, "Someone is in your way." on the screen paired with either the word "Unaware" or "Inconsiderate" below the sentence. Participants were then asked to rate on a scale of 1 ("Not at all related) to 6 ("very related") how well the single word relates to the sentence they just read above it. The scores were totaled to create the hostile and neutral interpretation scores where higher scores demonstrate stronger bias. The task has demonstrated good internal consistency across student and community samples (benign $\alpha = .90$, hostile $\alpha = .87$; Dillion et al., 2016). Internal consistency for hostile interpretation bias for the current study was good ($\alpha = .86$).

Measures for Exploratory Analyses

Although the current study's main outcomes are treatment dropout, therapeutic relationship, and hostile interpretation bias, other measures were administered for exploratory purposes. Questions related to general treatment history assessed for age during treatment, type of treatment, and reasons for starting and ending treatment. These questions were adapted by the author from a number of studies and questionnaires to address specific questions related to treatment history. A list of these questions and their answer choices can be found in Appendix A.

Additional questions related to why the participant sought mental health treatment and the client's perceptions of the therapist and the therapeutic relationship were also assessed. The

author developed these questions based on the specific hypotheses of the current study. Answer responses for the questions related to why the participant sought mental health treatment were text box format, allowing the participant to use their own words to describe their experiences in order to account for all possible reasons an individual may seek therapy services. Answer responses for the questions related to client perceptions of the therapist and the therapeutic relationship were in a likert scale format. These questions are listed in the Appendix A along with the treatment history questions.

Comparative Psychotherapy Process Scale-Patient

The CPPS-P (Hilsenroth, Blagys, Ackerman, Bonge, & Blais, 2005) is a 20–item self-report measure of the distinctive features common in Psychodynamic/Interpersonal and Cognitive/Behavioral treatments. The measure assesses for therapeutic techniques often used during the therapeutic hour. There are two subscales that make up the CPPS-P, one that reflects techniques of psychodynamic and interpersonal therapies and one that reflects cognitive – behavioral techniques. Participants were asked to indicate on a scale of 0 ("Not at all characteristic") to 6 ("Extremely characteristic") how characteristic a particular technique was for their therapy experience. Questions were adapted to reflect past therapy experiences. The CPPS-P subscales have demonstrated excellent internal consistency (CPPS-PI α = .92; CPPS- CB α = .94; Hilsenroth et al., 2005). The CPPS has a therapist rating scale in addition to the patient rating scale. Only the CPPS-P was used in the current study since therapist ratings were not available. Internal consistency for both subscales of the CPPS-P in the current study were good (Psychodynamic/Interpersonal: α = .84; Cognitive Behavioral: α = .82).

Perceived Barriers to Psychological Treatment

The PBPT (Mohr, Ho, Duffecy, Baron, Lehman, Jin, & Reifler, 2010) is a 27-item self-report measure. The items assess for a range of perceived barriers to psychological treatment. The

scale is divided into 8 subscales: Stigma, Lack of Motivation, Emotional Concerns, Negative Evaluations of the Therapy, Misfit of Therapy to Needs, Time Constraints, Participation Restriction, and Availability of Services. The subscale "Negative Evaluations of Therapy" has four items that assess for the belief that interaction with a therapist would be unhelpful or deleterious. Each item asks the participant to rate the degree to which different kinds of problems might get in the way of seeing a counselor or a therapist. The scale was adapted to assess for problems the participant might have encountered when they were in therapy previously. Response choices range from 1 to 5 with 1 stating "Not difficult at all" and 5 stating "Impossible". Higher scores reflect more barriers to psychological treatment. The PBPT has demonstrated good overall internal consistency (Chronbach's alpha = .92). All subscales have been shown to have good internal consistency (α = .71-.89; Mohr et al., 2010). Internal consistency for the current study was excellent (Overall PBPT scale: α = .92).

Patient Health Questionnaire – 9 (PHQ-9).

The PHQ-9 (Kroenke, Spitzer, & Williams, 2001) is a 9-item self-report measure. The items align with the 9 core symptoms for the diagnostic criteria for major depressive disorder according to the DSM-5. Participants were asked to rate on a 0 to 3 scale how often they experience each of the symptoms within the past two weeks. Response options vary between 0 ("Not at all"), 1 ("Several Days"), 2 ("More than Half the Days"), and 3 ("Nearly Every Day"). Lastly, participants were asked to rate how difficult these problems have been for them to get along with other people or do their work at home or school. Response options range from "Not difficult at all," "Somewhat difficult," "Very difficult," or "Extremely difficult." Scores on the PHQ-9 range from 0 – 27, with scores that are ≥ 5 indicating mild levels of depression. Scores that are ≥ 10, ≥ 15 indicate moderate and severe levels of depression respectively. There have been numerous studies that have examined the psychometric properties of the PHQ-9 and have demonstrated good internal reliability (Chronbach's alpha .86- .89; Milette, Hudson, & Baron,

2010; Kroenke, Spitzer, & Williams, 2001) and test-retest reliability (.84; Kroenke, Spitzer, & Williams, 2001; Kroenke, Spitzer, Williams, & Löwe, 2010). Internal consistency for the current study was excellent (α = .93).

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD).

The MSI-BPD (Zanarini, Vujanovic, Parachini, Boulanger, Frankenburg, & Hennen, 2003) is a 10 item screening measure to assess for Borderline Personality Disorder. It is based on a subset of questions from the borderline module of the Diagnostic Interview for DSM-IV Personality Disorders. The scale uses two questions to assess for the paranoia/dissociation criterion and one question to assess each of the other eight criteria (Zanarini et al., 2003). The scale is a 10-item, true/false, self-report questionnaire. Scores on the measure range from 0 to 10, with endorsement of an item equaling one point. Higher scores indicate more borderline characteristics. Internal consistency for the MSI-BPD has been adequate (.74; Zanarini et al., 2003). Test-retest reliability for this scale has been found to be good (.72; Zanarini et al., 2003). Internal consistency for the current study was good (α = .78).

Social Interaction Anxiety Scale-6/Social Phobia Scale-6 (SIAS6/SPS6).

The SIAS-6/SPS-6 (Peters, Rapee, Sunderland, Andrews, & Mattick, 2012) is a short form questionnaire that assess for symptoms of social anxiety and social phobia. The SIAS-6 primarily assesses for general social interaction anxiety and the SPS-6 assesses for fears of being scrutinized during day-to-day activities, such as eating and drinking (Peters et al., 2012). Scoring for the SIAS-6/SPS-6 is on a 5-point likert scale from 0 (“not at all”) to 4 (“extremely”). The first 6 items are summed to create a total score for the SIAS, and the last 6 questions are summed to create a total score for the SPS-6. Higher scores are indicative of higher symptom expression. Additionally, internal consistency for the SIAS-6 is acceptable (SIAS-6 = 0.79). Internal consistency for the current study was good (α = .90). For the SPS-6, internal consistency had

been demonstrated to be good (SPS = 0.85) (Le Blanc et al., 2014). Internal consistency for the current study was excellent (α = .92).

Generalized Anxiety Disorder – 7 (GAD-7).

The GAD-7 (Spitzer, Kroenke, Williams, and Lowe, 2006) is a brief questionnaire that assesses for generalized anxiety disorder. The present study used the GAD-7 to assess for potential relationships of generalized anxiety on irritability (a common symptom of GAD). Scoring for the GAD-7 is on a 4-point scale ranging from 0 ("Not at all") to 3 ("Nearly Every Day"). The items are summed to create a total score with higher scores indicating more generalized anxiety symptoms (Spitzer et al., 2006). Internal consistency for the GAD-7 is excellent (Cronbach's α = .92) and test-retest reliability has also been demonstrated to be good (0.83) (Spitzer et al., 2006). Internal consistency for the current study was excellent (α = .93).

PTSD Symptom Checklist-Civilian (PCL-C).

The PCL-C (Weathers, Litz, Huska, & Keane, 1994) is a 17-item self-report measure that assesses for PTSD symptoms, paralleling the DSM-IV criteria B, C, and D. The PCL-C was used in the present study to examine potential relationships between hostile interpretation bias, PTSD symptoms, therapeutic relationship, and treatment dropout. A 5-point scale is used for scoring symptoms over the past month with answers options ranging from 1 ("Not at all") to 5 ("Extremely"). The items are summed to create a total score with higher scores reflecting more symptoms of post-traumatic stress (Weathers et al., 1994). Internal consistency has been demonstrated to be high (Cronbach's α = .94) and test-retest reliability adequate (r = .68; Ruggiero, Del Ben, Scotti, & Rabalais, 2003). Internal consistency for the current study was excellent (α = .95).

Big Five Aspects Scale- Volatility (BFAS-Volatility).

The BFAS (DeYoung, Quilty, & Perterson, 2007) is a 100-item self-report questionnaire that assesses the Five Factor Model domains and underlying aspects. For the current study, the aspect of Volatility under the Neuroticism factor was the only aspect examined for trait volatility. Items consist of brief statements and participants rate the extent to which each statement describes them. Responses are on a 5-point scale with answer options ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The BFAS has demonstrated high reliability and validity in previous research (DeYoung, Quilty, & Peterson, 2007). Internal consistency for the current study was excellent (α = .90).

International Personality Item Pool-Neuroticism, Extraversion, Openness-120-Anger/Hostility (IPIP-NEO-Anger/Hostility).

The IPIP-NEO-120 (Maples, Guan, Carter, & Miller, in press) is a 120-item self-report measure that assesses for aspects of the big five personality domains. Items are presented as statements of behaviors and participants are asked to rate how much each statement describe them. Answer choices range from 1 ("Disagree Strongly") to 5 ("Strongly Agree"). For the current study, only the subscale, Anger/Hostility, was used to assess for trait anger. Internal consistency for the current study was adequate (α = .78).

Hopelessness Depression Screening Questionnaire-Suicidality Subscale.

The HDSQ-SS (Metalsky & Joiner, 1991) is a 4-item self-report measure of suicidal ideation. Items are rated on a 4-point Likert scale, with higher values indicating more frequent suicidal ideation. Items were phrased to reflect past suicidal ideation. Internal consistency for the current study was excellent (α = .93).

Attitude Towards Treatment

Two questions assessing for participants' attitudes towards psychological treatment were included in the treatment history questions. These questions were "How likely would you be to seek therapy or counseling services in the future?" and "How likely are you to recommend therapy or counseling services to others?" Answer choices ranged from "Not at All" to "Extremely".

Treatment Dose

There is evidence that there is an association of the quality of the therapeutic relationship and treatment outcome, when the relationship is assessed during the first few sessions (Horvath & Greenberg, 1994). We were interested in whether dropping out of treatment early (i.e., within the first five sessions) is related to hostile interpretation bias and therapeutic relationship. This question was conceptualized as "Treatment Dose" and was measured with a single question that assessed for the number of sessions a participant attended for psychological treatment. Answer options were grouped by number of sessions, with options including 1-5, 6-10, 11-15, 16-20, and 20+ sessions. Participants were asked to indicate which grouping most accurately reflected the number of sessions they attended in their most recent therapy experience.

Procedure

Participants completed all measures online via Qualtrics. Before completing measures, participants provided informed consent. At the end of the survey all participants were debriefed as to the nature and purpose of the study and provided a list of resources in the event they experienced negative emotions as a result of the study.

Analyses

Hypothesis 1a was analyzed using bivariate, zero-order correlations. Due to the categorical nature of the variable treatment dropout, Hypothesis 1b and Hypothesis 2 were examined with point biserial correlations. Our third hypothesis was examined using a bias corrected bootstrapping model in PROCESS version 3.1 with 5000 resamples as described by Hayes (2017). Hostile interpretation bias was entered as the independent variable, treatment dropout as the dependent variable, and therapeutic relationship as the mediating variable. Lastly, exploratory analyses were examined using zero-order bivariate correlations, point biserial correlations, one-way ANOVAs, and logistic regression.

CHAPTER IV

FINDINGS

Results

Hypothesized Results

The relationships between hostile interpretation bias and strength of therapeutic relationship (r = -.15; p = .100) and hostile interpretation bias and treatment dropout (r_{pb} = .16; p = .08) were not statistically significant. However, there was a significant negative relationship between strength of therapeutic relationship and treatment dropout (r_{pb} = -.29; p = .001). See Table 2.

Table 2. Means, standard deviations, and correlations between the main variables.

Measure	1.	2.	3.
1. WSAP-H	-		
2. HAQ-II	.15	-	
3. Treatment Dropout	.16	-.290*	-
Mean	50.44	87.12	.291
SD	13.8	17.73	.456

Note. * = $p < .001$; WSAP-H = Word Sentence Paradigm -Hostility; HAQ-II = Helping Alliance Questionnaire -II; Treatment Dropout = binary treatment dropout variable.

Although there were non-significant associations between hostile interpretation bias and therapeutic relationship and treatment dropout, indirect effects are not the same as traditional mediation, thus, significant indirect effects are possible without a significant c path. Therefore, hostile interpretation bias, therapeutic relationship, and treatment dropout were entered into a bias corrected bootstrap model using procedures outlined by Hayes (2017). Total hostile interpretation score was entered ats the independent variable and treatment dropout was entered as the dependent variable. Consistent with the correlation reported above, the direct effect of hostile interpretation bias on treatment dropout was not statistically significant, $\beta = .018$, $p = .23$. Furthermore, the indirect relationship of hostile interpretation bias on treatment dropout through strength of therapeutic relationship was not significant as indicated by a 95% confidence interval (CI) that did include zero (95% CI = .000 to .018).

Exploratory Analyses

Comparative Psychotherapy Process Scale-Patient

The CPPS-P was examined to determine if there were relationships between common therapeutic techniques used in Psychodynamic/Interpersonal and Cognitive Behavioral therapies

and the study's main variables (hostile interpretation bias, therapeutic relationship, and treatment dropout). There were no significant relationships between hostile interpretation bias and Psychodynamic/Interpersonal (r = -.056, p = .54) and Cognitive Behavioral (r = -.092, p = .32) techniques;. There were significant positive relationships between therapeutic relationship and Psychodynamic/Interpersonal (r = .626, p < .001) and Cognitive Behavioral techniques (r = .552, p < .001). Furthermore, there were significant negative relationships between treatment dropout and Psychodynamic/Interpersonal (r_{pb} = -.214; p = .02) and Cognitive Behavioral techniques (r_{pb} = -.184; p = .04).

Perceived Barriers to Psychological Treatment Scale

The PBPT was examined to determine if there were relationships between barriers to treatment and the main study variables. Overall, the PBPT had a significant negative relationship with therapeutic relationship (p = .002) and significant positive relationships with treatment dropout (p = .01) and hostile interpretation bias (p = .001).

In order to examine these relationships further, each of the eight subscales were also examined for relationships with the main study variables. Results demonstrate significant negative relationships between therapeutic relationship and subscales Stigma (p < .001), Emotional Concerns (p = .02), Negative Evaluations of Therapy (p < .001), and Misfit of Needs (p < .05). Additionally, there were significant positive relationships between treatment dropout and subscales Lack of Motivation for Treatment (p = .004), Emotional Concerns (p = .03), Negative Evaluations of Therapy (p = .03), Time Constraints (p = .008), and Availability of Services (p = .03). Lastly, there were significant positive relationships between hostile interpretation bias and all PBPT subscales: Stigma (p = .013), Lack of Motivation (p = .008), Emotional Concerns (p = .006), Negative Evaluations of Therapy (p = .033), Misfit of Needs (p =

.013), Time Constraints (p = .005), Participation Restrictions (p = .004), and Availability of Services (p = .041). See Table 3.

Table 3. Correlations between Main Variables and PBPT subscales.

Measures	PBPT-Total	Stigma	Lack of Motivation	Emotional Concerns	Negative Evaluations of Therapy	Misfit of Needs	Time Constraints	Participation Restrictions	Availability of Services
HAQ-II	-.274**	-.326**	-.111	-.209*	-.587**	-.248**	-.049	.056	-.108
WSAP-H	.283**	.239*	.234**	.239**	.188*	.218*	.243**	.252**	.180*
Treatment Dropout	.222*	.138	.252**	.189*	.188*	.161	.231**	.075	.186*
Mean	46.66	13.38	4.50	6.14	6.52	7.52	3.58	5.27	3.13
SD	16.51	5.37	2.23	2.90	3.23	3.41	1.75	2.43	1.70

Note. ** = $p < .01$; * = $p < .05$; HAQ-II = Helping Alliance Questionnaire-II; WSAP-H = Word Sentence Association Paradigm – Hostility; PBPT-Total = Perceived Barriers to Psychological Treatment -Total.

Psychological Symptom Scales

In order to determine if specific disorder-relevant symptoms were associated with hostile interpretation bias, therapeutic relationship, and treatment dropout, we examined correlations between each symptom measure and our main variables. Hostile interpretation bias was significantly positively associated with depression symptoms ($p = .001$), generalized anxiety symptoms ($p = .002$), social interaction anxiety symptoms ($p = .03$), borderline personality traits ($p = .002$), post-traumatic stress symptoms ($p < .001$), and volatile ($p < .001$) and anger/hostile personality traits ($p < .001$). Therapeutic relationship was significantly negatively correlated with depression symptoms ($p = .02$) and volatile ($p = .02$) and anger/hostile personality traits ($p = .005$). Treatment dropout was significantly positively associated with depression and suicide ideation symptoms only ($r_{pb} = .19$; $p = .03$; $r_{pb} = .29$; $p = .001$). See Table 3.

Attitudes Toward Treatment

Additionally, we examined attitudes toward psychological treatment in relation to our main variables. Specifically, we found that how likely an individual is to seek therapy services in the future was significantly negatively correlated with treatment dropout ($r_{pb} = -.23$; $p = .01$), significantly positively correlated with therapeutic relationship ($r = .34$; $p < .001$), and non-significantly related to hostile interpretation bias. Furthermore, how likely an individual is to recommend therapy services to another was significantly negatively correlated with hostile interpretation bias ($r = -.23$; $p = .01$) and treatment dropout ($r_{pb} = -.22$; $p = .02$) and positively correlated with therapeutic relationship ($r = .38$; $p < .001$). See Table 4.

Therapist Demographic Variables and Therapeutic Relationship and Treatment Dropout

We assessed for differences between therapist characteristics and therapeutic relationship. We found no significant differences between therapist age ($F(3,117) = 1.364$, $p = .26$), biological sex ($F(2,118) = .482$, $p = .62$), gender ($F(4,116) = .917$, $p = .46$), or race/ethnicity

($F(6,114) = .675$, $p = .67$), and the strength of the therapeutic relationship as determined by 4 one-way ANOVAS.

We further examined therapist demographic variables and treatment dropout for potential relationships. There were no significant relationships between therapist age ($p = .64$), biological sex ($p = .43$), gender ($p = .42$), or race/ethnicity ($p = .30$) and treatment dropout.

Table 4. Means, standard deviations, and correlations between the variables.

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Treatment Dropout	-												
2. HAQ-II	.292**	-											
3. WSAP-H	.156	-.152	-										
4. PHQ-9	.190*	-.221*	.277**	-									
5. GAD-7	.053	-.039	.273**	.748**	-								
6. SIAS-6	.042	-.165	.195*	.478**	.445**	-							
7. MSI-BPD	.136	-.153	.264**	.562**	.542**	.365**	-						
8. PCL-C	.105	-.043	.304**	.715**	.754**	.431**	.608**	-					
9. BFAS-Volatility	.062	-.223*	.319**	.323**	.341**	.325**	.491**	.443**	-				
10. IPIP NEO-Angry/Hostility	.037	-.254**	.361**	.253**	.282**	.284**	.442**	.357**	.905**	-			
11. HDSQ-Suicide	.290**	-.072	.116	.578**	.407**	.318**	.357**	.455**	.188*	.082	-		
12. Seek Services	-.226*	.336**	-.133	-.039	.146	.073	.027	.084	.005	-.092	-.056	-	
13. Recommend Services	-.220*	.375**	-.232*	-.170	.004	-.025	-.016	-.013	-.106	-.149	-.069	.644**	-
Mean	.29	87.12	50.44	10.48	9.51	6.82	5.11	41.38	34.95	11.24	1.08	3.61	4.18
SD	.46	17.73	13.80	7.31	6.35	6.04	2.87	17.26	10.62	3.93	1.91	1.10	1.01

Note. ** = $p < .01$; * = $p < .05$; HAQ-II = Helping Alliance Questionnaire-II; WSAP-H = Word Sentence Association Paradigm – Hostility; PHQ-9 = Patient Health Questionnaire - 9; GAD-7 = Generalized Anxiety Disorder-7; SIAS-6 = Social Interaction Anxiety Scale-6; MSI-BPD = McLean Screening Instrument for Borderline Personality Disorder; PCL-C = PTSD Symptom Checklist-Civilian; BFAS-Volatility = Big Five Aspects Scale-Volatility; IPIP NEO-Anger/Hostility = International Personality Item Pool Neuroticism Extraversion Openness to Experience – Anger/Hostility; HDSQ-Suicide = Hopelessness

Depression Symptom Questionnaire- Suicidality; Seek Services = “How likely are you to seek psychological treatment in the future?”; Recommend Services = “How likely are you to recommend psychological treatment to others?”.

Participant Demographic Variables and Hostile Interpretation Bias, Therapeutic Relationship, and Treatment Dropout

In order to further investigate the relationships between participant demographics and the main study variables, we examined participant gender, sexual orientation, and race/ethnicity to determine if there were differences in hostile interpretation bias. There were no statistically significant differences between gender ($F(5,125) = .546$, $p = .74$), sexual orientation ($F(4,126) = .777$, $p = .54$), and race/ethnicity ($F(5,124) = 1.422$, $p = .22$) and hostile interpretation bias as determined by three, one-way ANOVAs.

Furthermore, we examined participant gender, sexual orientation, and race/ethnicity to determine if there were differences in therapeutic relationship. Three, one-way ANOVAs revealed no statistically significant differences between participant gender ($F(5,113) = 1.403$, $p = .23$), sexual orientation ($F(4,114) = .1.700$, $p = .16$), or race/ethnicity ($F(5,112) = .168$, $p = .97$) and therapeutic relationship. Moreover, three, logistic regression analyses were used to investigate differences between participant gender, sexual orientation, and race/ethnicity and our binary treatment dropout variable. Results revealed no significant differences between participant gender ($\beta = .015$, $SE = .30$, $p = .96$), sexual orientation ($\beta = .072$, $SE = .18$, $p = .68$), or race/ethnicity ($\beta = -.124$, $SE = .14$, $p = .36$) and treatment dropout.

Examining Main Hypotheses with Treatment Dose as Outcome Variable

In order to evaluate our main hypotheses using a more continuous outcome variable, we re-analyzed our data using treatment dose (i.e., the amount of sessions an individual attended) as the outcome variable. Consistent with our results from the original hypotheses, the relationships between hostile interpretation bias and therapeutic relationship ($r = -.15$, $p = .10$) and hostile interpretation bias and treatment dose ($r = .03$, $p = .78$) were not statistically significant. However, there was a significant positive relationship between therapeutic relationship and

treatment dose (r = .24, p = .008). Lastly, we assessed for an indirect relationship between hostile interpretation bias and treatment dose. The indirect effect of hostile interpretation bias on treatment dose through therapeutic relationship strength was not statistically significant (95% CI = -.0103 to .0002).

CHAPTER V

CONCLUSION

Discussion

The current study provides the first examination of the relationship between hostile interpretation bias, therapeutic relationship, and treatment dropout. Our results demonstrate support for previous literature in that there was a negative relationship between therapeutic relationship and treatment dropout. However, there were no statistically significant relationships between hostile interpretation bias and therapeutic relationship or hostile interpretation bias and treatment dropout. Exploratory analyses examined relationships between main study variables and common therapy techniques, perceived barriers to psychological treatment, psychological symptom measures, patient demographics, and therapist demographics, and are discussed in greater detail below.

A weaker therapeutic relationship predicts a higher likelihood of dropout across a wide range of therapy orientations, including cognitive behavioral therapy (Bados, Balaguer, & Saldana, 2007) and interpersonal psychotherapy (Piper et al., 1999).

This relationship is also consistent across age groups (Kazdin, 1996) and therapy modalities, including individual (Arnow et al., 2007), group (Lorentzen, Sexton, & Hoglend, 2004), and family therapy (Robbins et al., 2006). Furthermore, there is evidence to suggest that this relationship is stronger for minority populations, including racial and ethnic (Qureshi & Collazos, 2011), gender and sexual orientation (Ellis, Meade, & Brown, 2020), and socioeconomic minorities (Fernandez, Butler, & Eyberg, 2011). Our findings add to the robust literature that suggests a weak therapeutic relationship leads to early treatment dropout and subsequent poor health outcomes (Sharf et al., 2010; Roos & Werbart, 2013). The current study provides further support that the therapeutic relationship is an important part of treatment and may impact treatment outcomes.

Additionally, the results of the current study revealed non-significant relationships between hostile interpretation bias and therapeutic relationship and treatment dropout. Hostility and interpretation bias are stable constructs over time (Dodge & Crick, 1990; Wilkowski & Robinson, 2010; Creswell & O'Connor, 2011); however, it may be the case that hostile interpretation bias is not stable enough for it to be retrospectively associated with therapeutic relationship and treatment dropout. In the current study, 79% of participants indicated that they received therapy or counseling services within the last three years. This may be an appropriate time frame for individuals to remember aspects of their therapy experience, however, hostile interpretation bias may not be retrospectively associated with therapeutic relationship across three years of time.

Alternatively, hostile interpretation bias may not be directly related to therapeutic relationship or treatment dropout. Based on the cognitive model of anger (Wilkowski & Robinson, 2010), hostile interpretation bias is an early component of anger that leads to the expression of anger and hostility. It may be the expression of that anger/hostility that leads to a disruption in the therapeutic relationship and subsequent treatment dropout. In fact, results of the

current study support this in that there were negative relationships between volatile and angry/hostility personality traits and past therapeutic relationship. These results are consistent with prior research findings that individuals with volatile and angry/hostility personality traits have difficulties forming and maintaining relationships (Newton & Kiecolt-Glaser, 1995; Pope & Bierman, 1999; O'Neill et al., 2009). Our results present interesting findings in that hostile interpretation bias is associated with volatile and angry/hostility personality traits, and these traits are associated with a weak therapeutic relationship, however, hostile interpretation bias was not significantly related to therapeutic relationship or treatment dropout in the present study. Future studies should seek to examine hostile interpretation bias and the therapeutic relationship in depth to understand this complex relationship in relation to treatment dropout.

Moreover, the main hypotheses of the study were examined using treatment dose as a more continuous outcome variable. Results were similar to the original analyses, with non-significant relationships between hostile interpretation bias, therapeutic relationship, and treatment dropout, and a significant positive relationship between therapeutic relationship and treatment dose. This provides additional support for the current literature suggesting that a strong therapeutic relationship is important for keeping people in treatment, where they can gain the most benefit.

Exploratory analyses examining common therapeutic techniques in Psychodynamic/Interpersonal and Cognitive Behavioral therapies and the main study variables revealed significant negative relationships between both therapeutic subscales and treatment dropout, suggesting that the use of these techniques may help reduce treatment dropout. Additionally, there were significant positive relationships between both therapeutic technique subscales and therapeutic relationship, supporting research that suggests that although the techniques used between the approaches differ, techniques of both orientations are associated with a strong therapeutic relationship (Constantino & Smith-Hansen, 2008; Krupnick et al.,

2006). These findings support literature on the use of active techniques of some kind in therapy are related to a stronger therapeutic relationship rather than the use of more reflective or supportive therapy (Loeb et al., 2005; Koszycki et al., 2012).

Our findings further support research examining interpersonal therapy and cognitive behavioral techniques which suggest that a strong therapeutic relationship is an important foundational component of any psychological treatment and leads to less treatment dropout and better treatment outcomes (Wettersten, Lichtenberg, & Mallinckrodt, 2005; Haugen, Werth, Foster, & Owen, 2017; Okamoto, Dattilio, Dobson, & Kazantzis, 2019). Lastly, there were no significant differences between therapeutic techniques and hostile interpretation bias, suggesting that individuals seeking services that present with hostile interpretation bias do not tend to receive a specific type of treatment over the other.

Overall, perceived barriers to treatment were negatively associated with therapeutic relationship. Further examination of perceived barriers subscales revealed that stigma and negative evaluations of therapy had the strongest negative relationships with therapeutic relationship. These findings support previous literature, providing additional evidence that stigma (social, self, and perceived stigma from the therapist) detrimentally affect the development of a strong therapeutic relationship, leading to poorer treatment outcomes (Horsfall, Clearly, & Hunt, 2010; Kvrgic et al., 2013; Owen, Thomas, & Rodolfa, 2013). Moreover, research examining expectations of therapy suggests that individuals who have low expectations for recovery or success in treatment, or feel as if their expectations for treatment are not being met, are more likely to have a weak relationship with their therapist (Wright & Davis, 1994; Joyce, Ogrodniczuk, Piper, & McCallum, 2003; Stewart, Steele, & Roberts, 2014). Our results suggest that having perceptions that one would be stigmatized in some way, or having negative expectations of therapy, creates an environment where building a strong therapeutic relationship would be challenging. Addressing stigma and treatment expectations early and throughout

treatment may be important for developing a strong therapeutic relationship and treatment adherence.

Interestingly, hostile interpretation bias had significant positive relationships with all perceived barriers subscales. Of particular note are the significant positive relationships with hostile interpretation bias and participation restrictions and time constraints. Items on these two subscales reflect a participant's personal difficulties with time constraints and participation restrictions (i.e., "Interference from daily responsibilities."; "Difficulties getting time off work."; "Physical symptoms"; "Difficulty walking or getting around."; "Illness making it hard to leave home."; and "Problems with transportation,"). A potential explanation for these findings is that individuals may view therapy as an interference in their daily lives and may interpret this interference in a hostile way, such as the therapist trying to take control over the patient's time. Additionally, individuals with participation restrictions related to physical challenges or transportation, may interpret expectations related to attending therapy sessions regularly and on time as invalidating or dismissive to their problems with physical health and/or transportation.

Moreover, treatment dropout was overall positively related to perceived barriers to treatment. Examining the subscales revealed significant positive relationships between treatment dropout and lack of motivation, emotional concerns, negative evaluations of therapy, time constraints, and availability of services. Interestingly, the relationship was stronger between treatment dropout and lack of motivation and time constraints than treatment dropout and stigma and participation restrictions. Our results suggest that treatment dropout may be more directly related to motivation and time constraints and the therapeutic relationship is more related to stigma and other restrictions. This suggests that addressing motivation and time constraints early in treatment may be important to prevent treatment dropout. Furthermore, it may be that a strong therapeutic relationship is an important resource to help address these barriers.

Additional exploratory analyses examining psychological symptoms revealed results consistent with prior research. Specifically, hostile interpretation bias was positively associated with depression symptoms, generalized anxiety symptoms, social interaction anxiety symptoms, borderline personality traits, post-traumatic stress disorder symptoms, and volatile and anger/hostile personality traits. These results are consistent with prior work demonstrating the diverse symptom presentations that experience hostile interpretation bias (Smith et al., 2016; Deschenes, Dugas, & Gouin, 2015; Ehlers & Clark, 2000; Lobbestael, Cima, & Arntz, 2013; Domes et al., 2008). Our results indicate that there is a significant range of diagnoses and presentations that may be associated with hostile interpretation bias, suggesting that hostile interpretation bias should not be considered to only be related to anger issues broadly or intermittent explosive disorder.

Further exploratory analyses revealed a negative relationship between treatment dropout and whether an individual would seek therapy services in the future and a positive relationship between therapeutic relationship and seeking services in the future. These findings support current literature suggesting that individuals who dropout of psychological treatment are less likely to seek out treatment again in the future (Kerkorian, Bannon, & McKay, 2006; Lorr, 1965). Additionally, whether an individual would recommend therapy to others was negatively associated with hostile interpretation bias and treatment dropout, and positively associated with therapeutic relationship. Results of analyses provide further support for literature examining the importance of the therapeutic relationship and how treatment dropout can lead to long-term consequences (i.e., not seeking services in the future; Swift & Greenberg, 2012; Lorr, 1965). Our results suggest that individuals who report having strong therapeutic relationships are more likely to seek psychological treatment in the future and recommend psychological treatment to others.

There is a large evidence base that there are disparities in psychological treatment access, dropout, and race, gender, and sexual orientation (Trinh, Agenor, Austin, & Jackson, 2017;

McGuire & Miranda, 2008). Recent work has suggested that psychotherapy providers who interact with others using cultural humility have stronger reported therapeutic relationships and lower rates of treatment dropout (Owen et al., 2014; Owen et al., 2017). Furthermore, there is evidence that particular demographic groups are more likely to experience discrimination in a health care setting, including psychotherapy (Hausmann et al., 2008; Burgess, Lee, Tran, & Ryn, 2007; Mays et al., 2017). Individuals who have negative experiences related to these interactions, may have strong negative reactions and perceptions about psychological treatment and providers. Moreover, there is evidence to suggest that matching race, gender, and sexual orientation between client and therapist is related to stronger reported therapeutic relationship and better treatment outcomes (Bhati, 2014). These findings suggest that therapist demographics may be an important variable to examine further. Interestingly, exploratory analyses examining therapist and participant demographics and the main study variables revealed no significant differences between therapist age, biological sex, gender, or race/ethnicity and therapeutic relationship and treatment dropout. Similarly, there were no significant differences between participant gender, sexual orientation, and race/ethnicity and hostile interpretation bias, therapeutic relationship, or treatment dropout. This suggests that hostile interpretation bias, therapeutic relationship, and treatment dropout may not be directly affected by therapist or participant demographics. It is important to note, however, that the current study was predominately female, Caucasian, and heterosexual, thus assumptions about dropout and therapeutic relationship development should be made with caution. Future studies should seek to directly explore how these variables interact with other groups, particularly those that may experience discrimination or prejudice within health care settings.

Limitations

Though this study is the first of its kind, there are some limitations to discuss. The current study is cross sectional in nature and therefore causal relationships cannot be determined based on

our results. Additionally, the current study is retrospective in nature, with memory bias potentially contributing to the findings. Future studies should seek to collect data in a longitudinal design, with follow-ups scheduled throughout. Lastly, our sample was primarily Caucasian, female, and heterosexual. This is a limitation of our ability to generalize our results to other racial, gender, and sexual orientation groups.

Conclusion

The current study sought to demonstrate a relationship between hostile interpretation bias, therapeutic relationship, and treatment dropout. Although most of the findings were non-significant, the results provide a needed foundation for future research to build from. Hostile interpretation bias appears to be associated with a wide range of psychological disorders and personality traits. Additionally, treatment dropout and the therapeutic relationship remain important factors in psychological treatment perceptions. Additional work is needed to examine these complex relationships to better intervene and adapt psychological treatment to those who want, need, or could benefit from it the most. Importantly, hostile interpretation bias was associated with various barriers to psychological treatment, and many barriers to treatment were associated with treatment dropout and weaker therapeutic relationships. The cognitive model of anger and hostility suggest that hostile interpretation bias leads to anger expression. Future research should examine anger expression and hostile interpretation bias in the context of psychological treatment and the therapeutic relationship.

There are large amounts of evidence that demonstrate the efficacy of many psychological treatments, however, these are only helpful for those who remain in treatment. Future research should examine these relationships and complexities to enhance the long term effects of psychological treatment. The current study is the first step in this direction.

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APPENDIX

Questionnaires

Demographic Information

To start with, we would like to get some background information from you.

1. What is your age? _____

2. What is your gender? _____

3. What is your current marital situation (please check one)?

_____ Married _____ Separated _____ Never married/Single

_____ Common law marriage _____ Divorced _____ Widowed

4. Do you consider yourself to be Hispanic or Latino (see definition below)? ☐ Yes ☐ No

Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

5. What is your race? (please check one)

☐	American Indian or Alaska Native	A person having origins in any of the original peoples of North, Central, or South America, and who maintains tribal affiliations or community attachment.
☐	Asian	A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
☐	Black or African American	A person having origins in any of the black racial groups of Africa.
☐	Native Hawaiian or Other Pacific Islander	A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
☐	White	A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
☐	Multiple races	
☐	None of the above	

6. What is the highest grade in school you have completed (please check one)?

_____ Less than High School (**record actual grade**)

_____ High School

_____ A.A. or other degree that is not a B.A. or B.S.

_____ 4 years of college with degree

_____ 1 year of college or technical school _____ Postgraduate, M.D., Ph.D.

_____ 2 or more years of college but did not graduate

7. How many people do you live with (not including yourself)?

_____ Number of children _____ Number of adults

8. During the past year, what was your total family income? $ _____

9. Do you ***currently*** take medication for emotional, mental, or psychological problems (e.g., depression, anxiety, ADHD, insomnia/sleep problems)? ☐ No ☐ Yes

If yes, please list below (if you need additional room, please continue on the back of this page):

Date Prescribed	Medication name	Dosage	Reason for medication

10. ***In the past,*** did you take medication for emotional, mental, or psychological problems (e.g., depression, anxiety, ADHD, insomnia/sleep problems)? ☐ No ☐ Yes

If yes, please list below (if you need additional room, please continue on the back of this page):

Duration	Medication name	Dosage	Reason for medication
From to			

From to			
From to			
From to			

11. Have you ever been in therapy or counseling for emotional, mental, psychological, or addiction problems? ☐No ☐Yes

If yes, please list below (if you need additional room, please continue on the back of this page):

Duration	Type of provider (PhD, MD, priest, social worker)	# of sessions	Reason for therapy
From to			
From to			
From to			

12. Have you ever been hospitalized for emotional, mental, or psychological problems problems (e.g., anxiety, depression, drugs)? ☐No ☐Yes

If yes, please list below (if you need additional room, please continue on the back of this page):

Duration	Length of stay	Reason for hospitalization
From to		
From to		
From to		

13. Has anyone in your family (parents, grandparents, brothers, sisters, aunts, uncles, cousins) ever had an emotional, mental, or psychological problem? ☐No ☐Yes

If yes, please list below:

Person's Relationship to you (e.g., mother, paternal aunt, etc.)	Diagnosis/Problem(s) or Symptom(s)	Treatment Received? (Y/N)	Type of Treatment

14. Do you have any of the following medical problems:

	Yes	No	Prefer not to answer
Thyroid Problems			
Seizures			
Migraine Headaches			
Diabetes/pre-diabetes			
Hypoglycemia (low blood sugar)			
Anemia			
Asthma			
Irritable Bowel Syndrome			
Fibromyalgia			
Cancer			
Heart Disease			

15. How old is your biological mother? If you are not sure, please take your best guess.

_____

16. How old is your biological father? If you are not sure, please take your best guess.

_____

Treatment Dropout

Please answer the following questions about your most recent experience with psychological therapy/treatment.

1. Which of the following best describes how it was decided that therapy would end?
    a. The therapist and I decided together that it was time to end therapy.
    b. I decided it was time to end therapy.
    c. The therapist decided it was time to end therapy.
    d. Someone else (parents, etc.) decided it was time to end therapy.
2. Which of the following best describes how you ended therapy?
    a. I stopped going to therapy without telling the therapist that I planned to stop.
    b. I called the therapist and told them I was stopping therapy, but I did not explain why or have a conversation about it.
    c. I called the therapist and told them I was stopping therapy and explained why or had a conversation about it.
    d. I met with the therapist in person to discuss ending therapy.
3. Did the therapist think you should stay in therapy?
    a. I don't know if the therapist thought I should stay in therapy or not.
    b. The therapist thought that I should definitely stay in therapy.
    c. The therapist thought that it would be better for me to stay in therapy, but that it was ok for me to stop therapy.
    d. The therapist thought it was completely fine for me to stop therapy.

To be classified as a dropout, participants would have to answer 'b' ("I decided it was time to end therapy") to question 1 and a combination of possible answers to questions 2 and 3. For question 2, answers 'a' ("I stopped going to therapy without telling the therapist that I planned to stop.") or 'b' ("I called therapist and told them I was stopping therapy, but I did not explain why or have a conversation about it.") will be considered dropout. If a participant answers 'c' ("I called the therapist and told them I was stopping therapy and explained why or

had a conversation about it.") or 'd' ("I met with the therapist in person to discuss ending therapy.") to question 2, then we will consider answers of 'a' ("I don't know if the therapist thought that I should stay in therapy or not.") or 'b' ("The therapist thought that I should definitely stay in therapy.") on question 3 to be dropout.

HAQ

Below are ways that a person may feel or behave in relation to their therapist. Consider carefully your relationship with your therapist from your time in therapy and then mark each statement according to how strongly you agree or disagree. Please answer every question.

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly agree
1.	I felt I could depend upon the therapist.	1	2	3	4	5	6
2.	I felt the therapist understood me.	1	2	3	4	5	6
3.	I felt the therapist wanted me to achieve my goals.	1	2	3	4	5	6
4.	At times I distrusted the therapist's judgment.	1	2	3	4	5	6
5.	I felt I was working together with the therapist in a joint effort.	1	2	3	4	5	6
6.	I believed we had similar ideas about the nature of my problems.	1	2	3	4	5	6
7.	I generally respected the therapist's views about me.	1	2	3	4	5	6
8.	The procedures used in therapy were not well suited to my needs.	1	2	3	4	5	6
9.	I liked the therapist as a person.	1	2	3	4	5	6
10.	In most sessions, the therapist and I found a way to work on my problems together.	1	2	3	4	5	6
11.	The therapist related to me in ways that slowed the progress of therapy.	1	2	3	4	5	6

12.	A good relationship formed with my therapist.	1	2	3	4	5	6
13.	The therapist appeared to be experienced in helping people.	1	2	3	4	5	6
14.	I wanted very much to work out my problems.	1	2	3	4	5	6
15.	The therapist and I had meaningful exchanges.	1	2	3	4	5	6
16.	The therapist and I sometimes had unhelpful exchanges.	1	2	3	4	5	6
17.	From time to time, we both talked about the same important events in my past.	1	2	3	4	5	6
18.	I believed the therapist liked me as a person.	1	2	3	4	5	6
19.	At times the therapist seemed distant.	1	2	3	4	5	6

WSAP-H

Instructions: In the following task sentences will appear on the screen. Please read the sentence carefully and then read the word below it. You will be asked to rate how well the single word related to the sentence that you just read above it on the scale provided.

WSAP-Hostility Scale

	Sentence	Word
1	A friend declines your invitation to dinner	Busy
2	A door slams in front of you	Insulting
3	Someone grabs your arm	Abusive
4	Your friend does not respond to what you say	Distracted
5	The car in front of yours is very slow	Cautious
6	A friend laughs at you	Disrespectful
7	A friend does not say hello	Unaware
8	Someone is talking while you are reading	Rude
9	Someone is in your way	Unaware
10	Someone bumps into you	Accidental
11	Someone tracks dirt onto your carpet	Disrespectful
12	Your friend does not respond to what you say	Thoughtless
13	Someone frowns at you	Hostile

14	A friend laughs at you	Amused
15	Someone is in your way	Inconsiderate
16	A friend declines your invitation to dinner	Rude
17	Someone throws a ball that hits you	Accidental
18	Someone blocks your way	Unnoticing
19	A shopping cart bumps into you	Aggressive
20	Someone grabs your arm	Alerting
21	The car in front of yours is very slow	Inconsiderate
22	Someone bumps into you	Aggressive
23	Someone is talking while you are reading	Unnoticing
24	Someone throws a ball that hits you	Disrespectful
25	A shopping cart bumps into you	Accidental
26	Your friend leaves behind trash in your car	Rude
27	Someone tracks dirt onto your carpet	Unknowing
28	Someone blocks your way	Inconsiderate
29	A door slams in front of you	Unintentional
30	Your friend leaves behind trash in your car	Forgetful
31	Someone frowns at you	Unhappy

32	A friend does not say hello	Ignoring

Measures for Exploratory Analyses

Treatment History Questions:

Instructions: Please answer the following the questions based on your most recent experience with psychological treatment. Please answer each question as accurately as possible. If you have been in psychological treatment more than once, please answer the questions below based on your most recent experience.

1. "How many sessions did you attend?"

   ☐1 – 5 ☐6 – 10 ☐11 – 15 ☐16 – 20 ☐20+

2. "Did you and your therapist agree to end treatment?"

   ☐No ☐Yes

3. "Who made the decision to end treatment?"

   ☐ I made it alone. ☐ The therapist decided it alone. ☐ The therapist and I decided it together. ☐ Someone else (parents, spouse, etc.) decided it. ☐Other.

4. "How much did you want to end treatment services?"

0	1	2	3	4
Not at all	A little	Moderately	Very much	Extremely

5. "How old were you when you started treatment?"

   ☐ 1 – 7 ☐ 8 – 13 ☐ 14 – 17 ☐ 18 – 25 ☐ 26 – 32 ☐ 33 – 40 ☐ 41+.

6. What kind of treatment did you have?

☐ Cognitive Behavioral Therapy ☐ Family Therapy ☐ Psychodynamic/ Psychoanalytic Therapy ☐Exposure Therapy ☐EMDR ☐Play Therapy ☐Spiritual Therapy ☐Do not know.

7. Where did you receive treatment?

   ☐ Community Mental Health Center ☐Psychiatrist ☐Private Practice ☐Hospital ☐ Inpatient Mental Health Center ☐Church ☐Other.

8. "How much did you like your therapist?"

0	1	2	3	4
Not at all	A little	Moderately	Very much	Extremely

9. "Did your therapist seem genuinely interested in helping you?"

0	1	2	3	4
Not at all	A little	Moderately	Very much	Extremely

10. "To what extent was the decision to end treatment due to your relationship with your therapist?"

0	1	2	3	4
Not at all	A little	Moderately	Very much	Extremely

11. "Why were you in therapy services at that time?"

_____

12. “What diagnoses did you receive at that time?”

    _____

13. “What problems did you and your therapist agree to work on initially in therapy?”_____

CPPS–Form P

Instructions: Using the scale provided below, please rate how characteristic each statement was of the therapy you received.

Scale:

0	1	2	3	4	5	6
Not at all characteristic		Somewhat characteristic		Characteristic		Extremely Characteristic

(1) My therapist encouraged me to explore feelings that were hard for me to talk about (e.g., anger, envy, excitement, sadness, or happiness).

(2) My therapist gave me explicit advice or direct suggestions for solving my problems.

(3) My therapist actively initiated the topics of discussion and activities during the sessions.

(4) My therapist linked my current feelings or perceptions to experiences in my past.

(5) My therapist brought to my attention similarities between my past and present relationships.

(6) Our discussion centered on irrational or illogical belief systems.

(7) The relationship between the therapist and myself was a focus of discussion.

(8) My therapist encouraged me to experience and express feelings in the sessions.

(9) My therapist suggested specific activities or tasks (homework) for me to attempt outside of session.

(10) My therapist addressed my avoidance of important topics and shifts in my mood.

(11) My therapist explained the rationale behind his or her technique or approach to treatment.

(12) The focus of our sessions was primarily on future life situations.

(13) My therapist suggested alternative ways to understand experiences or events I had not previously recognized.

(14) My therapist identified recurrent patterns in my actions, feelings, and experiences.

(15) My therapist provided me with information and facts about my current symptoms, disorder, or treatment.

(16) I initiated the discussion of significant issues, events, and experiences.

(17) My therapist explicitly suggested that I practice behavior(s) learned in therapy between sessions.

(18) My therapist taught me specific techniques for coping with my symptoms.

(19) My therapist encouraged discussion of wishes, fantasies, dreams, or early childhood memories (positive or negative).

(20) My therapist interacted with me in a teacher-like (didactic) manner.

PBPT

Perceived Barriers to Psychological Treatment Scale

Please rate the degree to which different kinds of problems got in the way of you being able to see your counselor or therapist. Please answer each question.

		Not Difficult at All	Slightly Difficult	Moderately Difficult	Extremely Difficult	Impossible
1.	Problems with transportation.	1	2	3	4	5
2.	Caregiving responsibilities.	1	2	3	4	5
3.	Cost of psychotherapy.	1	2	3	4	5
4.	Interference from daily responsibilities.	1	2	3	4	5
5.	Lack of available counseling/psychotherapy treatment.	1	2	3	4	5
6.	Didn't know how to find counselor/therapist.	1	2	3	4	5
7.	Difficulties getting time off work.	1	2	3	4	5
8.	Difficulty walking or getting around.	1	2	3	4	5
9.	Physical symptoms (fatigue, pain, breathing problems).	1	2	3	4	5
10.	Illness making it hard to leave home.	1	2	3	4	5
11.	Bad experiences with counselor.	1	2	3	4	5
12.	Distrust of counselors.	1	2	3	4	5

13.	Did not expect counseling to be helpful.	1	2	3	4	5
14.	Attending counseling would feel self-indulgent.	1	2	3	4	5
15.	Anxiety about going far from home.	1	2	3	4	5
16.	Concerns about upsetting feelings in counseling.	1	2	3	4	5
17.	Talking about problems makes them worse.	1	2	3	4	5
18.	Lack of energy or motivation.	1	2	3	4	5
19.	Difficulty motivating self.	1	2	3	4	5
20.	Being seen while emotional.	1	2	3	4	5
21.	My problems were not bad enough.	1	2	3	4	5
22.	Stigma of family/friends knowing.	1	2	3	4	5
23.	Discomfort talking to someone I didn't know.	1	2	3	4	5
24.	Concerns about being judged.	1	2	3	4	5
25.	Counselor did not care about me.	1	2	3	4	5
26.	Counseling means I couldn't solve my problems myself.	1	2	3	4	5
27.	Concerns about documentation in insurance.	1	2	3	4	5

PHQ-9

Over the last 2 weeks, how often have you been bothered by the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself-or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? Circle one:

Not difficult at all Somewhat difficult Very difficult Extremely difficult

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? Circle one:

Not difficult at all Somewhat difficult Very difficult Extremely difficult

SIAS-6 and SPS-6

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic of you.

	How characteristic of you are the statements below?	**Not at all**	**Slightly**	**Moderately**	**Very**	**Extremely**
1.	I have difficulty making eye contact with others.	0	1	2	3	4
2.	I find it difficult mixing comfortably with the people I work with.	0	1	2	3	4
3.	I tense up if I meet an acquaintance on the street.	0	1	2	3	4
4.	I feel tense if I am alone with just one person.	0	1	2	3	4
5.	I have difficulty talking with other people.	0	1	2	3	4
6.	I find it difficult to disagree with another's point of view.	0	1	2	3	4
7.	I get nervous that people are staring at me as I walk down the street.	0	1	2	3	4
8.	I worry about shaking or trembling when I'm watched by other people.	0	1	2	3	4
9.	I would get tense if I had to sit facing other people on a bus or train.	0	1	2	3	4
10.	I worry I might do something to attract the attention of other people.	0	1	2	3	4
11.	When in an elevator, I am tense if people look at me.	0	1	2	3	4
12.	I can feel conspicuous standing in a line.	0	1	2	3	4

BFAS-Volatility/IPIP-NEO-Anger

Here are a number of characteristics that may or may not describe you. Please indicate the number that best describes the extent to which you agree or disagree with each statement listed below. Be as honest as possible, but rely on your initial feeling and do not think too much about each item.

No.	Strongly Disagree 1	2	Neither Agree nor Disagree 3	4	Strongly Agree 5
1. Get angry easily.					
2. Rarely get irritated.					
3. Get irritated easily.					
4. Lose my temper.					
5. Get upset easily.					
6. Keep my emotions under control.					
7. Change my mood a lot.					
8. Rarely lose my composure.					
9. Am a person whose moods go up and down easily.					
10. Am not annoyed easily.					
11. Get easily agitated.					

12. Can be stirred up easily.					

PCL-C

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, and indicate how much you have been bothered by that problem in the last month.

No.	Not at All 1	A Little Bit 2	Moderately 3	Quite a Bit 4	Extremely 5
1. Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?					
2. Repeated, disturbing dreams of a stressful experience from the past?					
3. Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it)?					
4. Feeling very upset when something reminded you of a stressful experience from the past?					
5. Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of a stressful experience from the past?					
6. Avoid thinking about or talking about a stressful experience from the past or avoid having feelings related to it?					
7. Avoid activities or situations because they remind you of a					

stressful experience from the past?					
8. Trouble remembering important parts of a stressful experience from the past?					
9. Loss of interest in things that you used to enjoy?					
10. Feeling distant or cut off from other people?					
11. Feeling emotionally numb of being unable to have loving feelings for those close to you?					
12. Feeling as if your future will somehow be cut short?					
13. Trouble falling or staying asleep?					
14. Feeling irritable or having angry outburst?					
15. Having difficulty concentrating?					
16. Being “super alert” or watchful on guard?					
17. Feeling jumpy or easily startled?					

APPENDIX B

Oklahoma State University Institutional Review Board

Date: 11/20/2019
Application Number: AS-19-135
Proposal Title: Examining Factors Related to Psychological Treatment Dropout
Principal Investigator: Cassy Krug
Co-Investigator(s):
Faculty Adviser: Tony Wells
Project Coordinator:
Research Assistant(s):
Processed as: Exempt
Exempt Category:

Status Recommended by Reviewer(s): Approved
The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.
This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.
The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:
1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have

questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

VITA

Cassandra Paige Krug

Candidate for the Degree of

Doctor of Philosophy

Dissertation: HOSTILE INTERPRETATION BIAS AND PSYCHOLOGICAL TREATMENT DROPOUT: A PRELIMINARY INVESTIGATION

Major Field: Clinical Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Clinical Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2021.

Completed the requirements for the Master of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in 2017.

Completed the requirements for the Bachelor of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in 2015.

Experience:

Krug, C. P., Kraft, J.D., Wells, T.T., & Grant, D. M., (2020). The relationship between hostile interpretation bias and symptoms of depression and social anxiety: A replication across two samples. *Journal of Psychopathology and Behavioral Assessment.* 1-8. Doi: 10.1007/s10608-017-9836-y

Professional Memberships:

Association for Behavioral and Cognitive Therapies 2015-Present
Student Member

Anxiety and Depression Association of America 2017-Present
Student Member