

AN ABSTRACT OF THE DISSERTATION OF

Justin G. Jacques for the degree of Doctor of Philosophy in Counseling presented on January 26, 2022.

Title: A Corpus Linguistic Analysis of Counseling Alliance Ruptures: A Pilot Study

Abstract approved: _____

Cass Dykeman

Establishing a therapeutic alliance or a therapeutic bond has long been seen as an essential component of obtaining positive treatment outcomes in clinical practice. More recently, the idea of recognizing therapeutic alliance ruptures (disagreements about the tasks or goals of therapy or a problem in the therapeutic bond) during counseling has become an important part of training and competence in clinical practice. Many subjective observational tools have been developed to identify alliance ruptures in counseling sessions, but although they are helpful they often have issues with interrater reliability. This has created the need for more objective measures of alliance quality and detection of rupture events to ensure easier identification of various markers for effective and competent clinical practice. Little research has been conducted to establish clear, objective criteria regarding the quality of the therapeutic alliance and specifically when a rupture event has occurred. The present research consists of two methodological pilot studies demonstrating that researchers can investigate the underlining psychological meaning behind the words that occur during an alliance rupture between a counselor and client to develop an objective measure of this important alliance-related phenomena. The studies were conducted using a cross-sectional analysis of four linguistic corpuses. These corpuses were created by

transcribing mock counseling vignettes obtained from a publicly available website developed by nationally recognized experts in alliance ruptures and from recorded sessions of Carl Rogers, Fritz Pearls, and Albert Ellis in a series on their three approaches to therapy. The first study, methodological pilot study, involved an examination of key words and collocates for each alliance rupture type. Results of this keyness pilot study showed that the word “just” (often used as part of a less direct filler expression) was the most frequent word in the confrontation rupture corpus as well as a top five word in the other two corpuses. Regarding the withdrawal rupture corpus, the node word “know,” a cognitive-oriented token (that can create emotional distance), had four high intensity words (collocates), two of which were shared with the confrontation type corpus including “I” and “you.” Regarding the mixed rupture corpus, the most common word “like,” often used as a preposition (and has been implicated in low empathy encounters), unexpectedly did not appear as a collocation in the confrontation or withdrawal rupture collocation analysis. This methodological pilot study contributes to the field of therapeutic alliance rupture research by demonstrating a methodological approach that has the potential to provide several implications for both counseling and research. Following the analysis of the same data with Linguistic Inquiry and Word Count (LIWC) software, the second pilot study methodology was utilized to find a significant difference between she/he words (third-person singular pronouns) and certainty words when comparing the withdrawal and mixed rupture corpuses with the confrontation rupture corpus. In addition, a significant difference was found between positive emotion words and discrepancy words when comparing rupture infused psychotherapy with general psychotherapy.

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A Corpus Linguistic Analysis of Counseling Alliance Ruptures: A Pilot Study

by
Justin G. Jacques

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APPROVED:

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Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Justin G. Jacques, Author

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CONTRIBUTIONS OF AUTHORS

Cass Dykeman assisted with the research question development, methodology, and research design, as well as the conceptualization and presentation of the findings. Evelyn Stamey and Charles Silber assisted with the statistical analysis design and interpretations.

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DEDICATION

I would like to dedicate my dissertation to my mother and father. They clearly communicated the value of education in their words and actions. Thanks for your continued love and support on this journey and over the years. I would also like to thank my family, as your support has helped sustain me through this important journey.

Chapter 1: A General Introduction

The counseling profession is unique in that humans helping other humans through listening and providing focused feedback is a complex endeavor because every human is vastly different. Counseling is not only a unique profession but measuring proficiency with numerous human variables is complicated. Therefore, having a way to determine who was a proficient therapist would be very useful. This information would not only be valuable to the counseling profession but helpful for counselor educators who train mental health clinicians because it could increase the efficacy of their work. The great news is that there is now an innovative methodological approach in which researchers could employ to decipher the nuances of a transcript of a counselor client interaction. Utilizing a well-established methodology, linguistics, or the study of words, paired with a new software technology, scholars can determine whether a counselor has clinical proficiency by examining the linguistic components and psychological processes behind a counseling session verbal discourse.

This emerging research methodology will allow counselors and counselor educators to discover which counselors are indeed at par with professional competency standards of practice by being well equipped to detect important aspects of effective counseling, including the development of a therapeutic alliance and recognizing subsequent ruptures. These methodological pilot studies examined the discourse features of the three rupture types that occur in a therapeutic alliance: withdrawal, confrontation, and mixed (a combination of confrontation and withdrawal ruptures). Furthermore, this set of pilot studies demonstrated that this methodology can help identify the subtlety of when, where, and how often ruptures occur in a counseling session and what they reveal about the quality of the counselor client alliance and ultimately the level of proficiency of the counselor.

Rationale

These two methodological pilot studies aimed to achieve two primary research goals. The first was to identify a gap in methodological approaches that could help researchers and clinicians further understand ruptures in the therapeutic alliance. The studies then produced several research questions in an area that has not been previously queried (Farooq, 2017)—in this case, the underlying linguistic and psycholinguistic processes of rupture events. The corpus linguistics methodology has been applied over the years to a vast number of corpora, exploring several diverse topics. Corpus linguistic research has included everything from a person's choice of pronouns and how they can reflect their upbringing, their way of thinking, and where they live, to understanding why lying causes one to use different rhetoric (Pennebaker, 2011). Even though there have been numerous inquiries on a spectrum of corpus linguistics studies in an array of disciplines, no research has used this methodology to conduct research on alliance rupture types within counseling sessions. The second aim of the present study was to increase the knowledge base of the field of counseling by disturbing current clinical practice (Tadajewski & Hewer, 2011). Typically, counselors can obtain clinical proficiency through study, receiving feedback from supervisors, and reflective practice. However, there is evidence that there are outlier clinicians that continue to have poor outcomes (Project MATCH Research Group, 1998). The results of these methodological pilot studies examining rupture types could substantially change the way that counselors receive training and how supervisors and educators conduct supervision, by giving them a tool to help identify poor performers earlier in their educational journey and by creating an additional gatekeeping tool for the counseling profession. Furthermore, this emerging line of research could help counselors, supervisors, and counselor educators, increase their depth of understanding of the three alliance rupture marker

types (withdrawal, confrontation, and mixed) and assist novice counselors with deploying effective strategies to overcome ruptures in the therapeutic alliance.

The Importance of the Topic to the Profession of Counseling

The aforementioned studies had two primary objectives. The first objective was to utilize an emerging research methodology can be utilized to further understand the therapeutic alliance and to more accurately identify when rupture events occur in counseling sessions between the counselor and the client. The second objective was to show that this methodology could explore the underlying linguistic, psychological, and broader psycholinguistic processes of mock counseling sessions and specifically targeted sessions highlighting the three alliance rupture types. The second pilot study also demonstrated the ability of this methodology to compare the rupture-infused counseling sessions to baseline counseling. The application of corpus linguistics research methodology to counseling is necessary because the findings would enable counselors and counselor educators to gain insight into this key practice dynamic and develop strategies to improve their therapeutic bond and their efficacy (Newhill et al., 2003). The results from this pilot study demonstrate the potential usefulness of this research methodology to improve clinical practice given the known link between working alliance and counseling outcomes (Fluckiger et al., 2018). Additionally, the findings of this study will give counselor educators another research tool to more efficiently and effectively educate, supervise, and train novice clinicians.

Literature Review

This chapter provides context for the present methodological pilot studies by first defining and describing the alliance ruptures, features of the three rupture types, the software tools used in corpus linguistic research, and research on the linguistics of alliance. The studies

then offer an overview of the relationship of word collocations and their meanings. A synopsis of the two manuscripts will follow the summary of these concepts, terms, and concerns.

There are multiple definitions of what constitutes a therapeutic alliance rupture in the literature. There also appears to be a range of characterizations. On one end, ruptures are conceptualized as breakdowns, vicious circles or cycles, deteriorations, disruptions, disturbances, dysfluencies, empathic failures, and impasses (Muran & Safran, 2016). On the other end, there are enactments, breaches, misalliances, misattunements, strains, miscoordinations, and weakenings. Moreover, alliance ruptures have been more acutely characterized as interruptions in the collaboration regarding the goals and tasks of therapy and a waning in the emotional bonds between patient and therapist (Muran & Safran, 2016).

Muran and Safran (2016) have subcharacterized therapeutic alliance ruptures into three rupture types: withdrawal, confrontation, and mixed. A foundational feature of a withdrawal rupture type is a patient's behavior that communicates disconnection from an affective state, from the therapist, or from some aspect of the therapy (Muran & Safran, 2016). Conversely, the salient features of the confrontation rupture type are the direct communication of irritation or unhappiness by the client to the therapist relating to some component of the treatment. The mixed rupture type is differentiated from withdrawal and confrontation markers as they consist of elements of both withdrawal and confrontation rupture types. In mixed ruptures, the client is moving away and against the counselor simultaneously or in a set of interaction sequences. Having described the rupture types, it is useful to identify effective tools for helping psychotherapists identify these markers. Most commonly, this identification is done through counseling session transcript analysis and therefore literature on the linguistic analysis of therapeutic alliances will be presented.

Researchers have recently used automated tools that can code and evaluate counseling sessions (Perez-Rosas et al., 2017). These inexpensive computer programs, including Language Inquiry and Word Count (LIWC; Pennebaker et al., 2015c) and #Lancsbox (Brenzina et al., 2018), can quickly and more reliably examine large amounts of transcription texts to complete data coding and summarizing tasks.

The LIWC software can identify several linguistic variables that may help identify an alliance rupture. Examples of linguistic variables are pronoun use (first person, second person, third person), emotional language use (positive emotion, negative emotion), and word count (total number of words). LIWC can also identify numerous psychological processes that signify alliance events and outcomes. Pennebaker et al. (2015b) included the following variables as categories in their linguistic-based measure of psychological processes: time orientation, positive emotion, negative emotion, anxiety, anger, and sadness.

#Lancsbox 6.0 (Brenzina et al., 2021) employs an emerging analytical method called linguistic collocation analysis or collocation measures. This program can help researchers understand alliance rupture types and their meanings within transcribed session texts by exploring the relationship of meaning and word collocations. Once these collocations are discovered through transcription analysis, supervisors can accurately point to withdrawal, confrontation, and mixed rupture type features in counseling session discourse.

The collocation of words is defined by the relationship between words which are proximal in each text. Collocations are further identified by their distance, frequency, and inclusivity to the surrounding text associated with a word of interest, referred to as the “node” (Brenzina et al., 2015). This analysis process provides precise data on the relationships between words, which give investigators hints to the underlying psychological processes behind words

and subsequently helps them answer important research questions. Researchers can use Lancsbox 6.0 to automate this process (i.e., analysis of collocations processing of words), which enables quick and accurate analysis.

Additionally, Lancsbox 6.0 possesses a graphical collocation instrument, Graphcoll, which creates and illustrates visual networks that demonstrate the strength of collocational relationships. These collocation relationships that are illustrated by visual networks are measured by the distance between various words and the identified node word. This innovative tool, which creates further value for collocation networks, allows for corpora to be better understood by drawing out subtle meaning from text that may otherwise have been missed without the help of software. Armed with data gathered from these new linguistic technologies related to therapeutic alliance rupture types, supervisors can potentiate the supervision process by helping with the effectiveness and efficiency of the supervisee's growth.

Description of Manuscript 1

Rationale for the Manuscript

The therapeutic alliance is an essential part of the counseling process, as research has shown that the quality of the alliance has an important impact on clinical outcomes (Fluckiger et al., 2018). However, despite the amount of research on the quality of the therapeutic alliance in counseling sessions, few studies have applied corpus linguistics to the therapeutic alliance, and more specifically, as they relate to rupture markers. Therefore, research is needed to understand why some clinicians are able to build and sustain more enduring therapeutic alliances compared to others. The results of this pilot study on rupture markers that exist within the therapeutic alliance could help supervisors and counselors utilize a new methodology to gain insight into and

awareness of this important therapeutic dynamic and improve their relational bond and ultimately their counseling outcomes with clients (Newhill et al., 2000).

Research Questions

To address gaps in the existing literature, six research questions guided this methodological pilot study.

RQ1: What is the use rate of linguistic processes that occur during a withdrawal rupture therapy segment?

RQ2: What is the use rate of linguistic processes that occur during a confrontation rupture therapy segment?

RQ3: What is the use rate of linguistic processes that occur during a mixed rupture therapy segment?

RQ4: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ1?

RQ5: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ2?

RQ6: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ3?

Description of Methodology

To answer these questions, this study utilized a synchronic corpus linguistic design (Weisser, 2017) to examine the three alliance rupture types. This study design was used to analyze mock counseling session transcriptions from a publicly available website created by nationally recognized experts in alliance ruptures. The mock videos included seven White male counselors, two White female counselors, eight White female clients and one White male client.

The transcripts were cleaned and converted to three corpora and were subsequently analyzed using #Lancsbox.

Description of Data Analysis Processes

For RQs 1-3, #Lancsbox was used to determine the use rate of linguistic processes that occur during the three types of rupture therapy segments. The following descriptive statistics were reported for the top five words (i.e., top in terms of percentage of all words): raw count frequency and percentage of all words. The #Lancsbox settings for this descriptive analysis were: frequency - 01 frequency, dispersion: range percentage, type. Regarding RQs 4-6, mutual information squared (MI³), an effect size measure within the #Lancsbox 6.0 software, was utilized to understand the strength between two words. The settings within #Lancsbox's Graphcoll feature included: statistic ID = 04, statistic name = MI3, statistic cut-off value = 9, L and R span = L3-R3 minimum collocate frequency (C) = 3, minimum collocation frequency (NC) = 1, and dispersion range percentage.

Target Journal

The target journal for manuscript 1 is *Psychotherapy Research*. This journal was selected because manuscript 1 focuses on professional counseling practice—specifically, helping counselors and supervisors recognize when a therapeutic rupture has occurred during a counseling session. Manuscript 1 aligns with the aim of *Psychotherapy Research* of improving the scientific quality of psychotherapy research and bringing research into clinical practice. *Psychotherapy Research* has an impact factor of 2.78, which qualifies the publication as the flagship peer-reviewed journal within the study of clinical practice. The journal has also published recent articles on a therapist's ability to recognize alliance ruptures as a moderator of change in the therapeutic alliance (Chen et al., 2018). Additionally, *Psychotherapy Research*

published a pilot study exploring the feasibility and utility of idiographic models (individual-level methodology) in clinical practice (Frumkin et al., 2021). However, despite the journal's prestige, *Psychotherapy Research* has not published a manuscript using the innovative corpus linguistics research methodology as it relates to the topic of therapeutic alliance ruptures, which represents a potential gap in the journal's research. Moreover, this gap represents a significant publication opportunity and a prospective venue for the present manuscript.

Description of Manuscript 2

Rationale for the Manuscript

The therapeutic alliance is a crucial component of the counseling relationship and understanding ruptures that occur within these alliances is important to further build on foundational research that suggests that the quality of the alliance is a significant contributor to clinical outcomes (Fluckiger et al., 2018). Concerning counseling research, few studies have explored the linguistic aspects of the therapeutic alliance or the ruptures that may occur during therapy. Therefore, methodological research is necessary to enable counselors and counselor educators to have objective tools for gaining insight into this key counseling dynamic, to develop strategies to recognize ruptures, and to improve the therapeutic bond and ultimately clinical efficacy (Newhill et al., 2000).

Statement of Research Question

With the identified gaps in the literature related to the occurrence of alliance ruptures during a counseling session, the following three research questions were designed to guide the methodological pilot study in manuscript 2.

RQ1: What is the use rate of linguistic and psychological processes of rupture-infused psychotherapy by type?

RQ2: Do linguistic and psychological processes differ by rupture type in rupture-infused psychotherapy? If so, how?

RQ3: Does the use rate of linguistic and psychological processes in rupture-infused psychotherapy type differ from the use rate of these processes in general psychotherapy?

Description of the Methodology

To answer the research questions, this methodological pilot study utilized a synchronic corpus linguistic design (Brezina, 2018) to explore ruptures that occur in counseling sessions. This was completed by analyzing mock counseling vignettes' transcripts that were obtained from a website created by a nationally renowned expert on therapeutic alliance ruptures and video recorded sessions of Carl Rodgers', Fritz Pearls', and Albert Ellis' work from a series on their three approaches to therapy. The mock videos included ten White male counselors, two White female counselors, nine White female clients and one White male client. The transcriptions were subsequently converted into four corpuses through preprocessing and then analyzed using LIWC. The study involved 14 variables. The four linguistic process variables examined were: first-person singular pronouns, first-person plural pronouns, third-person singular pronouns, and third-person plural pronouns. The 10 psychological process variables explored were: negative emotion, anger, sadness, anxiety, positive emotion, discrepancy, certainty, differentiation, tentative, and causation. The unit of analysis was single words (Bjekić et al., 2014).

Description of the Data Analysis

In reference to RQ1, both raw and normalized frequency rates (percentage of all words) for all variables across all transcriptions will be calculated. The variables are the three types confrontation, withdrawal, and mixed forms of alliance ruptures. The transcriptions are of Carl Rodgers, Fritz Pearls, and Albert Ellis from *Three Approaches to Psychotherapy*. Regarding

RQ2 and RQ3 (i.e., differences), the log likelihood test (G^2) was employed (Rayson & Garside, 2000). All analyses were conducted using R, and the preset alpha level was .001.

Target Journal

The target journal for manuscript 2 is the *Journal of Counseling Psychology*. This journal was selected because manuscript 2 focuses on professional counseling practice and exclusively on therapeutic alliance ruptures, which will help trainers, supervisors, and counselors identify when these events occur in clinical practice. Manuscript 2 aligns with the aim of the *Journal of Counseling Psychology* of publishing empirical articles focused on counseling interventions, assessment, and the supervision and training of counselors. Furthermore, this journal has an impact factor of 4.656 and is considered the predominant peer-reviewed journal for clinical practice in psychology—specifically, those within the field who focus on the practice of counseling. The journal has also published a recent article on a new qualitative method termed the action project research method (Young et al., 2021) and a study examining the impact of client-therapist congruence on ruptures and their outcomes on brief relational therapy versus cognitive behavioral therapy (Zilcha-Mano et al., 2019). Although the journal is considered iconic in the field, no research has been published on the therapeutic alliance using the cutting-edge research methodology of corpus linguistics. This gap in the *Journal of Counseling Psychology* signifies a noteworthy publication prospect and prospective venue for manuscript 2.

Researcher's Positionality Statement

I, Justin Jacques, grew up in Bettendorf, Iowa, in a mostly rural community where I attended public school and played multiple sports. I am a second-generation college graduate and the grandson of a Wisconsin farmer and Chicago, Illinois factory worker. I currently work as a student assistance professional at Johns Hopkins University. I have been a professional counselor

for the past 18 years working in residential treatment, employee assistance programs, and college counseling centers with diverse clients. I am fluent in English and have intermediate communication skills in Spanish. My research comes from the perspective of a cisgender, middle class, middle-aged, White American male with a diagnosed learning disability. My chosen research methodology, corpus linguistics, has been composed primarily of White male researchers, which impacts the lens with which the field's research is conducted and may influence these methodological pilot studies.

Glossary of Specialized Terms

Specialized key terms are defined below.

Bayesian information criteria (BIC) is a criterion for model selection among a fixed set of models. It based on, to a degree, the likelihood function (McQuarrie et al., 1998).

Collocations are words that occur in combinations or words that often present themselves with the node word (Brezina, 2018).

The *confrontation rupture* is a type of rupture that consists of direct communication of irritation or unhappiness by the client to the counselor relating to some aspect of the counseling relationship (Safran & Muran, 2014).

Corpus/corpora is a specific form of linguistic data. It consists of a collection of written texts of spoken language that can be analyzed by using specialized computer software. A corpus represents a sample of text of interest to the researcher (Brezina, 2018).

Corpus linguistics is the empirical method of analyzing language. It requires the researcher to provide scientific evidence by data abstraction from a corpus to back up any statement made about language. This method also follows the scientific requirement that the results must be replicable (Brezina, 2018).

Counseling is a professional relationship constructed to help individuals, families, and groups with respect to mental health, wellness, educational, and career goals (Kaplan et al., 2014). For the purpose of this dissertation the terms counseling and psychotherapy will be used interchangeably.

#Lancsbox 6.0 is a newly developed corpus analysis software program, possessing a graphical collocation instrument, Graphcoll, which creates and illustrates visual networks that demonstrate the strength of collocational relationships. These collocation relationships, which are illustrated by visual networks, are measured by the distance between various words and the identified node word (Brezina et al., 2018).

Linguistic Inquiry and Word Count (LIWC) is a text analysis program that counts words in psychologically meaningful categories. Within LIWC there are multiple subscale measures that can be utilized to analyze a corpus. The validity and reliability of LIWC has been well established (Pennebaker et al., 2015a).

A *log-likelihood test* is a significance test that is “similar to the chi-square test, but generally considered more reliable, especially when working with small values” (McEnery & Hardie, 2011, p. 246).

Mutual information cubed is the exclusivity of collocates or the relationship between the number of times collocates are seen together as opposed to separately in a corpus cubed (Gablasova et al., 2017).

The *mixed rupture* type consists of features of both withdrawal and confrontation rupture types. The client is simultaneously moving away from and against the counselor or in a set of interaction sequences (Safran & Muran, 2014).

Node word is a word that is searched for by a researcher in order to conduct an analysis (Brezina, 2018).

Therapeutic alliance rupture(s) is defined as interruptions in collaboration regarding the goals and tasks of therapy and a waning in the emotional bonds between patient and therapist (Safran & Muran, 2014).

A *token* is a singular instance of a word in a text (Brezina, 2018)

The *withdrawal rupture* is a type of rupture that occurs when the client withdraws or partially disengages from the counselor, their own emotions, or some aspect of the counseling process (Safran & Muran, 2014).

Thematic Links Between Manuscripts

These two methodological pilot studies are linked thematically through corpus linguistic analysis of the three types of alliance ruptures that occur in counseling sessions by utilizing transcript analysis of mock counseling sessions and three general counseling sessions. The first pilot study examined the linguistic processes that occur during each alliance rupture type and targeted the unique collocations of words that appear in each mock counseling transcription. The second pilot study looked specifically at the underlying linguistic and psychological process differences that exist between each rupture type by analyzing the use rate of words that appear in each of the respective mock counseling session transcripts. The second study also examined the underlying linguistic and psychological process differences between rupture-infused psychotherapy and general psychotherapy.

In addition to examining unique but related mock counseling manuscripts and general counseling transcripts, which represents data in these respective pilot studies, the texts were utilized in the creation of both manuscripts, as they drew from the same corpora with the

addition of the second general counseling corpora. These pilot studies demonstrate the potential of this methodological approach to obtain data that will add to what is known about alliance ruptures and enable counselors and counselor educators to identify ruptures to attend to them more quickly to improve treatment outcomes. This information can be directly applied to supervision and help counselor educators train clinicians in a more effective and efficient manner.

Statement of Dissertation Organization

This is a manuscript style dissertation that is divided into four chapters. Chapter 1 provides an introduction, including an overview of the major research topics regarding alliance ruptures in the counseling relationship, and specifically the three rupture types. Chapter 1 also includes predominant themes that have emerged in previous research. Chapter 2 consists of an original research manuscript for which data were generated from mock counseling session transcripts with alliance rupture types. These data were used to identify features of the three rupture types, the linguistic processes of the therapeutic alliance ruptures, and the relationship between meaning and word collocation related to the three rupture types. Chapter 3 is the second original research manuscript for which the same data from mock counseling transcripts and general counseling transcripts were used to identify alliance rupture specific terms, linguistic and psychological processes of alliance ruptures, and psycholinguistic processes of alliance ruptures. Finally, chapter 4, the conclusion, reviews the findings from the respective manuscripts, summarizes their importance, attends to thematic links between the two studies, and lays out a research agenda to build on this foundational work.

References

- Bjekić, J., Lazarević, L. B., Živanović, M., & Knežević, G. (2014). Psychometric evaluation of the Serbian dictionary for automatic text analysis-LIWCser. *Psihologija*, 47(1), 5-32. <https://doi.org/10.2298/PSI1401005B>
- Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research and Practice*, 16, 252-260. <https://psycnet.apa.org/doi/10.1037/h0085885>
- Brezina, V. (2018). *Statistics in corpus linguistics: A practical guide*. Cambridge University Press.
- Brezina, V., Weill-Tessier, P., & McEnery, A. (2021). #LancsBox v. 6.0. [software]. <http://corpora.lancs.ac.uk/lancsbox>
- Chen, R., Atzil-Slonim, D., Bar-Kalifa, E., Hasson-Ohayon, I., & Refaeli, E. (2018). Therapists' recognition of alliance ruptures as a moderator of change in alliance and symptoms. *Psychotherapy Research*, 28(4), 560-570. <https://doi.org/10.1080/10503307.2016.1227104>
- Farooq, R. (2017). A framework for identifying research gap in social sciences: Evidence from the past. *IUP Journal of Management Research*, 16(4), 66-75. <https://www.iupindia.in/705/ijmr.asp>
- Flückiger, C., Del Re, A. C., Wampold, B. E., & Horvath, A. O. (2018). The alliance in adult psychotherapy: A meta-analytic synthesis. *Psychotherapy*, 55(4), 316-340. <https://doi.org/10.5167/uzh-157613>
- Frumkin, M. R., Piccirillo, M. L., Beck, E. D., Grossman, J. T., & Rodebaugh, T. L. (2021). Feasibility and utility of idiographic models in the clinic: A pilot study. *Psychotherapy Research*, 31(4), 520-534. <https://doi.org/10.1080/10503307.2020.1805133>
- Gablasova, D., Brezina, V., & McEnery, T. (2017). Collocations in corpus-based language learning research: identifying, comparing, and interpreting the evidence. *Language Learning*, 67(S1), 155-179. <https://doi.org/10.1111/lang.12225>
- Kaplan, D. M., Tarvydas, V. M., & Gladding, S. T. (2014). 20/20: A vision for the future of counseling: The new consensus definition of counseling. *Journal of Counseling & Development*, 92(3), 366-372. <https://doi.org/10.1002/j.1556-6676.2014.00164.x>
- McEnery, T., & Hardie, A. (2011). *Corpus linguistics: Method, theory and practice*. Cambridge University Press.
- McQuarrie, A. D. R., & Tsai, C.-L. (1998). *Regression and time series model selection*. World Scientific.

- Newhill, C. E., Safran, J. D., & Muran, J. C. (2003). *Negotiating the therapeutic alliance: A relational treatment guide*. Guilford Press.
- Pennebaker, J. W. (2011). The secret life of pronouns. *New Scientist*, 211(2,828), 42-45.
[https://doi.org/10.1016/S0262-4079\(11\)62167-2](https://doi.org/10.1016/S0262-4079(11)62167-2)
- Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015a). *LIWC 2015 operator's manual*. Pennebaker Conglomerates. <https://liwc.wpengine.com>
- Pennebaker, J.W., Boyd, R.L., Jordan, K., & Blackburn, K. (2015b). *The development and psychometric properties of LIWC2015*. University of Texas at Austin.
<https://doi.org/10.15781/T29G6Z>
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2015c). *Linguistic Inquiry and Word Count: LIWC2015 (Version 1.6)* [Computer software]. Pennebaker Conglomerates.
<https://liwc.wpengine.com>
- Pérez-Rosas, V., Mihalcea, R., Resnicow, K., Singh, S., An, L., Goggin, K. J., & Catley, D. (2017, April). Predicting counselor behaviors in motivational interviewing encounters. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers* (pp. 1,128-1,137). Association for Computational Linguistics. <https://www.aclweb.org/anthology/E17-1106.pdf>
- Project MATCH Research Group. (1998). Therapist effects in three treatments for alcohol problems. *Psychotherapy Research*, 8(4), 455-474.
<https://doi.org/10.1080/10503309812331332527>
- Rayson, P., & Garside, R. (2000, October). Comparing corpora using frequency profiling. In *Proceedings of the workshop on comparing corpora-Volume 9* (pp. 1-6). Association for Computational Linguistics. <http://dx.doi.org/10.3115/1117729.1117730>
- Muran, J. C., & Safran, J. D. (2016). Therapeutic alliance ruptures. In A. E. Wenzel (Ed.), *Sage encyclopedia of abnormal and clinical psychology* (pp. 3,511–3,514). Sage.
- Safran, J., Muran, J. C., Demaria, A., Boutwell, C., Eubanks-Carter, C., & Winston, A. (2014). Investigating the impact of alliance-focused training on interpersonal process and therapists' capacity for experiential reflection. *Psychotherapy Research*, 24(3), 269-285.
<https://doi.org/10.1080/10503307.2013.874054>
- Tadajewski, M., & Hower, P. (2011). Intellectual contributions and ‘gap-spotting’. *Journal of Marketing Management*, 27(5-6), 449-457.
<https://doi.org/10.1080/0267257X.2011.562364>
- Young, R. A., Domene, J. F., Valach, L., & Socholotiuk, K. (2021). Exploring human action in counseling psychology: The action-project research method. *Journal of Counseling Psychology*, 68(3), 331–343. <https://doi.org/10.1037/cou0000533>

Chapter 2: A Research Manuscript

Keyness and Collocations of Therapeutic Rupture Types: A Pilot Study

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Abstract

This pilot study examined a research methodology that could be utilized to evaluate the therapeutic alliance and specific rupture types that counselors experience in a counseling session by employing a cross-sectional analysis of a linguistic corpus created from transcriptions of mock counseling sessions. We used a corpus linguistic program called #Lancsbox 6.0 to analyze the collocates of the top words found in therapeutic rupture types. Results of this methodological pilot study show that the word “just,” which was often used as part of a less direct filler expression, was the most frequent word in the confrontation rupture corpus as well as a top five word in the withdrawal and mixed rupture corpuses. Regarding the withdrawal rupture corpus, the node word “know,” a cognitive-oriented token that could create emotional distance, had four high intensity words (collocates), two of which (“I” and “you”) were shared with a confrontation type corpus. Regarding the mixed rupture corpus, the most common word “like” was often used as a preposition, was implicated in low empathy encounters, and did not appear as a collocation in the confrontation or withdrawal rupture collocation analysis. Implications for both counseling and research are discussed.

Keywords: #Lancsbox, collocation, therapeutic alliance, alliance rupture, corpus linguistics.

Keyness and Collocations of Therapeutic Rupture Types: A Pilot Study

The field of mental health would benefit significantly if there was a way to reliably determine who was a proficient therapist. This insight could change the way educators train mental health clinicians and potentiate the efficacy of their work. Fortunately, there may be a way to decipher the wall of words that comes with a counseling session transcript. Through a technology-informed methodology, the effectiveness of a counselor could be determined by examining the linguistic dimensions and psychological processes behind their verbal discourse. This methodology may enable researchers to identify counselors to detect important components of effective counseling, including ruptures in the therapeutic alliance. The present study explores the linguistic features of three rupture marker types in the therapeutic alliance—confrontation, withdrawal, and mixed—to attempt to identify when they occur, how frequently, and what they mean to the quality of the therapeutic alliance and ultimately the skill of the counselor.

There was a twofold purpose for this study. First, we attempted to identify a gap in methodological approaches regarding the study of ruptures in the therapeutic alliance and help the reader understand an area of uncertainty (Farooq, 2017) regarding therapeutic alliance ruptures. Corpus linguistics studies have been designed and performed on a range of corpora, examining a multitude of topics, including everything from how an individual remembers political events (Pennebaker et al., 2013) to understanding the use of language in depressed college students (Rude et al., 2013). However, despite the amount and variety of corpus linguistics studies in an array of fields and in psychotherapy specifically, few study have applied corpus linguistics to the therapeutic alliance, and precisely as they relate to rupture markers. The second aim of this research was to expand counseling's methodological knowledge base by disrupting current practice (Tadajewski & Hewer, 2011). Counselors do not necessarily improve

their efficacy with practice over their career (Chow et al., 2015) or understand why certain practitioners are able to develop and maintain a stronger therapeutic alliance compared to their colleagues. The results of this pilot study on rupture markers in the therapeutic alliance could provide practitioners with a methodology to gain awareness of and insight into this key psychotherapy dynamic and improving their therapeutic bond and ultimately their treatment outcomes with clients (Newhill et al., 2000). Additionally, the present exploration and utilization of this methodology could eventually enable therapists to further understand the three types of rupture markers—withdrawal, confrontation, and mixed—and aid them in selecting the appropriate intervention to repair ruptures in the therapeutic alliance.

In the review of the literature on therapeutic alliance ruptures, six themes emerged: (a) definition of alliance ruptures, (b) features of withdrawal rupture type, (c) features of confrontation type, (d) features of mixed rupture type, (e) the linguistics of alliance, and (f) relationship between meaning and word collocations. Following the review of the literature, the research questions will be outlined.

Multiple definitions of the therapeutic alliance rupture exist in the extant literature and appear to exist on a continuum. On one end of the continuum, the ruptures are described more severely as breakdowns, vicious circles or cycles, deteriorations, disruptions, disturbances, dysfluencies, empathic failures, and impasses (Muran & Safran, 2016). On the other end, they appear more subtle and include enactments, breaches, misalliances, misattunements, strains, miscoordinations, and weakenings. Alliance ruptures have been more precisely defined as interruptions in collaboration regarding the goals and tasks of therapy and a waning in the emotional bond between patient and therapist (Muran & Safran, 2016). Because therapeutic

alliance ruptures are varied in presentation, it is possible for a therapist to experience one, a few, or many of the described features within a psychotherapy session.

Moreover, researchers have further broken-down the therapeutic alliance ruptures into three more nuanced types of alliance rupture markers termed “withdrawal,” “confrontation,” and “mixed” rupture markers. Two articles are particularly helpful in supporting the tripartite model of ruptures in relation to construct validity. Safran and Muran (2006), and Muran (2019) clearly defined components of the therapeutic alliance rupture types and additionally purport limitations to these proposed constructs. Additionally, Safran et al.’s (2011) meta-analysis found that there is evidence that when a counselor can detect and repair a therapeutic alliance rupture, there is a correlation to positive therapeutic outcomes. Given the research regarding the construct validity of the tripartite model, an examination of each type of rupture is warranted.

The key feature of a withdrawal rupture marker is a patient’s behavior that communicates disconnection from an affective state, from the therapist, or from some aspect of the therapy. It also encompasses, more specifically, a movement away from the therapist (Muran & Safran, 2016). Salient examples include silences, topic shifts, minimal responses, storytelling, and abstract talk. Withdrawal ruptures move the client towards sovereignty and separation in relationship to the therapist (Muran & Safran, 2016). Overall, withdrawal ruptures may be hard to detect because they are not overt and often present a polite veneer, yet the client is objectively pulling away from the psychotherapist, and therefore the alliance, through subtle words and actions.

The antithesis of the withdrawal marker is the confrontation marker, where the rupture in the alliance is more obvious, can be confrontational, and occurs in a more direct manner between the psychotherapist and client. The distinguishing feature of the confrontation rupture marker is

the direct communication of irritation or unhappiness by the client to the therapist, relating to some component of the treatment. It effectively includes the client's movements against the therapist and consists of actions marked by hostility and attempting to gain control. Examples of confrontation ruptures include complaints and concerns about the therapist, rejection of the therapist's intervention, concern about the activities of therapy, complaints about the parameters of therapy, concerns about the progress of therapy, and the client defending themselves against the therapist (Eubanks et al., 2015). Confrontation ruptures can also contain coercions such as being excessively friendly or even seductive (Eubanks et al., 2018). Given their direct nature, confrontation rupture markers are more easily detected and more obvious to the psychotherapist but are also an indicator that damage has been done to the therapeutic alliance.

The third rupture marker type, mixed, is a combination of both confrontation and withdrawal rupture markers. The mixed rupture marker is distinguished from withdrawal and confrontation markers because it includes features of both withdrawal and confrontation rupture markers. The client moves away from and against the counselor simultaneously or in a set of interaction sequences. An example of a mixed rupture type is when a client criticizes the counselor in an act of confrontation while simultaneously smiling or laughing nervously in an act of withdrawal. Clients are likely to exhibit mixtures of confrontation and withdrawal markers when they are displeased with some facet of therapy but at the same time want to avoid conflict with the therapist (Eubanks et al., 2015). Mixed therapeutic rupture markers are more intricate and nuanced than either withdrawal or confrontation markers alone and subsequently may be harder for the psychotherapist to identify. Consequently, it is useful to examine tools that are effective in helping psychotherapists identify rupture marker types. Commonly, this

identification is done with transcripts from psychotherapy sessions. Thus, literature on the linguistic analysis of therapeutic alliances is presented.

The corpus linguistics research methodology employed in this pilot study utilizes technology to precisely understand linguistics as they relate to the therapeutic alliance. Recent research has led to the creation of automated tools that can code and evaluate counseling sessions (Perez-Rosas et al., 2017). These inexpensive computer programs have the capacity to examine large numbers of transcription texts quickly and to complete data coding and summary tasks reliably. New computational devices continue to be developed to assist psychotherapists in behavioral coding tasks (Perez-Rosas et al., 2017). An important innovation of note has been in linguistics-based approaches, including the creation of the Language Inquiry and Word Count (LIWC; Pennebaker et al., 2015c) and Antconc (Anthony, 2017) software, which can automatically detect and code psychotherapist and client reflections within session transcripts. These technologies are based on analyzing gram patterns, which are similar patterns between psychotherapist and client speech and their contextual metafeatures. Metafeatures are made up of arbitrary structural features beyond words. Specifically, they are a set of less-sparse elements found by clustering feature instances from automatically annotated data. Metafeatures help linguistic researchers discover important structured patterns between words for a task (Chen et al., 2016)—in this case, a counseling session. Once these structured patterns have been identified and their underlying meanings interpreted, they can be used to examine the discourse of a counseling session and to assess the strength of the alliance between psychotherapist and client. Furthermore, gram patterns, which include related metafeatures, are helpful as they aim to represent the dialog sequence between the client and psychotherapist. LIWC and Antconc are

powerful linguistic tools that help researchers more finely assess gram patterns in speech and their underlying metafeatures.

These emerging linguistic technologies are improving the ability of supervisors to evaluate and provide efficient and timely feedback to trainees regarding their performance. Specifically, these tools can be employed to help evaluate the quality of alliance within psychotherapy sessions. One example is a software that employs an analytical method called linguistic collocation analysis or collocation measurement (Brezina, 2018). This analytical method can further help psychotherapy researchers understand alliance rupture markers and their meanings within transcribed session texts by exploring the relationship between meaning and word collocations (Brezina, 2018). Once these collocations, which represent underlying metafeatures, are identified through transcription analysis, supervisors can accurately point to withdrawal, confrontation, and mixed rupture maker features in counseling session discourse. With this information they can then make sure supervisees have recognized alliance ruptures, attended to them, and attempted to repair them. Armed with data from this linguistic technology, supervisors can enhance the supervisee's growth. As a newer methodology supported by a semirecently developed software platform, it is important to further explore the linguistics of the relationship between word collocations and their meaning.

The collocation of words is defined as the relationship between proximal words in a text. Collocations are further identified by their distance, frequency, and inclusivity to the surrounding text associated with a word of interest, referred to as the "node" (Brenzina et al., 2015). An example is a collocation analysis of the node word "cheese" to discover what words most commonly occur before or after the word "cheese" in the British National Corpus (BNC). Statistical analysis of the BNC found that the most commonly occurring words adjacent to

cheese in descending order are “bread,” “cream,” “and,” “grated,” “cottage,” “butter,” “milk,” “cheddar,” “parmesan,” and “wine” (McEnery & Hardie, 2011). As demonstrated, this innovative analysis can provide precise data on the relationships between words, giving investigators clues to the underlying psychological process behind words to potentially answer research questions.

#LancsBox (Brezina et al., 2021), a relatively new corpus analysis software program, possesses a graphical collocation instrument, Graphcoll, which creates and illustrates visual networks that demonstrate the strength of collocational relationships. These collocation relationships are measured by the distance between various words and the identified node word. This tool, which analyzes collocation networks, allows for corpora to be better understood by drawing out subtle meaning from text that may otherwise have been missed without the help of software.

Given the aforementioned, six research questions were developed to guide this methodological pilot study. These questions were:

RQ1: What is the use rate of linguistic processes that occur during a withdrawal rupture therapy segment?

RQ2: What is the use rate of linguistic processes that occur during a confrontation rupture therapy segment?

RQ3: What is the use rate of linguistic processes that occur during a mixed rupture therapy segment?

RQ4: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ1?

RQ5: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ2?

RQ6: In sessions with a rupture therapy segment, what are the collocates of the most used word identified in RQ3?

Method

Design

A synchronic corpus linguistic design was employed for this study (Weisser, 2017). The unit of analysis for all research questions was single words (Paquet, 2020). The corpus was created by transcribing mock counseling vignettes obtained from the “clinical tools” subheading on a publicly available website (<https://www.therapeutic-alliance.org/clinical-tools.html>) created by nationally recognized experts in alliance ruptures. The variables were: token (i.e., individual words), frequency (i.e., number of words), collocates (i.e., words that occur together), and type of rupture (e.g., confrontation, withdrawal, mixed). Token, frequency, and collocates were continuous, and type of rupture was nominal.

RQs 4-6 used a mutual information analysis, but this option is not provided by G*Power. As such, the point biserial correlation was used as a proxy. The effect size appropriate for a point biserial correlation is $|r|$ (Rosnow & Rosenthal, 2003). The average $|r|$ that was used for the effect size was obtained from a metaanalysis examining the relationship between rupture-repair episodes and treatment outcomes (Safran et al., 2011). The input parameters were: (a) test family = t tests, (b) statistical test = correlation: point biserial model, (c) type of power analysis = a priori: compute required sample size - given α , power, and effect size, (d) effect size $|r| = 0.24$, (e) power (1- β err probability) = 0.80, (f) $\alpha = .0001$, and (g) tails = 2. The G*Power 3.1 output included a sample size of 374 and an actual power of 0.80.

Corpus

Register, Scope, and Sources

Biber (2012) detailed the existence of four main registers in English: (a) conversation, (b) fiction, (c) news reportage, and (d) academic prose. The texts of the present study fall within the conversation register with the subregister being psychotherapy conversation. In building the corpus, researchers used transcriptions from mock counseling vignette videos that highlighted the three types of alliance ruptures (confrontation, withdrawal, and mixed) based on the constructs from Muran and Safran's (2016) seminal psychotherapy research. The nine mock videos contained seven White male counselors, two White female counselors, eight White female clients and one White male client. The videos were obtained from their website (<https://www.therapeutic-alliance.org/>) under the "clinical tools" tab (Muran et al., n.d.). Dr. Muran, who is a nationally renowned expert in ruptures, described the process of making the videos for the website:

For the videos on our website, we simply asked our students to bring and play difficult moments (some based on their readings, some based on their own clinical experience). We specifically invited withdrawal, confrontation and mixed rupture events and kept it to one take to promote authenticity and spontaneity: Only the initial rupture marker and case formulation were discussed in advance. The students were familiar with our definitions and principles. (C. J. Muran, personal communication, June 18, 2021)

These publicly available mock counseling sessions were transcribed in the creation of the corpus. This included the transcription of three counseling vignettes that highlighted confrontation ruptures, two vignettes that highlighted withdrawal ruptures, and four vignettes that highlighted mixed ruptures. The resultant confrontation rupture corpus contained three transcripts, 1,986 tokens, and 387 types; the resultant withdrawal rupture corpus contained two transcripts, 2,367 tokens, and 393 types; and the resultant mixed rupture corpus contained four transcripts, 3,136 tokens, and 513 types.

Preprocessing

Nine mock counseling vignette videos (three confrontation, two withdrawal, and four mixed) were disembedded from the therapeutic-alliance.org website (Muran et al., n.d.) using standard downloading protocol and were subsequently converted into MP4 files. The files were then uploaded to Transcribe.wreally.com and electronically transcribed. Transcripts were subsequently converted into Word documents after being manually checked for transcription accuracy. The electronic files were then converted into .txt files using AntFileConverter (Anthony, 2017), and three distinct corpuses were created by combining the respective .txt files of each rupture type vignette video (confrontation, withdrawal, or mixed). Spelling and word-related errors were identified and corrected with further cleaning for non-ASCII characters and diacritics taking place. Stop words were not removed from the three data sets because they were seen as potentially important to the analysis. After the three rupture type corpuses were preprocessed, they contained 1,995 (confrontation), 2,384 (withdrawal), and 3,148 (mixed) words, respectively.

Measures

Frequency

The frequency count is the most basic statistical measure within corpus linguistic methodology. It is a simple tallying of the number of instances of a specific type of word that occurs in a corpus (McEnery & Hardy, 2012).

Range Percent

Range percent is the percentage to which occurrences of a word appear in each of the individual corpuses being analyzed (Gries, 2019).

Type

Type is a particular or unique wordform (McEnery & Hardy, 2012).

Token

Tokens are single occurrences of a word form in a text (Brezina, 2018).

Mutual Information (MI)

Mutual information measures the construct of exclusivity of collocates, or the relationship between the number of times collocates are seen together as opposed to separately in a corpus (Gablasova et al., 2017).

Mutual Information Squared (MI³)

Mutual information squared is the cube of the MI (Gablasova et al., 2017).

Apparatus

This study used the latest version (6.0) of #LancsBox (Brezina et al., 2021) to analyze the corpus. #LancsBox 6.0 is a multi-platform tool for the analysis of language data. #LancsBox identifies collocations and key words. Additionally, the words tool within #LancsBox allows in-depth analysis of frequencies of types, lemmas, parts of speech (POS) tags, and POS categories, as well as comparison between corpora using the key word analysis. #LancsBox can also be used to visualize frequency and dispersion in corpora.

Data Analysis

In terms of RQs 1-3, raw count frequency and percentage of all words are reported for the top five words (i.e., top in terms of percentage of all words) for each of the three counseling alliance rupture types. The #Lancsbox settings for this descriptive analysis were: frequency- 01 frequency, dispersion: range percentage, type. Range percent measures the percentage of corpora in which a specific word occurs and can range from 0% to 100%. A range percent of

0% indicates that a word did not occur in any of the corpuses, and 100% indicates that a word occurred in all the corpuses (Brezina, 2018). Regarding RQs 4-6, the collocation parameters for this analysis can be found later in this paragraph. MI is an effect size measure that indicates the strength of attraction between words (Garner et al., 2018). However, MI results tend to inflate the importance of low-frequency words (Kyle et al., 2018). To correct for this problem, MI can be cubed to counterbalance this low-frequency bias (Garner et al., 2018). The larger the MI score, the more exclusively the two words are associated and the rarer their combination (Gablasova et al., 2017). The minimum MI³ for inclusion was: statistic cut off value: 9.0: and minimum collocation frequency: 3 (Brezina et al., 2015). Words with a Juilland's D of less than .50 were filtered out (Paquot, 2005). The parameters for L and R span (L5-R5), minimum collocate frequency, and minimum collocation frequency were drawn from Brezina (2018).

Results

For RQs 1-3, the frequencies for the top five words in each of the three rupture type corpuses can be found in Table 2.1. The range percent (measure of dispersion selected for this study) was 100% for each token (word), which shows that all of the top words were found among all three corpora. Regarding RQs 4-6, the collocations of the most frequent words in each of the three alliance rupture types were studied.

In terms of RQ4 (confrontation), the node word "just" offered three collocates of high frequency which included "I," "you," and "and" (see Figure 2.1). The majority of collocates of this node word had a left positioning. Conversely, "know," which had the same frequency as "full," "do," and "at" in the confrontation rupture type corpus, had the same number of collocations as the node word "just" in the withdrawal rupture type corpus.

Concerning RQ5 (withdrawal), rupture type node word “know” had four high intensity words, three that were shared with the confrontation type corpus (see Figure 2.2). This included “I,” “you,” “and,” and one unique high intensity word “don’t.” The withdrawal rupture type corpus also had the majority of collocates of the node word in the left positioning.

With respect to RQ6 (mixed), the node word was “like” and notably did not appear as a collocation in the confrontation or withdrawal rupture collocation analysis (see Figure 2.3). However, “like” had more high intensity words (six) including “I,” “just,” “I’m,” “it’s,” “you,” and “that.” It is also noteworthy that the mixed rupture type corpus had significantly more collocates (39) compared to the confrontation (14) and withdrawal (14) rupture type corpora. Furthermore, the mixed rupture type corpus did align with the confrontation and withdrawal rupture type corpora in that the majority of the collocates of the node word were left positioning.

Discussion

The aim of this pilot study was to demonstrate that this methodology could be used to explore the collocates of the most frequently used words in each of the three corpora (three alliance rupture types). The software #LancsBox 6.0 (Brezina et al., 2021) was utilized to analyze the data. RQs 1-3 identified the top five words in each alliance rupture category, while RQs 4-6 explored the collocates of the respective words using MI3 to measure the strength of attraction between words.

RQs 1-3 examined the top five words from each alliance rupture type (i.e., subcorpus). Regarding the three subcorpora, several interpretations explain the results gathered. The first group of findings are related to individual words. These results include the words “know,” “right,” and “way,” which were found in the top five words of the confrontation rupture corpus.

These tokens were found to reflect certainty by the counselor or client in the confrontation alliance rupture corpora. These tokens, which convey certainty, are important because the client may use very specific or intentional language when directly expressing anger or resentment towards the counselor or some portion of the counseling process (Safran & Muran, 2000).

The second finding is also related to individual words. In the withdrawal rupture corpus, “know,” “just,” “think,” “like,” and “mean,” the top five words found in the analysis, are commonly used in passive communication and specifically when the client speaks with the counselor. Examples include “I don’t know,” “I just don’t know,” “it feels like maybe,” and “I guess...I mean.” This passive language may be the client’s way of expressing their concerns in an indirect or qualified way, to move away from the counselor, their own emotions, or some aspect of the counseling process in a subtle fashion (Safran & Moran, 2000).

A third result that stands out after a review of Table 2.1 is preposition use within the top five words of each alliance rupture corpora. The word “like” was uncovered in the analysis of the top five words in each alliance rupture category. This included “like” being the fourth most frequent word in the confrontation and withdrawal corpora and the most frequent word in the mixed rupture corpora. The frequent use of “like” is of note because a recent study that sought to understand empathic behavior in counseling sessions found that during low empathy encounters (between counselors and clients), clients communicate more using prepositions, as well as adverbs, auxiliary verbs, personal pronouns, and interpersonal pronouns (Perez-Rosas et al., 2017). This nascent finding may suggest there is a connection between alliance ruptures in the counseling session and lower-level empathic discourse from the client to the counselor. This correlation may further support the findings of alliance rupture researchers such as Eubanks et al. (2015), whose study has identified and classified alliance rupture subtypes. This possible

association between ruptures and lower empathic communication is logical, as a rupture event (confrontation, withdrawal, or mixed) occurs when clients withdraw from their counselor/counseling or move against the counselor/counseling and would be less empathic (as revealed through linguistic analysis,) in their discourse with their counselor.

A final result that stood out was the frequent use of the cognitive processing words “know” and “think” (Pennebaker et al., 2015b). The token “know” appears as the second most frequent word in the confrontation rupture corpus and the second most frequent word in the mixed rupture corpus. The word “think” was also found to be the third most frequent word in the withdrawal rupture corpus. This finding may suggest that the therapeutic alliance rupture phenomena are a cognitive process or at least requires the use of cognitive oriented words.

Regarding RQ2, there were several collocations found across the respective alliance rupture corpus types that stood out. The first observation of note was for the node word “just,” which is collocated most frequently with the first-person pronoun “I” and most strongly with the conjunction “and” in the confrontation corpus. Two primary explanations exist for this finding. First, the word sequences “I just” and “and just” are common in verbal discourse and often exist as filler expressions. This may indicate that the counselor or client is taking time to carefully consider their responses regarding a particularly challenging verbal exchange. Second, the use of personal pronouns, in this case “I,” has been shown to reflect the speaker’s focus of attention (Kacewicz et al., 2014). This may reveal that either the counselor or client is more closely paying attention to their own thoughts, feelings, and behaviors because of feeling more insecure or self-aware (Kacewicz et al., 2014). Self-referential language commonly occurs during a difficult verbal discourse, such as a confrontation rupture, where there is a direct attack by the client in the direction of the counselor.

A second finding is related to the node word “know,” which is collocated most frequently with the word “I” and most strongly associated with the word “you” within the withdrawal rupture corpus. This finding is of note because the expressions “I know” and “you know” are commonly used to communicate understanding, agreement, or common knowledge of an idea in verbal discourse (Holmes, 1986). This result aligns with the idea of appeasing, which is a withdrawal marker where the client withdraws from the counselor or some aspect of counseling by being overtly compliant or submitting to the counselor (Eubanks et al., 2015). This compliant discourse could also be a part of a content/affect split, where the client is submitting to the counselor in a deferential manner within a discourse where agreement or common understanding occur, but the client’s tone, voice inflection, or body language may be communicating disagreement or ambivalence (Eubanks et al., 2015)

A final result relates to the node word “like,” which was most frequently associated with the word “I” in the mixed rupture corpus. Furthermore, within the mixed rupture corpus, “I” is to the right of the node word “like,” where in the confrontation and withdrawal rupture type corpuses it was to the left of the node word “just.” This makes sense, as “I just,” “I know,” and “like I” are common sequences in general verbal discourse. Again, as previously mentioned, frequent use of personal pronouns may indicate increased self-focus or self-referential awareness. Additionally, the word “like” was collocated most strongly with the word “just,” which is the node word for the confrontation rupture corpus. The phrase “just like” represents a simile, which is a part of speech that has the goal of comparing similarities, provoking thought, clarifying, creating humor, and deemphasizing (Roberts & Krenz, 1994).

There are seven limitations to this study that should be considered when interpreting the findings. First, the corpus size is a limitation. A larger corpus (with a larger sample size) could

create the conditions necessary for greater word frequency and a larger potential for more detailed collocation graphs. A second limitation is that while these collocations offer robust results, these transcripts were taken from mock counseling sessions and do not fully reflect the natural discourse that occurs in an actual counseling session. Third, because the pilot study examined words, it did not account for such things as voice tone, facial expression, and prosody. These nonverbal aspects of communication may play a large role in rupture events. A fourth limitation is that the unit of analysis (i.e., rupture event) was nested within a larger unit (i.e., the counseling session). Because the study analyzed the entire counseling session there may have been times when the counselor and client were in sync, and that could impact the accuracy of the findings. Fifth, there may be vocabulary differences based on region (most videos were filmed on the East Coast) that could limit the generalizability of the results. A sixth limitation is the race, age, gender, and social position of the mock video participants. The counselors consisted of six older White males and two adult White females. The clients were eight adult White females and one adult White male. The limited range of demographics of counselors and clients in regard to age, gender, race, age, and social class could be a significant limitation regarding the findings of this study. Gender, race, age, and social class may have had significant conscious or unconscious impact on the discourse of the counseling session because of the impact of underlying power dynamics related to privileged aspects of identity. A final limitation to the pilot study is related to construct validity. It is difficult to determine whether this research assessed rupture events precisely or whether another related construct was being measured (e.g., fight, flight, or freeze response). Despite these limitations, the pilot study demonstrated the utility of this methodology for both research and practice as they relate to alliance ruptures in the context of counseling.

The following clinical and research implications should be considered in light of the fact that this study was a methodological pilot with data related limitations. Regarding the clinical and research implications emerging from the obtained results, 10 should be considered. A summary of these 10 appears in Table 2.2. First, because words related to certainty were found within the top five most common words in the confrontation rupture corpus, it could be beneficial for counselors to listen for certainty language within their work to identify a possible rupture event. Salient examples of certainty language include the words “know,” “right,” and “way.” Being aware of certainty words could be especially helpful when the counselor feels as if they or some aspects of their counseling work (Safran & Muran, 2000) are being confronted by the client. This awareness will help the counselor more quickly metacommunicate about a potential confrontation rupture and work to renegotiate the therapeutic relationship.

Second, counselors should be aware of passive communication and especially when they notice the client is repeatedly relying on this communication style to move away from them as the counselor or some aspect of the counseling process (Safran & Muran, 2000). Examples of passive language, which was found in the top five most common words in the withdrawal rupture corpus, include “I don’t know,” “I just don’t know,” “it feels like maybe,” and “I guess... I mean.” In identifying passive communication, counselors can skillfully identify a subtle withdrawal rupture event, target the occurrence in session, and work to repair the alliance by disembedding from this counselor/client enactment.

Third, supervisors and counselors need to be aware of preposition use within the counseling sessions. This is because research has found that preposition use in counseling discourse (by the client) may indicate a low empathy encounter (Perez-Rosas et al., 2017), which could hint at a series of rupture events that has weakened the therapeutic alliance. A salient

example is the word “like,” which was found in the top five words in each of the respective alliance rupture corpuses and was commonly used as a preposition. Additional research is needed to determine the relationship between low empathy encounters, the counseling alliance, and rupture events, as recognizing these parts of speech could be a powerful tool for supervisors and counselors in recognizing and repairing misalignments in the counseling relationship.

A fourth implication of the findings of RQ1 is that further study is needed on understanding the role of cognitive processing words in rupture events that take place during a counseling session. This research is needed to develop a more comprehensive understanding of which words most reliably reflect cognitive processing—the quantity or threshold of cognitive words that correlates to a rupture event. Future research could also clarify whether it is important to measure cognitive processing words in the client, the counselor, or the totality of the discourse.

Fifth, the results revealed that the use of filler expressions such as “I just” and “we just” were used to create a pause or space in a conversation (Kharismawan, 2017). These expressions were found in each of the three alliance rupture type corpora. Based on this result, supervisors and counselors can be aware of these word combinations, have an understanding that they may represent a rupture, and communicate in the here-and-now about a perceived misalignment between the counselor and client. Additionally, “I” was found to be collocated with all three of the top five words found in the respective alliance rupture corpuses. This has clinical significance because the first-person singular pronoun “I” has been shown to reflect the focus of the speaker’s attention (Kacewicz et al., 2014). Specifically, the use of “I” in discourse may demonstrate that the speaker is paying more attention to their own thoughts, feelings, and behaviors or may be feeling more self-aware or insecure (Kacewicz et al., 2014). This first-

personal singular pronoun use may be an indicator that a rupture event has occurred and create an opportunity for the counselor to further inquire about the quality of the interaction taking place in that moment.

Sixth, it could be useful for supervisors and counselors to be aware of the collocates of the node word “know” within the withdrawal rupture corpus. The node word “know” was used most frequently with “I” (e.g., “I know”) and most strongly with “you” (e.g., “you know”). Because these two expressions are often used to communicate common understanding and agreement between individuals (Holmes, 1986). Because these expressions can also be utilized in a conscious or unconscious manner to appease or to be compliant to a counselor, it is important for counselors to recognize when these easily recognizable parts of speech occur more frequently and check in with the client. In identifying these types of expressions, supervisors and counselors can further understand whether a subtle withdrawal rupture has taken place and subsequently tend to and repair the misattunement.

Seventh, it may be useful for supervisors and counselors to identify words that collocate with the node word “like,” and specifically the phrase “just like,” which reflects the strongest collocation relationship between the node word “like” and another word within the mixed rupture corpora. This finding is important for counselors and supervisors as “just like” was most often used as a simile, and its recognition could give clinicians a clue that a mixed rupture event was occurring. This is because similes could be used by the client or counselor in a confrontation rupture to create clarification in a defensive manner and within a withdrawal rupture to deemphasize some aspect of the discourse to subtly move away from the counselor. Additionally, similes were used by clients or counselors within a mixed rupture to compare similarities, provoke thought, and create humor (Roberts & Krenz, 1994).

Eighth, further research is needed regarding words that reflect certainty in confrontation-rupture marker events. This inquiry is needed to develop a more comprehensive understanding of which words most reliably reflect certainty. This includes determining the quantity of words or threshold of words that correlate to a confrontation rupture event and whether certainty-related tokens occur in the language of the client, counselor, or both.

Ninth, exploration to determine which words reflect passive communication within a withdrawal rupture marker event would be useful. This research would create a more comprehensive understanding regarding the most used tokens in passive communication, the quantity of words that correlate to a withdrawal rupture event, and whether passive language is present in the discourse of the client, the counselor, or mutually within a counseling session.

Tenth, examining filler statements such as “I just” could illuminate important client alliance maneuvers. This is important because these filler expressions, which commonly include personal pronouns, may indicate a withdrawal rupture marker. This phenomenon is potentially caused by clients being more self-conscious or self-referential (paying attention to their thoughts, feelings, and emotions) because of confronting a challenging topic or a difficult verbal exchange in which they do not want to engage. Understanding the role of filler words and common pronouns that collocate with them could help supervisors and counselors better recognize potential damaging, yet subtle rupture events and attempt to repair them.

References

- Anthony, L. (2017). AntFileConverter (Version 1.2. 1) [software].
<https://www.laurenceanthony.net/software/antfileconverter/>
- Biber, D. E. (2012). Corpus-based and corpus-driven analyses of language variation and use. In B. Heine & H. Narrog (Eds.), *The Oxford handbook of linguistic analysis* (pp. 193-224). Oxford University Press.
- Bird, S., Klein, E., & Loper, E. (2009). *Natural language processing with Python: Analyzing text with the natural language toolkit*. O'Reilly Media.
- Bjekić, J., Lazarević, L. B., Živanović, M., & Knežević, G. (2014). Psychometric evaluation of the Serbian dictionary for automatic text analysis-LIWCser. *Psihologija*, 47(1), 5-32.
<https://doi.org/10.2298/PSI1401005B>
- Brezina, V. (2018). *Statistics in corpus linguistics: A practical guide*. Cambridge University Press. <https://doi.org/10.1080/0726860022000013166>
- Brezina, V., Weill-Tessier, P., & McEnery, A. (2021). #LancsBox v. 6.x. [software].
<http://corpora.lancs.ac.uk/lancsbox/>
- Burridge, K., & Florey, M. (2002). 'Yeah-no he's a good kid': A discourse analysis of yeah-no in Australian English. *Australian Journal of Linguistics*, 22(2), 149-171.
<https://doi.org/10.1080/0726860022000013166>
- Chen, W., Zhang, M., Zhang, Y., & Duan, X. (2016). Exploiting meta features for dependency parsing and part-of-speech tagging. *Artificial Intelligence*, 230(C), 173-191.
<https://doi.org/10.1016/j.artint.2015.09.002>
- Chow, D. L., Miller, S. D., Seidel, J. A., Kane, R. T., Thornton, J. A., & Andrews, W. P. (2015). The role of deliberate practice in the development of highly effective psychotherapists. *Psychotherapy*, 52(3), 337-345. <https://doi.org/10.1037/pst0000015>
- Eubanks, C. F., Muran, J. C., & Safran, J. D. (2015). *Rupture resolution rating system (3RS): Manual* [Unpublished manuscript]. Mount Sinai-Beth Israel Medical Center.
- Eubanks, C. F., Muran, J. C., & Safran, J. D. (2018). Alliance rupture repair: A meta-analysis. *Psychotherapy*, 55(4), 508-519. <https://doi.org/10.1037/pst0000185>
- Farooq, R. (2017). A framework for identifying research gap in social sciences: Evidence from the past. *IUP Journal of Management Research*, 16(4), 66-75.
<https://www.iupindia.in/705/ijmr.asp>
- Fiedler, K. (Ed.). (2007). *Social communication*. Psychology Press.
<https://doi.org/10.4324/9780203837702>

- Gablasova, D., Brezina, V., & McEnery, T. (2017). Collocations in corpus-based language learning research: Identifying, comparing, and interpreting the evidence. *Language Learning*, 67(S1), 155-179. <https://doi.org/10.1111/lang.12225>
- Garner, J., Crossley, S., & Kyle, K. (2020). Beginning and intermediate L2 writer's use of N-grams: an association measures study. *International Review of Applied Linguistics in Language Teaching*, 58(1), 51-74. <https://doi.org/10.1515/iral-2017-0089>
- Gries, S. T. (2020). On classification trees and random forests in corpus linguistics: Some words of caution and suggestions for improvement. *Corpus Linguistics and Linguistic Theory*, 16(3), 617-647. <https://doi.org/10.1515/cllt-2018-0078>
- Halfon, S., Fişek, G., & Çavdar, A. (2017). An empirical study of verb use as indicator of emotional access in therapeutic discourse. *Psychoanalytic Psychology*, 34(1), 35-39. <https://doi.org/10.1037/pap0000081>
- Holmes, J. (1986). Functions of you know in women's and men's speech. *Language in Society*, 15(1), 1-21. <https://doi.org/10.1017/S0047404500011623>
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun use reflects standings in social hierarchies. *Journal of Language and Social Psychology*, 33(2), 125-143. <https://doi.org/10.1177%2F0261927X13502654>
- Kharismawan, P. Y. (2017). The types and the functions of the fillers used in Barack Obama's speeches. *International Journal of Humanity Studies*, 1(1), 111-119. <https://e-journal.usd.ac.id/index.php/IJHS/article/view/680/539>
- Kyle, K., Crossley, S., & Berger, C. (2018). The tool for the automatic analysis of lexical sophistication (TAALES): version 2.0. *Behavior Research Methods*, 50(3), 1030-1046. <https://doi.org/10.3758/s13428-017-0924-4>
- McEnery, T., & Hardie, A. (2011). *Corpus linguistics: Method, theory and practice*. Cambridge University Press.
- Muran, J. C., Eubanks, C. F., & Samstag L.W. (n.d.). *Clinical tools*. <https://www.therapeutic-alliance.org/clinical-tools.html>
- Muran, J. C., & Safran, J. D. (2016). Therapeutic alliance ruptures. In A. Wenzel (Ed.), *Sage encyclopedia of abnormal & clinical psychology* (pp. 3512-3514). Sage Publications.
- Newhill, C. E., Safran, J. D., & Muran, J. C. (2003). *Negotiating the therapeutic alliance: A relational treatment guide*. Guilford Press. <https://doi.org/10.1002/pits.22019>
- Newman, D. S., Guiney, M. C., & Barrett, C. A. (2017). Language in consultation: The effect of affect and verb tense. *Psychology in the Schools*, 54(6), 624-639. <https://doi.org/10.1002/pits.22019>

- Paquot, M. (2005). *EAP vocabulary in learner corpora: A cross-linguistic perspective* [Paper presentation]. *Phraseology 2005: The Many Faces of Phraseology*, Louvain-la-Neuve, Belgium.
- Pennebaker, J.W., Boyd, R.L., Jordan, K., & Blackburn, K. (2015b). *The development and psychometric properties of LIWC2015*. University of Texas at Austin. <https://doi.org/10.15781/T29G6Z>
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2015c). *Linguistic Inquiry and Word Count: LIWC2015*. (Version 1.6) [Computer Software]. Pennebaker Conglomerates. <https://liwc.wpengine.com>
- Pennebaker, J. W., Rim, B., & Paez, D. (Eds.). (2013). *Collective memory of political events: Social psychological perspectives*. Psychology Press.
- Pérez-Rosas, V., Mihalcea, R., Resnicow, K., Singh, S., An, L., Goggin, K. J., & Catley, D. (2017, April). Predicting counselor behaviors in motivational interviewing encounters. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers* (pp. 1,128-1,137). Association for Computational Linguistics. <https://www.aclweb.org/anthology/E17-1106.pdf>
- Roberts, R. M., & Kreuz, R. J. (1994). Why do people use figurative language? *Psychological Science*, 5(3), 159-163. <https://doi.org/10.1111%2Fj.1467-9280.1994.tb00653.x>
- Rosnow, R. L., & Rosenthal, R. (2003). Effect sizes for experimenting psychologists. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 57(3), 221-237. <https://doi.org/10.1037/h0087427>
- Safran, J. D., & Muran, J. C. (2000). Resolving therapeutic alliance ruptures: Diversity and integration. *Journal of Clinical Psychology*, 56(2), 233-243. [https://doi.org/10.1002/\(SICI\)1097-4679\(200002\)56:2%3C233::AID-JCLP9%3E3.0.CO;2-3](https://doi.org/10.1002/(SICI)1097-4679(200002)56:2%3C233::AID-JCLP9%3E3.0.CO;2-3)
- Safran, J. D., Muran, J. C., & Eubanks-Carter, C. (2011). Repairing alliance ruptures. *Psychotherapy*, 48(1), 80-87. <https://doi.org/10.1037/a0022140>
- Staples, S., Egbert, J., Biber, D., & Conrad, S. (2015). Register variation a corpus approach. In D. Tannen, H. E. Hamilton, & D. Schiffrin. (Eds.), *The Handbook of Discourse Analysis*, (2nd ed., pp. 505-525.). Wiley. <https://doi.org/10.1002/9781118584194.ch24>
- Tadajewski, M., & Hower, P. (2011). Intellectual contributions and gap-spotting. *Journal of Marketing Management*, 27(5-6), 449-457. <https://doi.org/10.1080/0267257X.2011.562364>
- Weisser, M. (2017). Corpora. In A. Barron, Y. Gu, & G. Steen (Eds.), *The Routledge handbook of pragmatics* (pp. 41-52). Routledge.

Table 2.1*Usage Rate Results (RQs 1-3)*

Rupture Type	Rank	Word	Raw Freq	Normal Freq
Confrontation				
	1	just	31	.016
	2	know	29	.015
	3	way	22	.011
	4	like	21	.011
	5	right	19	.010
Withdrawal				
	1	know	53	.022
	2	just	40	.017
	3	think	37	.016
	4	like	36	.015
	5	mean	35	.015
Mixed				
	1	like	114	.036
	2	know	52	.017
	3	just	45	.014
	4	yeah	39	.012
	5	really	36	.011

Note. Normalized frequency was the percentage of all words.

Table 2.2*Summary of Clinical and Research Implications*

#	Type	RQ	Summary
1	Clinical	1	Certainty word (e.g., know) signal confrontation rupture.
2	Clinical	2	Passive word (e.g., I don't know) signals withdrawal rupture.
3	Clinical	1,2,3	Preposition (e.g., like) signal all three rupture types.
4	Clinical	1,2,3	Filler expression (e.g., I just) signals all three rupture types.
5	Clinical	2,3	Cognitive word (e.g., think) signals withdrawal and mixed rupture.
6	Clinical	5	Collocate node word know (e.g., I know) signal withdrawal rupture.
7	Clinical	6	Collocate node work like (e.g., just like) signal mixed rupture
8	Research	1,4	Certainty words (e.g., right) and role in confrontation ruptures.
9	Research	2,5	Passive communication (e.g., I guess) and role in withdrawal ruptures.
10	Research	2,5	Filler expressions (e.g., we just) and role in withdrawal ruptures.

Figure 2.1

Collocations of a Confrontation Rupture Type Corpus (RQ4)

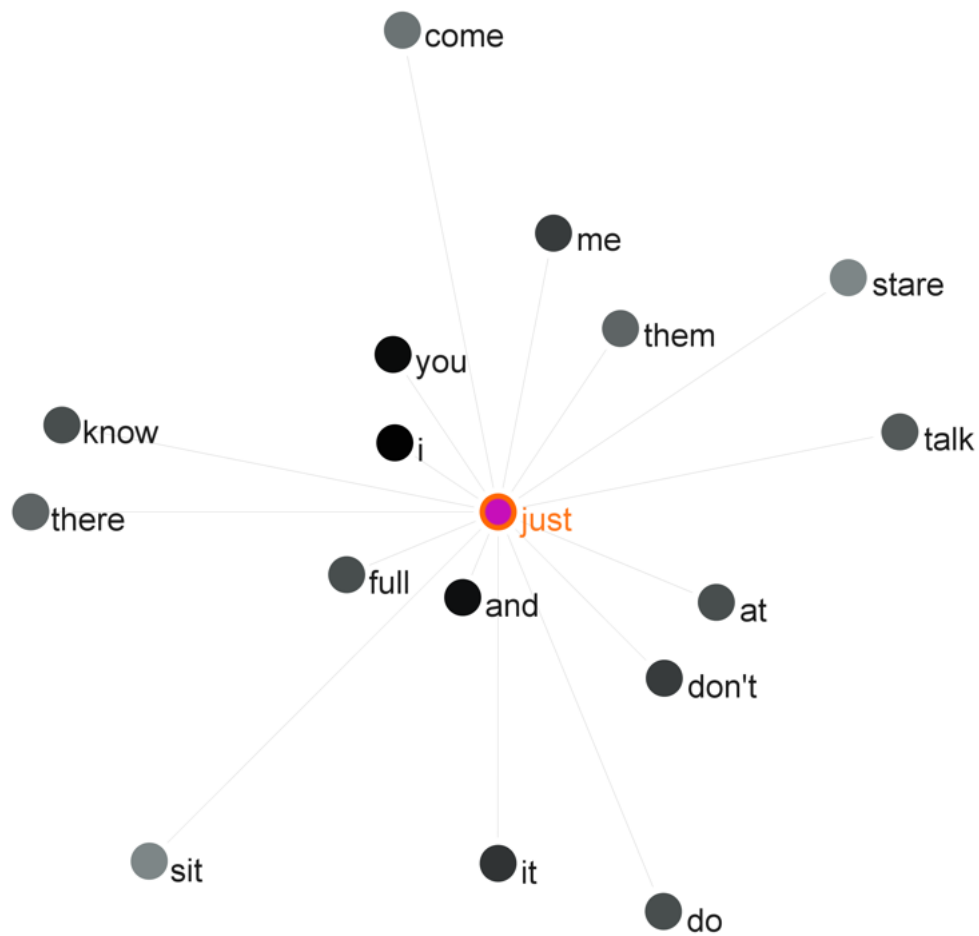


Figure 2.2

Collocations of a Withdrawal Type Corpus (RQ5)

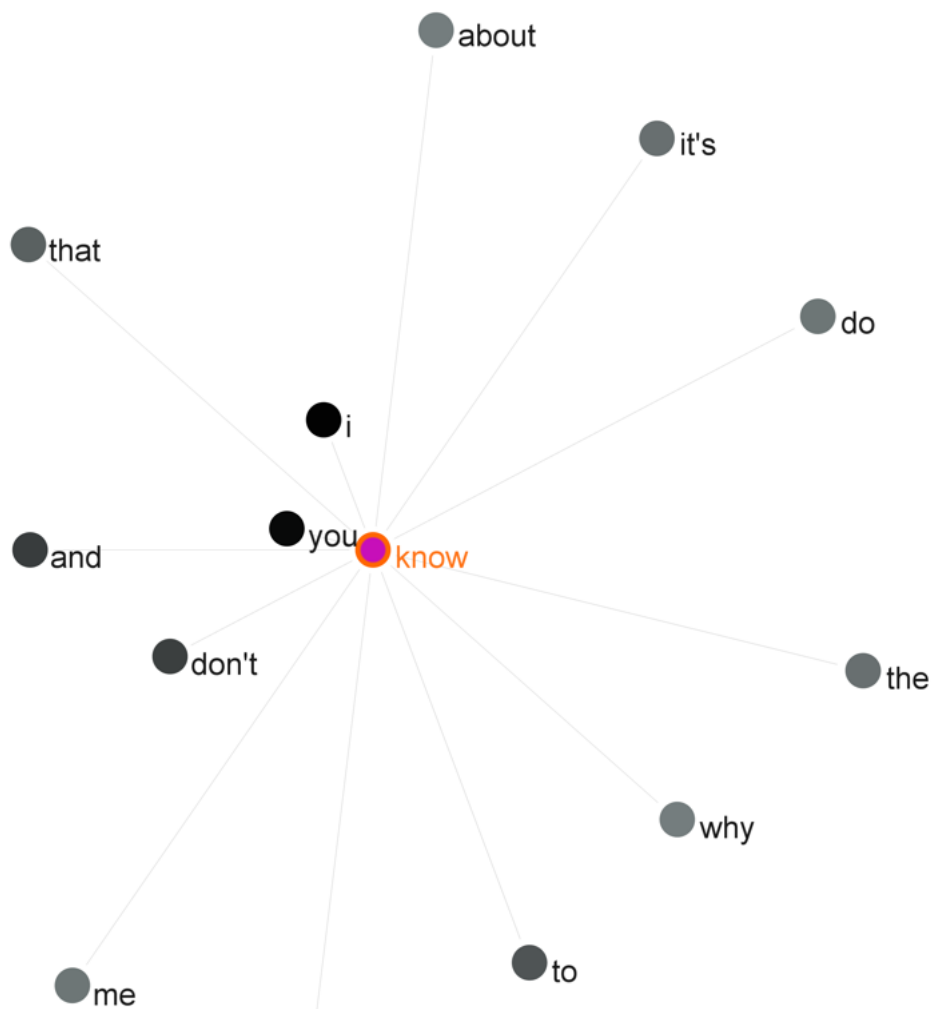
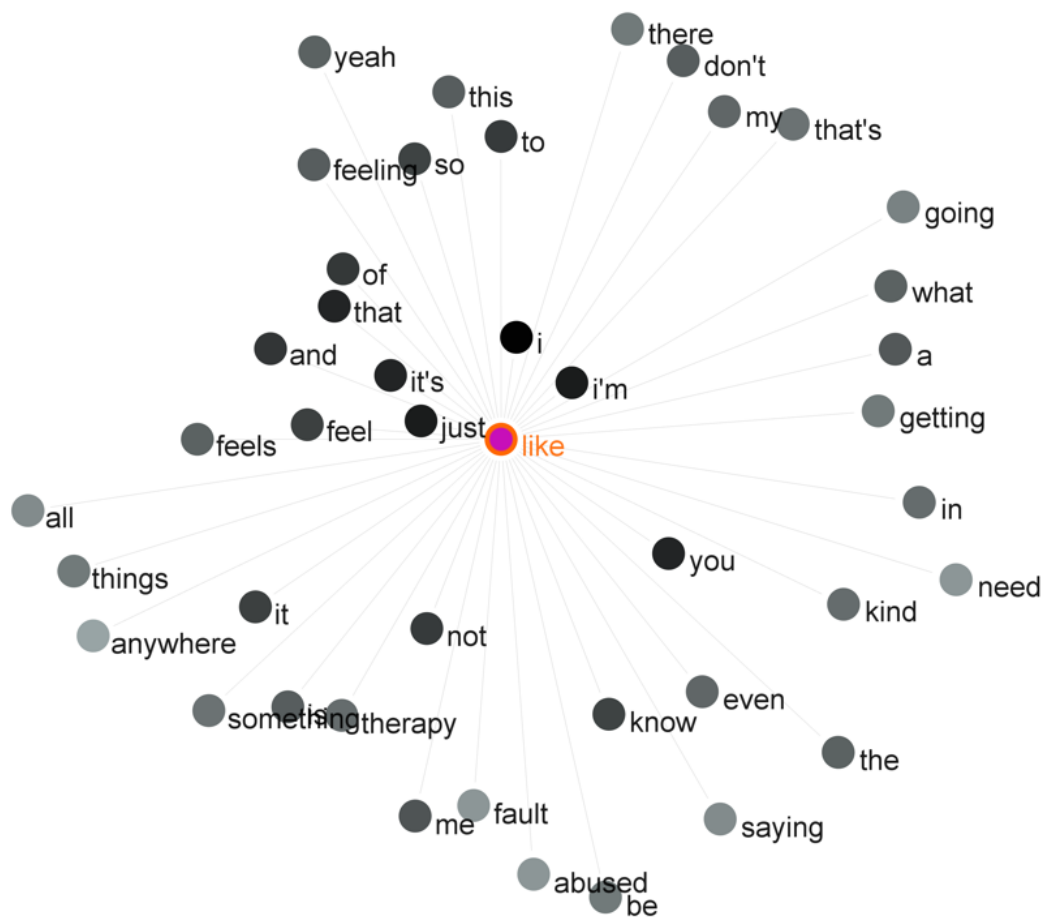


Figure 2.3

Collocations of a Mixed Rupture Corpus (RQ6)



Chapter 3: A Research Manuscript

Psycholinguistic Markers of Therapeutic Rupture Types: A Pilot Study

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Abstract

This pilot study was designed to examine a methodology that could further the understanding of rupture events that counselors encounter during a counseling session that ultimately impact the quality of the therapeutic alliance. We employed a cross-sectional analysis of a linguistic corpus created from mock counseling transcripts embedded in a website administered by a peer-reviewed expert in the psychology field and three video recorded sessions of Carl Rodgers, Fritz Pearls, and Albert Ellis. The content of the corpuses was analyzed using Linguistic Inquiry and Word Count software. The results showed a significant difference between she/he words (third-person singular pronouns) and certainty words when comparing withdrawal and mixed rupture corpuses with a confrontation rupture corpus. In addition, we found a significant difference between positive emotion words and discrepancy words when comparing a rupture-infused psychotherapy corpus to a general psychotherapy corpus. Several implications for counseling and research are provided in response to these findings.

Keywords: corpus linguistics, therapeutic alliance, alliance rupture, rupture event, LIWC

Psycholinguistic Markers of Therapeutic Rupture Types: A Pilot Study

When an individual has a significant injury or is diagnosed with a serious disease, they search for a qualified healthcare professional to ensure they get the best treatment. However, in the field of counseling, there are few ways to identify a competent counselor. If counselors could easily determine who was a proficient counselor, the way educators train counselors would significantly change, and counseling outcomes would improve. New software provides a way through the veil of words that compose a counseling session transcript to catch a glimpse at quality. With the aid of computer programs, researchers may be able to assess the competence of a counselor by examining the linguistic and psychological processes underlying their conversations with clients. Furthermore, this methodology may allow researchers to identify top counselors. This includes clinicians who could detect the most important components of effective counseling—namely, ruptures in the therapeutic alliance. The present study explored the therapeutic alliance ruptures by examining the linguistic and psychological features of the three rupture marker types: confrontation, withdrawal, and mixed.

There were two primary goals for the present study. First, we attempted to identify a gap in the methodological literature that could be used to assess alliance ruptures that occur in counseling sessions by helping the reader understand an area of ambiguity (understanding how to identify the linguistic and underlying psychological processes of rupture types) and investigating additional research questions (Farooq, 2017). Corpus linguistics research can examine a variety of topics using an assortment of corpora. These examinations have included everything from profanity use as a marker of distinction to understanding when second language learners implement the nuances of social dimensions in speaking tasks (Gablasova et al., 2017; McEnery, 2004). Concerning counseling research, few studies have appeared using the corpora linguistic

methodology to analyze any aspect of therapeutic alliance. Second, this study contributes to the counseling profession's methodological knowledge base by disrupting current research practice (Tadajewski & Hewer, 2011). Research has also found that counselors do not improve their effectiveness through practical cumulative experience over their career (Chow et al., 2015) or understand why specific counselors can create and sustain a stronger therapeutic alliance than can their colleagues. The findings of this methodological pilot study could enable counselors and counselor educators to gain a research tool to gain insight into this key practice dynamic and develop strategies to improve their therapeutic bond and efficacy (Newhill et al., 2000). In sum, the present pilot study may provide counselors with additional methodological instrument to gain insight into the subtle nuances of the three rupture marker types (withdrawal, confrontation, and mixed) to assist the repair of therapeutic alliance ruptures.

In the review of the literature on therapeutic alliance ruptures, eight themes emerged: (a) definition of alliance ruptures, (b) features of withdrawal rupture type, (c) features of confrontation type, (d) features of mixed rupture type, (e) research on the linguistics of alliance, (f) linguistic processes and alliance ruptures, (g) psychological processes and alliance ruptures, and (h) broad psycholinguistic processes and alliance ruptures. After these eight themes are reviewed, the research questions that guided this are stated.

The existing literature provides a range of definitions of a therapeutic alliance rupture varying in terms of severity continuum, frequency, and type. The more severe ruptures on the continuum consist of impasses, empathic failures, dysfluencies, disturbances, disruptions, deteriorations, vicious circles or cycles, and breakdowns (Muran & Safran, 2016). Subtle ruptures include weakenings, miscoordinations, strains, misattunements, misalliances, breaches, and enactments. In terms of frequency, a counselor may experience a single rupture, a few

ruptures, or numerous ruptures within a counseling session, as therapeutic alliance ruptures vary in their presentation. In addition to severity and frequency, alliance ruptures can be classified by rupture type.

Researchers have divided therapeutic alliance ruptures into three subtypes or marker types: withdrawal, confrontation, and mixed rupture markers (Muran & Safran, 2016). Research has divided therapeutic alliance ruptures into three subtypes or marker types: withdrawal, confrontation, and mixed rupture markers (Safran & Muran, 2016). Construct validity of this tripartite model of ruptures has been supported by two articles—Safran and Muran (2006, 2019), which clearly outline the definitions of the therapeutic alliance rupture types and posit limitations to these proposed constructs. Concerning this model, Safran et al. (2011) meta-analysis gave evidence that identifying and repairing ruptures were positively related to a beneficial therapeutic outcome. Given a review of the research supporting the construct validity of this tripartite, an examination of each part is warranted.

Withdrawal rupture markers consist of behaviors that indicate a disconnection in the counseling relationship, evidence of the client moving away from the counselor, and a subtle alliance rupture event (Muran & Safran, 2016). The client most commonly communicates their disconnect from the counselor by displaying behaviors that represent disengagement from either the counselor, some aspect of counseling, or an affective state. Salient examples include abstract talk, storytelling, minimal responses, topic shifts, and silences. Additionally, withdrawal ruptures create distance by moving the client away from the counselor and toward independence (Muran & Safran, 2016). Examples include overt denial or a client's words not matching their affect. Furthermore, withdrawal ruptures are subtle and consist of difficult-to-identify words and behaviors. Taking a self-critical stance in a counseling session or appeasing a counselor are

examples. In general, withdrawal rupture markers are difficult to detect because the client's covert language and behavior represent a disconnection and distancing process.

In direct contrast to withdrawal ruptures are confrontation ruptures. Confrontation rupture markers are detectable breaks in the counseling relationship between the counselor and client and occur in an antagonistic manner. The primary characteristic of a confrontation rupture marker is the explicit communication of frustration or discontentment by the client to the counselor. In addition, these rupture types consist of movements against the counselor with an antagonistic posture and a bid for relational control. Confrontation ruptures may also include coercions such as being excessively friendly or even seductive (Eubanks et al., 2018). Salient examples include concerns or conflicts about: (a) the course of counseling, (b) the procedure of counseling, (c) the limits of counseling, (d) the activities of counseling, (e) a counselor in session activities, and (f) the counselor (Eubanks et al., 2015). Because of their direct nature, confrontation rupture markers are easier to identify and are more obvious to the counselor, but they still signify an injury to the counseling relationship.

A final rupture marker type, called a mixed rupture, is a combination of the confrontation and withdrawal rupture marker types. Mixed ruptures are composed of elements from both withdrawal and confrontation rupture markers. Within a mixed rupture, the client moves away and against the counselor concurrently, or in a sequence of verbal interactions. An example is when a client overtly disagrees with their counselor about an interpretation they have made, which represents a confrontation, but then immediately retracts their claim to reduce tension, in an act of withdrawal. This example highlights that clients often exhibit a combination of confrontation and withdrawal markers at times when they are upset about some aspect of counseling but at the same time want to avoid conflict with their counselor (Eubanks et al.,

2015). Mixed rupture markers have the most complex presentation of the three rupture types and may be the most difficult to identify. Hence, it may be beneficial to utilize instruments that can assist counselors in identifying the various rupture marker types effectively and efficiently.

A common way to identify the various rupture markers is through the analysis of counseling session transcriptions. Recently, linguistic researchers have utilized software programs to code and subsequently evaluate counseling sessions (Perez-Rosas et al., 2017). These automated programs can reliably and efficiently code and summarize large amounts of transcription-based data in a matter of minutes. These tools assist linguists in their research endeavors and counselors in their session transcription coding tasks (Perez-Rosas et al., 2017). Two noteworthy software programs that can perform counseling session transcription analysis are Language Inquiry and Word Count (LIWC; Pennebaker et al., 2015c) and Antconc (Anthony, 2017). These software platforms can uncover and code underlying counseling and client linguistic processes through the analysis of gram patterns, which are parallel linguistic patterns between counselors' and clients' speech, as well as context-dependent metafeatures. Metafeatures are random framework-like elements that exist behind language. They are a collection of more common aspects of language that are identified by grouping trait occurrences from automatically annotated transcription data. Metafeatures may enable researchers to uncover significant relationships amongst words within a set of interactions (Chen et al., 2016) in this instance, a counseling session. As metafeatures are discovered and their covert significances understood, they can be employed to analyze counseling session conversations and subsequently assess the strength of the alliance between the counselor and client. Additionally, associated metafeatures could help researchers identify dialog cycles between client and counselor. Linguistic-oriented computer programs such as LIWC and Antconc are linguistic devices that

can help social scientists more precisely evaluate gram patterns and their hidden metafeatures, which are numerous in the semantic dialogues that make up the therapeutic alliance.

There exist several linguistic variables that may presage alliance rupture. A salient example of a linguistic variable that can be measured is pronoun use. Simmons et al. (2005) found that when couples were asked to rate their marriages for an interviewer, the more they used “we,” the better their marriage. Additionally, research has shown that using the pronoun “you” in conversation predicts lower relationship quality (Tausczik & Pennebaker, 2010). Other studies have found that second-person pronoun use (e.g., you, your) was negatively related to the quality of a relationship (Simmons et al., 2008). Because therapeutic alliance is analogous to a marriage or a close relationship, assessing pronoun use could indicate the quality of the alliance and help target alliance ruptures. Emotional language use is another linguistic variable helpful in identifying alliance ruptures. In written discourse, negative emotion words (e.g., hurt, ugly, nasty) are used in writing about negative events (Kahn et al., 2007). Analyzing negative emotion words in verbal discourse may signal negative events and reveal ruptures in the therapeutic alliance, specifically when the counselor and client are talking about their counseling relationship.

An additional linguistic variable that can help identify a therapeutic rupture is word count. Word count analysis can illuminate who is controlling the conversation and how engaged the parties are in the discourse (Tausczik & Pennebaker, 2010). In a study of social hierarchy, Sexton and Helmreich (2000) found that individuals of high status tend to speak more frequently and openly and make more statements that involve others. Conversely, low-status speakers have the propensity to use language that is more self-focused and cautious. In the therapeutic relationship, where status tends to be more equal and the client typically speaks more often than

the counselor, identifying unequal status and power dynamics through discourse analysis could help identify alliance rupture. Word count is also helpful in assessing level of engagement (Tausczik & Pennebaker, 2010) and may help identify when a client is subtly or overtly disengaged from a counseling session signifying a rupture. Finally, the number and frequency of acquiesces and positive emotion words are helpful in measuring levels of agreement (Tausczik & Pennebaker, 2010). Assessing the level of agreement in a counseling session could, in turn, point to a positive alliance or detect a subtle rupture, depending on the context.

There are numerous psychological processes that signify alliance events and outcomes. Pennebaker et al. (2015b) included the following variables as categories in their linguistic-based measure of psychological processes: time orientation, positive emotion, negative emotion, anxiety, anger, and sadness. A foundational study conducted by Mergenthaler and Bucci (1999) discovered that by analyzing three categories of words—emotional tone, abstraction, and referential activity—they could predict successful outcomes in therapy. To discern emotional tone, Mergenthaler and Bucci tracked the flow of the therapeutic discourse, targeted the patients' verbal form, and looked for expressions of emotional experience. Another study looking at the negative emotion variable embedded in a psychological process measure found that better therapy outcomes were associated with a reduction in negative emotion words over the course of treatment when working with clients diagnosed with a personality disorder (Arntz et al., 2012). These studies support the use of linguistic methodologies to identify psychological processes that presage.

Given the aforementioned, three research questions were developed to guide this methodological pilot study. These questions were:

RQ1: What is the use rate of linguistic and psychological processes of rupture-infused psychotherapy by type?

RQ2: Do linguistic and psychological processes differ by rupture type in rupture-infused psychotherapy? If so, how do they differ?

RQ3: Does the use rate of linguistic and psychological processes in rupture-infused psychotherapy type differ from the use rate of these processes in general psychotherapy?

Method

Design

This study utilized a synchronic corpus linguistic design (Brezina, 2018). The corpus was created by transcribing mock counseling vignettes obtained from the “clinical tools” subheading on a publicly available website created by nationally recognized experts in alliance ruptures and three video recorded sessions of Carl Rogers’, Fritz Pearls’, and Albert Ellis’ work from the *Three Approaches to Psychotherapy* films (Shostrom, 1965). The study involved 14 variables. The four linguistic process variables examined were: first-person singular pronouns, first-person plural pronouns, third-person singular pronouns, and third-person plural pronouns. The 10 psychological process variables explored were: negative emotion, anger, sadness, anxiety, positive emotion, discrepancy, certainty, differentiation, tentative, and causation. The unit of analysis was single words (Bjekić et al., 2014).

An a priori power analysis χ^2 test square test was conducted using G*Power 3.1 (Faul et al., 2009). The proper effect size for such a test was Cohen’s w (Rosnow & Rosenthal, 2003). The effect size input for this power analysis was drawn from an online environment study of gender discourse (Sullivan et al., 2015). The input parameters were: (a) test family - χ^2 tests; (b) statistical test - goodness-of-fit tests: contingency tables; (c) type of power analysis - a priori:

compute required sample size - given α , power, and effect size; (d) $w = 0.60$; (e) power ($1-\beta$ error probability) = 0.90; (f) $\alpha = .0001$; and (g) degrees of freedom (Df) = 2. The G*Power 3.1 output suggested a sample size of 67 with an actual power of 0.91.

Corpus

Register, Scope, and Sources

Biber (2012) detailed the existence of four main registers in English: (a) conversation, (b) fiction, (c) news reportage, and (d) academic prose. The texts of the present study fall within the conversation register with the subregister being psychotherapy conversation. In building the corpus, researchers used transcriptions from mock counseling vignette videos that highlighted the three types of alliance ruptures (confrontation, withdrawal, and mixed) based on the constructs from Muran and Safran's seminal psychotherapy research (Muran & Safran, 2016). The nine mock videos contained seven White male counselors, two White female counselors, eight White female clients and one White male client. The videos were obtained from their website (<https://www.therapeutic-alliance.org/>) under the "clinical tools" tab (Muran et al., n.d.). Dr. Muran, who is a nationally renowned expert in ruptures, described the process of making the videos for the website:

For the videos on our website, we simply asked our students to bring and play difficult moments (some based on their readings, some based on their own clinical experience). We specifically invited withdrawal, confrontation and mixed rupture events and kept it to one take to promote authenticity and spontaneity: Only the initial rupture marker and case formulation were discussed in advance. The students were familiar with our definitions and principles. (C. J. Muran, personal communication, June 18, 2021)

These publicly available mock counseling sessions were transcribed for the creation of the corpus. This included the transcription of three counseling vignettes that highlighted confrontation ruptures, two vignettes that highlighted withdrawal ruptures, and four vignettes that highlighted mixed ruptures. The resultant confrontation rupture corpus contained three

transcripts, 1,986 tokens, and 387 types; the resultant withdrawal rupture corpus contained two transcripts, 2,367 tokens, and 393 types; and the resultant mixed rupture corpus contained four transcripts, 3,136 tokens, and 513 types.

Additionally, a reference corpus was created to establish a base rate for psychological processes within a therapy session. The corpus was created by combining the transcriptions of the emblematic and influential counseling sessions with Carl Rogers, Fritz Pearls, and Albert Ellis (Shostrom, 1965). The video contained three White Males and one White Female. The resultant reference corpus contained three transcripts, 13,584 tokens, and 1,410 types

Preprocessing

Nine mock counseling vignette videos (three confrontation, two withdrawal, and four mixed) were disembedded from the therapeutic-alliance.org website (Muran et al., n.d.) using standard downloading protocol and were subsequently converted into MP4 files. The files were then uploaded to Transcribe.wreally.com and electronically transcribed. Transcripts were subsequently converted into Word documents after being manually checked for transcription accuracy. Additionally, three video recorded sessions of Carl Rodgers, Fritz Pearls, and Albert Ellis working with clients were transcribed from the *Three Approaches to Psychotherapy* films (Shostrom, 1965). The electronic files were then converted into .txt files using AntFileConverter (Anthony, 2017), and three distinct corpuses were created by combining the respective .txt files of each rupture type vignette videos (confrontation, withdrawal, or mixed). Spelling and word-related errors were identified and corrected, and the corpora were further cleaned for non-ASCII characters and diacritics using After the three rupture type corpuses were preprocessed, they contained 1,995 (confrontation), 2,384 (withdrawal), 3,148 (mixed), and 13,584 (Carl Rodgers, Fritz Pearls, and Albert Ellis) words.

Measures

Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015c) was the software program used in this analysis. Within LIWC, there are multiple subscale measures that can be utilized to analyze a corpus. The validity and reliability of LIWC have been well established (Pennebaker et al., 2015a).

Linguistics Processes

The LIWC linguistics processes employed were first-person singular (I, me, my, mine), first-person plural (“we,” “us,” “our,” and “ours”), third-person singular (“she,” “her,” and “him”), and third-person plural pronouns (“they,” “their,” and “they’d”) (Pennebaker et al., 2015b).

Psychological Processes

The LIWC psychological processes employed were: negative emotion (e.g., “hurt”), anger (e.g., “hate”), sadness, (e.g., “lonely”), anxiety (e.g., “worried”), positive emotion (e.g., “happy”), discrepancy (e.g., “should”), certainty (e.g., “always”), differentiation (e.g., “hasn’t”), tentative (e.g., “maybe”), and causation (e.g., “because”; Pennebaker et al., 2015b).

Apparatus

Linguistic Inquiry Word Count (LIWC)

The most recent edition of the LIWC software is from 2015 (Pennebaker et al., 2015c). The default LIWC2015 dictionary is composed of almost 6,400 words, word stems, and sect emoticons. The program is also composed of 90 analyzable output variables, which focus mainly on psychological processes. The variables are scored by comparing the percentage of words being analyzed to a dictionary of words in categories and subdictionaries (Smith-Keiling & Hyun, 2019).

Data Analysis

For RQ1 (use rates), raw and normalized frequency rates (i.e., percentage of all words) are reported for all variables across all three types of alliance ruptures (confrontation, withdrawal, and mixed). Normalized frequencies (e.g., relative frequencies) were calculated by taking the percentage of the total words of a variable (e.g., she/he words were .0015 percent of confrontation corpus) as calculated by the LIWC software and dividing that number by 100 (basis for normalization) and then multiplying the result by the total number of tokens (Brezina, 2018). In terms of RQ2, (type differences), the log likelihood test (G^2) was employed (Rayson & Garside, 2000). The effect size was calculated using the Bayes information criterion (BIC) with interpretation guidelines from Wilson (2013). If overall significant type differences were encountered, post hoc pairwise comparisons were conducted using the G^2 test (McDonald, 2014). Concerning RQ3, differences between the rupture and general counseling corpuses were assessed by means of G^2 and BIC. All analyses were conducted using R with a preset alpha level of .001. Additionally, due to the large number of tests, a Bonferroni correction was utilized to set a family-wise error rate to control for type one errors.

Results

Regarding RQ1, the raw and normalized count of linguistic and psychological processes for confrontation, withdrawal, and mixed rupture type corpuses can be found in Table 3.1. In terms of RQ2, differences in the linguistic and psychological processes category among the rupture types can be reviewed in Table 1. For those linguistic and psychological processes where significant differences did occur, the pairwise post hoc analyses can be inspected in Table 3.2. Concerning RQ3, linguistic and psychological processes that distinguished the rupture corpus from the baseline counseling corpus can be examined in Table 3.3.

Discussion

The aim of this pilot study was to demonstrate a methodology that can be used to assess the linguistic and psychological processes that take place in mock counseling session vignettes that consisted of an alliance rupture event. In this section the potential reasons for the obtained results are discussed. After this discussion, limitations, practice implications, and researched implications are addressed. RQ1 looked at the level of use of linguistic and psychological processes known to be related to each of the respective alliance rupture types (confrontation, withdrawal, and mixed). The probable explanations for these obtained results are addressed in the discussions in the findings for RQ2 and RQ3.

Regarding RQ2, two of the 14 variables returned a significant result. The first of these was the third-person singular pronoun variable. Two likely explanations for this result should be considered. First, research has found that third-person pronouns have been associated with self-monitoring and general social awareness in verbal discourse (Pennebaker et al., 2003). This could be one explanation as to why she/he words were found to be significantly more common in withdrawal and mixed ruptures compared to confrontation ruptures, as a client or counselor may be more subtly aware of themselves and their relationship with the other in these events. A second explanation is that pronoun use also indicates the focus of the speaker's attention (Kacewicz et al., 2014) and in the case of third-person singular pronouns, a focus on others. This aligns with withdrawal rupture events and mixed events (which include withdrawal rupture events), where the client is subtly moving away from the counselor (Muran & Safran, 2016) and may include an "other focus" by the client to hide the misattunement. Both findings seem plausible, but the first finding appears more likely as confrontation ruptures may be other focused but are, by definition, disagreements.

The second significant result was for the certain variable. Two likely explanations for this result should be considered. The first explanation is that "certain words" may represent the speaker's perceived sense of power from a psycholinguistic perspective. Research has shown that those who use certainty language (e.g., always, never) in verbal discourse are viewed as more powerful (Adkins & Brashers, 1995; Han & Lind, 2017; Hart & Childers, 2004) and are more committed to the truth of what they are asserting (Holmes, 1982). This finding makes logical sense in the context of a confrontation rupture where a client is directly expressing anger or dissatisfaction toward the counselor (Muran & Safran, 2016). This subsequent certainty language employed by the client or counselor may reflect their commitment to their perceived truth and be seen by the observer (counselor or client) as an act of power. A secondary explanation is that research shows they increase the persuasiveness of a message (Corley & Wedeking, 2014). This makes logical sense in that a confrontation rupture is where a client is moving toward the counselor in a direct manner (Eubanks et al., 2016) or bringing up a concern or complaint regarding the counselor or some aspect of counseling in a targeted manner (Muran & Safran, 2016). According to Corley and Wedeking, certainty language is often used to ensure compliance. Within a confrontation rupture event, the client may want the counselor to comply with their request after directly confronting them about their personal concerns about the counselor or some aspect of the counseling. Both findings may be plausible, but the second finding appears more likely as clients often want the counselor to comply with their requests regarding some goal or task related to counseling process. However, because the BIC was under 2, at 1.52, caution should be taken in drawing strong conclusions unless this finding can be replicated or other evidence is presented, as the results are weak and may have occurred by chance.

In the matter of RQ3, two explanations deserve consideration for each finding. First, pertaining the finding of a decreased use of positive emotion words for rupture-infused psychotherapy (general psychotherapy comparison), the use of positive emotion words has been shown to help stabilize emotionality because an individual is able to shift attention away from self (Lyons et al., 2006). This would also make logical sense in the context of an alliance rupture event where both the client and counselor may be using less positive emotion words as there is disharmony in either of the party's internal states, as overt or covert conflict is occurring in the counseling session. Second, positive emotion words have been shown to correlate to social coping. This finding makes sense in the context of a rupture event (confrontation, withdrawal, or mixed), as the client and even the counselor may not be using social coping (Chung & Pennebaker, 2012) to sustain social norms. Both findings are plausible, but the second finding is more convincing as social coping to sustain social norms is necessary in communication and appears very important in the context of an alliance rupture event.

Regarding the second finding, there are two plausible explanations for the obtained result of significantly lower use of "discrepancy words." First, this possibly counterintuitive finding (the reader might expect that rupture events in counseling discourse would be more cognitive in nature) could be explained by the fact that therapy is inherently composed of cognitive mechanisms, or language which includes discrepancy words (Lee et al., 2011). This includes counselors and clients discussing their thoughts (cognitions) about causes, consequences, or conflict about a discussion topic (Chung & Pennebaker, 2012). Therefore, both the rupture infused corpus and the general psychotherapy corpus may have higher than usual cognitive content or discrepancy language than other verbal discourse. Second, the lower number of discrepancy words, a subset of cognitive processing words, in the rupture infused corpus compared to the

general psychotherapy corpus could be explained by an unproductive moment in therapy. Ruptures have been defined as missattunements between the client and counselor (Muran & Safran, 2016), and in those segments of therapy discourse the conversation may be less cognitive in nature, on average, than in baseline or useful therapy where the counselor and client are attuned. This explanation aligns with research showing that highly helpful or productive moments in therapy include greater proportion of cognitive words and specifically words indicating insight (McCarthy et al., 2017).

Second, an increased frequency of discrepancy words such as “should” or “would” has been shown to be accompanied by an overall decrease or weakening in clout (certainty) and confidence in written text (Moore et al., 2021). The findings by Moore et al. also align with the statistically significant finding of discrepancy words, which shows lower certainty (clout) and less confidence by the client or counselor. In the context of rupture events, clients may be less certain and confident about the counseling process and may communicate this through subtle passive communication in the case of a withdrawal rupture. Or, they may display a lack of certainty or confidence in a direct confrontation with the counselor in the case of a confrontation rupture event. Equally important, the counselor may reciprocate in one of the three rupture events with a plethora of discrepancy words, consciously or unconsciously communicating their own decrease in certainty or confidence through verbal discourse. Both justifications seem to have merit, but the first explanation is more plausible, as the cognitive nature of psychotherapy conversations around conflict, both active and passive, is very apparent.

Seven limitations to the present study should be noted. The first limitation is sample size. Having a larger sample would allow for a more in-depth exploration of the vocabulary related to each of the rupture types and allow for additional experiments on a larger number of areas. In

order to identify the underlying linguistic and psychological processes that occur in a rupture event, studies would require a much larger corpus and one that would separate the clients' and counselors' discourses. Additionally, there are some significant limits regarding our capacity to generalize the findings from this study to other alliance rupture discourse datasets. First, we utilized a corpus of a mock counseling session, which included professional counselors and actors. Although this set of discourses are very similar to an actual counseling session, there are likely significant differences between the discourse of a session that included playacting with a counselor and an actual counseling session discourse. A second limitation is that analyses focus on whole sessions rather than specific rupture events. Results may have varied if the discourse around each rupture event had been isolated for a study. Third, because the pilot study examined words, it did not account for other nonverbal communications (e.g., voice tone, facial expression, and prosody). Nonverbal communication could play a significant role in rupture events. A fourth limitation is that the unit of analysis (i.e., the rupture event segment) was nested within a larger unit (i.e., the entirety of the counseling session). Because the study examined an hour-long session there likely were times where the counselor and client were aligned and that may impact the validity of the results. Fifth, there may be differences in vocabulary based on geographical region, as the videos were mostly filmed on the East Coast, and this could limit the ability to generalize the findings to other regional populations. A sixth limitation is the race age, gender, and social class of the mock video participants. The counselors consisted of 10 older White males and two adult White females of middle to upper social class. The clients were nine adult White females and one adult White male. The limited range of study participants regarding gender, race, age, and social class could be a significant limitation regarding the validity of this study. It is also of note that gender, race, age, and social class could have had a significant

impact on the verbal discourse of the counseling session because of the impact of underlying power dynamics related to privileged aspects of identity. A final limitation to the study relates to construct validity and whether this research truly assessed rupture events or whether another construct such as a fight, flight, or freeze response was actually what was measured. Despite these limitations, the pilot study demonstrated the utility of this research methodology as they relate to alliance ruptures in the context of counseling.

There are four implications for counseling practice from the obtained results (implications must be taken with caution, as this manuscript represents a methodological pilot study with significant data related limitations). First, the finding of she/he words that indicates the necessity of supervisors and counselors to remain keenly aware of increased use of third-person singular pronouns by their clients (and their own use) is important. This is because third person singular pronoun use may indicate self-monitoring and increased general social awareness in verbal discourse (Pennebaker et al., 2003) and may indicate a withdrawal or mixed rupture event. Furthermore, supervisors and counselors should be aware that pronoun use point to the focus of the speaker's attention and specifically third-person singular pronoun use (she/he words) is "other focused" (Kacewicz et al., 2014). This may signal that a client in the context of a withdrawal or mixed rupture may be using deflection of attention to create distance in a subtle manner as they are covertly moving away from the counselor or some aspect of the counseling process.

Second, the finding of certainty words necessitates that supervisors and counselors remain keenly aware of increased certainty language in counseling session discourse. This finding is important because it may indicate that the client or the counselor believes the other is in a position of power, are more committed to certainty (Adkins & Brashers, 1995; Han & Lind,

2017; Hart & Childers, 2004; Holmes, 1982), and that a rupture event is occurring. Additionally, because there is evidence that using certainty language increases the persuasiveness of their message, supervisors and counselors need be aware of this type of discourse (in the context of a confrontation rupture event) to call out and work through a potential rupture in the therapeutic alliance with a client.

Third, the finding of infrequent use of positive emotion words in the rupture infused psychotherapy corpora indicates the necessity of supervisors and counselors to remain keenly aware of a decrease of positive emotion language in counseling session discourse. This is important because it may indicate that a participant is feeling less emotionally stable (Lyons et al., 2006), may not be coping socially, and be less able to sustain the social norms of conversation (Chung & Pennebaker, 2012). Therefore, a decrease in positive emotion words may signify a subtle disconnect in the therapeutic alliance, which counselors could become skilled at recognizing and repairing.

A final implication regarding the finding of decreased use of discrepancy words in the rupture infused psychotherapy corpus is that this may be an indicator that the discourse may be less cognitive in nature than the average psychotherapy conversation. This lack of discrepancy words, which are cognitive in nature, may indicate that a rupture event is occurring, and that the session or segment is not as therapeutically useful (McCarthy et al., 2017) because the counselor and client are not attuned, and helpful cognitive insights are not occurring. Supervisors and counselors who recognize a decrease in discrepancy or cognitive language can be aware that a rupture event may have occurred, attempt to disembed from the event, and subsequently tend to the discord in the counseling relationship.

Two recommendations for further research (that must be taken with caution, as this manuscript represents a methodological pilot study with significant data related limitations) should be noted. First, because the results demonstrate that the linguistic and psychological process that underlies language between three types of alliance rupture types may be distinguishable, researchers have a new opportunity to further explore rupture-specific counseling session discourse. Specifically, it may be important for researchers to continue this line of inquiry and study each rupture type (confrontation, withdrawal, and mixed) and their discourse in actual counseling sessions. Second, expanding on the results of this study would allow researchers to further examine alliance ruptures but in a more granular manner through analyzing rupture marker events in counseling session segments.

References

- Adkins, M., & Brashers, D. E. (1995). The power of language in computer-mediated groups. *Management Communication Quarterly*, 8(3), 289-322.
<https://doi.org/10.1177%2F0893318995008003002>
- Althoff, T., Clark, K., & Leskovec, J. (2016). Large-scale analysis of counseling conversations: An application of natural language processing to mental health. *Transactions of the Association for Computational Linguistics*, 4, 463-476.
https://doi.org/10.1162/tacl_a_00111
- Anthony, L. (2017). AntFileConverter (Version 1.2. 1) [software].
<https://www.laurenceanthony.net/software/antfileconverter/>
- Arntz, A., Hawke, L. D., Bamelis, L., Spinhoven, P., & Molendijk, M. L. (2012). Changes in natural language use as an indicator of psychotherapeutic change in personality disorders. *Behaviour Research and Therapy*, 50(3), 191-202.
<https://eprints.lanacs.ac.uk/id/eprint/51045>
- Biber, D. E. (2012). Corpus-based and corpus-driven analyses of language variation and use. In B. Heine & H. Narrog (Eds.), *The Oxford handbook of linguistic analysis* (pp. 193-224). Oxford University Press.
- Bjekić, J., Lazarević, L. B., Živanović, M., & Knežević, G. (2014). Psychometric evaluation of the Serbian dictionary for automatic text analysis-LIWCser. *Psihologija*, 47(1), 5-32.
<https://doi.org/10.2298/PSI1401005B>
- Brezina, V. (2018). *Statistics in corpus linguistics: A practical guide*. Cambridge University Press.
- Chen, J., Qiu, L., & Ho, M. H. R. (2020). A meta-analysis of linguistic markers of extraversion: Positive emotion and social process words. *Journal of Research in Personality*, 89, Article 104035. <https://doi.org/10.1016/j.jrp.2020.104035>
- Chen, W., Zhang, M., Zhang, Y., & Duan, X. (2016). Exploiting meta features for dependency parsing and part-of-speech tagging. *Artificial Intelligence*, 230(C), 173-191.
<https://doi.org/10.1016/j.artint.2015.09.002>
- Chow, D. L., Miller, S. D., Seidel, J. A., Kane, R. T., Thornton, J. A., & Andrews, W. P. (2015). The role of deliberate practice in the development of highly effective psychotherapists. *Psychotherapy*, 52(3), 337-345. <https://doi.org/10.1037/pst0000015>
- Chung, C. K., & Pennebaker, J. W. (2012). Linguistic inquiry and word count (LIWC): pronounced “Luke,”... and other useful facts. In *Applied natural language processing: Identification, investigation and resolution* (pp. 206-229). IGI Global.

- Cohn, M. A., Mehl, M. R., & Pennebaker, J. W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science*, *15*(10), 687-693. <https://doi.org/10.1111%2Fj.0956-7976.2004.00741.x>
- Corley, P. C., & Wedeking, J. (2014). The (dis) advantage of certainty: The importance of certainty in language. *Law & Society Review*, *48*(1), 35-62. <https://doi.org/10.1111/lasr.12058>
- Decter-Frain, A., & Frimer, J. A. (2016). Impressive words: Linguistic predictors of public approval of the US Congress. *Frontiers in Psychology*, *7*, Article 240. <https://doi.org/10.3389/fpsyg.2016.00240>
- Ellington, L., Kelly, K. M., Reblin, M., Latimer, S., & Roter, D. (2011). Communication in genetic counseling: Cognitive and emotional processing. *Health Communication*, *26*(7), 667-675. <https://doi.org/10.1080/10410236.2011.561921>
- Eubanks, C. F., Lubitz, J., Muran, J. C., & Safran, J. D. (2019). Rupture resolution rating system (3RS): Development and validation. *Psychotherapy Research*, *29*(3), 306-319. <https://doi.org/10.1080/10503307.2018.1552034>
- Eubanks, C. F., Muran, J. C., & Safran, J. D. (2018). Alliance rupture repair: A meta-analysis. *Psychotherapy*, *55*(4), 508-519. <https://doi.org/10.1037/pst0000185>
- Farooq, R. (2017). A framework for identifying research gap in social sciences: Evidence from the past. *IUP Journal of Management Research*, *16*(4), 66-75. <https://www.iupindia.in/705/ijmr.asp>
- Fast, E., & Horvitz, E. (2016). *Identifying dogmatism in social media: Signals and models*. <https://arxiv.org/abs/1609.00425v1>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analysis using G*Power 3.1: Test for correlation and regression analysis. *Behavioral Research Methods*, *41*(4), 1149-1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Gablasova, D., Brezina, V., McEnery, T., & Boyd, E. (2017). Epistemic stance in spoken L2 English: The effect of task and speaker style. *Applied Linguistics*, *38*(5), 613-637. <https://doi.org/10.1093/applin/amv055>
- Gill, A. J., French, R. M., Gergle, D., & Oberlander, J. (2008, November). The language of emotion in short blog texts. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work* (pp. 299-302). Association for Computing Machinery. <https://doi.org/10.1145/1460563.1460612>
- Gunsch, M. A., Brownlow, S., Haynes, S. E., & Mabe, Z. (2000). Differential forms linguistic content of various of political advertising. *Journal of Broadcasting & Electronic Media*, *44*(1), 27-42. https://doi.org/10.1207/s15506878jobem4401_3

- Han, S. H., & Lind, C. J. (2017). Putting powerfulness in its place: a study on discursive style in public discussion and its impact. *Argumentation and Advocacy*, 53(3), 216-233. <https://doi.org/10.1080/00028533.2017.1337332>
- Hart, R. P., & Childers, J. P. (2004). Verbal certainty in American politics: An overview and extension. *Presidential Studies Quarterly*, 34(3), 516-535. <https://doi.org/10.1080/00028533.2017.1337332>
- Hartung, F., Burke, M., Hagoort, P., & Willems, R. M. (2016). Taking perspective: Personal pronouns affect experiential aspects of literary reading. *PloS One*, 11(5). <https://doi.org/10.1371/journal.pone.0154732>
- Holmes, J. (1982). Expressing doubt and certainty in English. *RELC journal*, 13(2), 9-28. <https://doi.org/10.1017/S0047404500011623>
- Huang, C.-L., Chung, C. K., Hui, N., Lin, Y.-C., Seih, Y.-T., Lam, B. C. P., Chen, W.-C., Bond, M. H., & Pennebaker, J. W. (2012). The development of the Chinese linguistic inquiry and word count dictionary. *Chinese Journal of Psychology*, 54(2), 185-201. <https://psycnet.apa.org/record/2014-20116-004>
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun use reflects standings in social hierarchies. *Journal of Language and Social Psychology*, 33(2), 125-143. <https://doi.org/10.1177%2F0261927X13502654>
- Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *American Journal of Psychology*, 120(2), 263-286. <https://doi.org/10.2307/20445398>
- Liu, D., & Lei, L. (2018). The appeal to political sentiment: An analysis of Donald Trump's and Hillary Clinton's speech themes and discourse strategies in the 2016 US presidential election. *Discourse, Context & Media*, 25, 143-152. <https://doi.org/10.1016/j.dcm.2018.05.001>
- Lyons, E. J., Mehl, M. R., & Pennebaker, J. W. (2006). Pro-anorexics and recovering anorexics differ in their linguistic Internet self-presentation. *Journal of Psychosomatic Research*, 60(3), 253-256. <https://doi:10.1016/j.jpsychores.2005.07.017>
- McCarthy, K. L., Caputi, P., & Grenyer, B. F. (2017). Significant change events in psychodynamic psychotherapy: Is cognition or emotion more important?. *Psychology and Psychotherapy: Theory, Research and Practice*, 90(3), 377-388. <https://doi.org/10.1111/papt.12116>
- McDonald, R. P. (2014). *Factor analysis and related methods*. Psychology Press.
- McEnery, T. (2004). *Swearing in English: Bad language, purity and power from 1586 to the present*. Routledge.

- Moons, W. G., Spoor, J. R., Kalomiris, A. E., & Rizk, M. K. (2013). Certainty broadcasts risk preferences: Verbal and nonverbal cues to risk-taking. *Journal of Nonverbal Behavior*, 37(2), 79-89. <https://doi.org/10.1007/s10919-013-0146-0>
- Muran, J. C., Eubanks, C. F. & Samstag L.W. (n.d.). *Clinical tools*. <https://www.therapeutic-alliance.org/clinical-tools.html>
- Muran, J. C., & Safran, J. D. (2016). Therapeutic alliance ruptures. In A. Wenzel (Ed.), *Sage encyclopedia of abnormal & clinical psychology* (pp. 3,512-3,514). Sage Publications.
- Newman, M. L., Pennebaker, J. W., Berry, D. S., & Richards, J. M. (2003). Lying words: Predicting deception from linguistic styles. *Personality and Social Psychology Bulletin*, 29(5), 665-675. <https://doi.org/10.1177%2F0146167203029005010>
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, 8(3), 162-166. <https://doi.org/10.1111%2Fj.1467-9280.1997.tb00403.x>
- Pennebaker, J. W. (2011). The secret life of pronouns. *New Scientist*, 211(2828), 42-45. [https://doi.org/10.1016/S0262-4079\(11\)62167-2](https://doi.org/10.1016/S0262-4079(11)62167-2)
- Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015a). *LIWC 2015 operator's manual*. Pennebaker Conglomerates.
- Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015b). *The development and psychometric properties of LIWC2015*. <http://hdl.handle.net/2152/31333>
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2015c). *Linguistic Inquiry and Word Count: LIWC2015*. (Version 1.6) [Computer software]. Pennebaker Conglomerates. <https://liwc.wpengine.com>
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, 54(1), 547-577. <https://doi.org/10.1146/annurev.psych.54.101601.145041>
- Pérez-Rosas, V., Mihalcea, R., Resnicow, K., Singh, S., An, L., Goggin, K. J., & Catley, D. (2017, April). Predicting counselor behaviors in motivational interviewing encounters. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers* (pp. 1,128-1,137). Association for Computational Linguistics. <https://www.aclweb.org/anthology/E17-1106.pdf>
- Rayson, P., & Garside, R. (2000, October). Comparing corpora using frequency profiling. In *Proceedings of the workshop on comparing corpora-Volume 9* (pp. 1-6). Association for Computational Linguistics. <https://doi-org.ezproxy.proxy.library.oregonstate.edu/10.3115/1117729.1117730>

- Rosnow, R. L., & Rosenthal, R. (2003). Effect sizes for experimenting psychologists. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 57(3), 221-237. <https://psycnet.apa.org/doi/10.1037/h0087427>
- Sexton, J. B., & Helmreich, R. L. (2000). Analyzing cockpit communications: The links between language, performance, and workload. *Human Performance in Extreme Environments*, 5(1), 63-68. <https://doi.org/10.7771/2327-2937.1007>
- Shostrom, E. L. (Director). (1965). *Three approaches to psychotherapy* [Film]. Santa Ana, CA: Psychological Films.
- Simmons, R. A., Gordon, P. C., & Chambless, D. L. (2005). Pronouns in marital interaction: What do "you" and "I" say about marital health? *Psychological Science*, 16(12), 932-936. <https://doi.org/10.1111/j.1467-9280.2005.01639.x>
- Smith-Keiling, B. L., & Hyun, H. I. F. (2019). Applying a computer-assisted tool for semantic analysis of writing: Uses for STEM and ELL. *Journal of Microbiology & Biology Education*, 20(1). <https://doi.org/10.1128/jmbe.v20i1.1709>
- Sonnenschein, A. R., Hofmann, S. G., Ziegelmayr, T., & Lutz, W. (2018). Linguistic analysis of patients with mood and anxiety disorders during cognitive behavioral therapy. *Cognitive Behaviour Therapy*, 47(4), 315-327. <https://doi.org/10.1080/16506073.2017.1419505>
- Sullivan, F. R., Kapur, M., Madden, S., & Shipe, S. (2015). Exploring the role of 'gendered' discourse styles in online science discussions. *International Journal of Science Education*, 37(3), 484-504. <https://doi.org/10.1080/09500693.2014.994113>
- Tadajewski, M., & Hower, P. (2011). Intellectual contributions and gap-spotting. *Journal of Marketing Management*, 27(5-6), 449-457. <https://doi.org/10.1080/0267257X.2011.562364>
- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24-54. <https://doi.org/10.1177%2F0261927X09351676>
- Vaughn, L. A. (2018). Contents of hopes and duties: A linguistic analysis. *Frontiers in Psychology*, 9, Article 757. <https://doi.org/10.3389/fpsyg.2018.00757>
- Waters, T. E., Steele, R. D., Roisman, G. I., Haydon, K. C., & Booth-LaForce, C. (2016). A linguistic inquiry and word count analysis of the Adult Attachment Interview in two large corpora. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, 48(1), 78-88. <https://dx.doi.org/10.1037%2Fcbcs0000035>
- Wilson, A. (2013). Embracing Bayes factors for key item analysis in corpus linguistics. In M. Bieswanger & A. Koll-Stobbe (Eds.), *New approaches to the study of linguistic variability* (pp. 3-11). Peter Lang. <https://eprints.lancs.ac.uk/id/eprint/51045>

- Wolohan, J. T., Hiraga, M., Mukherjee, A., Sayyed, Z. A., & Millard, M. (2018, August). Detecting linguistic traces of depression in topic-restricted text: Attending to self-stigmatized depression with NLP. In *Proceedings of the First International Workshop on Language Cognition and Computational Models* (pp. 11-21). Association for Computational Linguistics. <https://www.aclweb.org/anthology/W18-4102.pdf>
- Zilcha-Mano, S., Muran, J. C., Hungr, C., Eubanks, C. F., Safran, J. D., & Winston, A. (2016). The relationship between alliance and outcome: Analysis of a two-person perspective on alliance and session outcome. *Journal of Consulting and Clinical Psychology*, 84(6), 484-496. <https://doi.org/10.1037/ccp0000058>

Table 3.1*Rupture Type Descriptive Statistics (RQ1) and Results from Inferential Analyses (RQ2)*

Var.	Cat.	Actual Count			Expected Count			G^2	BIC	BIC Desc.
		Confr.	Withd.	Mix.	Confr.	Withd.	Mix.			
shehe	Ling.	2.98	40.00	28.85	19.05	22.70	30.08	31.85	14.01	Very Strong
certain	Psy.	46.08	18.94	33.87	26.22	31.25	41.41	19.36	1.52	Weak
negemo	Psy.	31.97	48.05	101.92	48.25	57.51	76.19	15.74	-2.11	Positive
i	Ling.	177.95	306.05	348.10	220.66	262.99	348.44	15.56	-2.29	Positive
anx	Psy.	6.95	13.02	36.06	14.86	17.71	23.46	12.43	-5.41	Positive
differ	Psy.	93.94	89.00	169.97	93.59	111.54	147.78	8.08	-9.77	Strong
discrep	Psy.	60.97	47.10	64.92	45.87	54.68	72.44	6.41	-11.43	Very Strong
sad	Psy.	5.96	4.02	16.93	7.14	8.51	11.27	5.61	-12.23	Very Strong
cause	Psy.	38.93	27.93	47.98	30.45	36.30	48.09	4.26	-13.58	Very Strong
they	Ling.	4.97	0.95	4.08	2.65	3.16	4.18	3.75	-14.09	Very Strong
tentat	Psy.	114.00	108.88	148.96	98.61	117.52	155.71	3.23	-14.61	Very Strong
posemo	Psy.	38.93	61.07	84.04	48.81	58.17	77.07	2.91	-14.94	Very Strong
anger	Psy.	11.92	22.96	28.85	16.90	20.14	26.69	2.19	-15.65	Very Strong
we	Ling.	6.95	9.94	15.99	8.72	10.39	13.77	0.75	-17.10	Very Strong

Note. Confrontation $n = 1,986$, withdrawal $n = 2,367$; mixed $n = 3,136$; adjusted error rate for 14 comparisons was $p < .00007$; G^2 for that error rate = 19.09. A negative BIC indicates support for the null hypothesis.

Table 3.2*Post Hoc Pairwise Rupture Comparisons*

Category	Process	Corpus 1		Corpus 2		G^2	BIC	BIC Descript.
		Type	Raw Ct.	Type	Raw Ct..			
shehe	Ling.	W	40	C	2.98	31.77	23.39	Very Strong
certain	Psych.	W	18.94	C	46.08	16.95	8.57	Strong
shehe	Ling.	M	28.85	C	2.98	14.17	5.63	Positive
certain	Psych.	M	33.87	C	46.08	11.58	3.04	Positive

Note. The critical value for G^2 at $p < .001$ is 10.83. Withdrawal $n = 2,367$; confrontation $n = 1,986$; mixed $n = 3,136$.

Table 3.3*Rupture Versus Reference Corpus Results (RQ3)*

Category	Process	Corpus		G^2	BIC	BIC Descriptors
		Rupture Raw Ct (Norm count)	Reference Raw Ct (Norm count)			
posemo	Psych	184.04 (2.46)	594.23(4.38)	51.49	41.54*	Very Strong
discrep	Psych	172.99 (2.31)	497.91 (3.67)	29.47	19.52*	Very Strong
tentat	Psych	371.84 (4.97)	518.26 (3.82)	14.63	4.68	Positive
they	Ling	9.99 (0.13)	55.62 (.41)	13.57	3.62	Positive

Note. The critical value for G^2 at $p < .001$ is 10.83. Rupture $n = 7,489$; reference $n = 13,567$.

Chapter 4: A General Conclusion

The following sections are covered in this chapter: (a) a summary of findings, limitations, and discussion from manuscript 1; (b) a summary of findings, limitations, and discussion from manuscript 2; (c) linkages between the manuscripts; (d) implications of collective manuscripts; and (e) recommendations for future research.

Summary of Manuscript 1

Manuscript 1 was a methodological pilot study that explored the top five words found among each of the rupture type subcorpuses and their collocates. The software, #Lancsbox 6.0, was utilized in the data analysis. Six overarching research questions were constructed to guide this pilot study. The first three research questions identified the top five words in each alliance rupture type corpus in terms of keyness (RQs 4-6). The second three questions identified the collocates of the word with the strongest keyness for each rupture type (RQs 4-6).

For RQ1, results showed that in the confrontation rupture type corpus, the top five words were “just,” “know,” “way,” “like,” and “right.” In the withdrawal rupture type corpus, the top five words were “know,” “just,” “think,” “like,” and “mean.” In the mixed rupture type corpus, the top five words were “like,” “know,” “just,” “yeah,” and “really.” It is of note that the range percent for each word was 100%, demonstrating that all top words were present in all three corpora.

There are several explanations for the obtained results related to each of the three alliance rupture type corpora (explanations must be taken with caution, as this manuscript represents a methodological pilot study with significant data related limitations). The first is that “know,” “right,” and “way,” which were found in the confrontation rupture corpus, appear to reflect certainty by the counselor or client. One explanation for this finding could be that these tokens indicate specific, intentional language in directly expressing frustration or resentment towards

the counselor or some aspect of the counseling process (Safran & Muran, 2000). A second finding related to the words “know,” “just,” “think,” “like,” and “mean,” the top five words found in the withdrawal corpus, is that this language takes place in passive communication. One explanation for this finding is that passive language may be a way for a client to avoid conflict and communicate their disconnect in a passive way, as the clients moves away from the counselor, their emotions, or the counseling process (Safran & Muran, 2000).

A third finding relates to the use of the preposition “like,” which was commonly used in each of the three alliance rupture type corpuses. Research has found that preposition use increases in low empathy counters (Perez-Rosas et al., 2017), and this finding may help a supervisor or counselor realize that a potential rupture event has occurred.

A final significant result relating to RQ1 is that “know” and “think” can be categorized as cognitive processing words (Pennebaker et al., 2001). This finding is important as these types of words may indicate to a supervisor or counselor that a rupture event may have subtly taken place.

Regarding RQ2, there were several important findings. First, the node word “just” was collocated most often with the first-person pronoun “I” and strongly with the conjunction “and” in the context of a confrontation rupture. Because the sequence “I just” and “just” are common filler expressions in verbal discourse, this may indicate that the counselor or client is creating space in an outwardly (confrontation) or subtle (withdrawal) challenging verbal expression, which may point to a rupture event (Kacewicz et al., 2014). Second, “I” demonstrates the speaker’s attention, and in the case of “I just,” may indicate that the speaker (counselor or client) is focused on their own thoughts, feelings, and emotions (Kacewicz et al., 2014), which may come up in a more difficult confrontation-related discourse.

A second salient finding regarding RQ2 is related to the node word “know,” which is most frequently collocated with the word “I” and strongly associated with the word “you” in the withdrawal rupture corpus. This is an important finding because common phrases such as “I know” and “you know” are often used in discourse to communicate understanding, agreement, or common knowledge about a topic. Supervisors who can recognize these frequent phrases may be able to detect and tend to a subtle rupture event where the client discretely moves away from the counselor or some aspect of counseling (Safran & Muran, 2016).

A final finding regarding RQ2 relates to the node word “like,” which was strongly associated with the token “just” as in the phrase “just like.” The phrase “just like,” which was commonly found in each of the corpora, is considered a simile. Similes function in discourse to compare similarities, create clarification, or deemphasize some aspect of a conversation (Roberts & Krenz, 1994). The phrase “just like” could be used in a confrontation rupture to create a direct clarification in a confrontational manner; in a withdrawal rupture by subtly deemphasizing some aspect of the discourse, provoking thought, comparing similarities, or adding humor; or in a mixed rupture using a combination of clarification or deemphasis language in the discourse (Roberts & Krenz, 1994). Supervisors and counselors who are aware of simile use and its potential utility as part of a rupture event may be better prepared to identify and repair a misalignment in the counseling relationship.

Limitations

There are seven limitations of note regarding this study. First, the study had a small corpus size, which restricted the generalizability of the findings to new datasets and prevented the creation of broader, more detailed collocation graphs. A second limitation is that although this study design offered robust results, the transcripts were taken from mock counseling sessions

and not sessions with real counselors and clients. Because the findings are not based on natural discourse, this limits the generalizability of the results. Third, the pilot study examined discourse and no other features of communication (e.g., voice tone, facial expression, and prosody). Other parts of communication may be important contributors in rupture events. A fourth limitation is that the rupture event (i.e., the unit of analysis) was nested within a larger unit, which in this case was the counseling session. Because the study analyzed the entire counseling session the results may have been impacted by the times when the counselor and client were in sync with one another. Fifth, there may be differences in language based on the geographical region (most sessions were recorded on the East Coast), which may limit the generalizability of the results. A sixth potential limitation is the race, age, gender, and social class of the counselors and clients in the mock sessions. The counselors consisted of seven older White males and two adult White females of middle to upper social class. The clients were eight adult White females and one adult White male. The restricted diversity of counselors and clients (gender, race, age, and social class) may be a significant limitation regarding the findings of this study. Additionally, the identity of the counselors and clients (e.g., gender, race, age, and social class) could have had a conscious or unconscious impact on the discourse of the counseling session because of the underlying power dynamics related to privileged aspects of identity. A final limitation may be related to construct validity. It is difficult to determine whether this research accurately measured rupture events or another related construct (e.g., fight, flight, or freeze response). Despite these limitations, this pilot study established the utility of the corpus linguistics methodology for both research and practice in the context of analyzing alliance ruptures during counseling.

Implications and Recommendations

The following clinical implications should be taken with caution, as this manuscript represents a methodological pilot study with data related limitations. Based on the obtained results from RQ1, seven implications for clinical practice in the field of clinical mental health counseling were derived from this study. First, because certainty words (“know,” “right,” and “way”) were found within the top five most common words in the confrontation rupture corpus, it could be beneficial for supervisors and counselors to listen for certainty language in their session discourse to identify a potential rupture event. Second, counselors should be aware of passive communication (especially when they notice the client is repeatedly relying on this communication style), as passive communication “I don’t know,” “I just don’t know,” “it feels like maybe,” and “I guess... I mean” may indicate a client’s movement away from the counselor or some aspect of the counseling process (Safran & Muran, 2000).

A third implication suggests that supervisors and counselors should be aware of preposition use in counseling sessions. Preposition use may indicate a low empathy encounter (Perez-Rosas et al., 2017) which could hint at a rupture event or series of rupture events in the therapeutic alliance. A fourth implication relates to cognitive processing words as further research would help supervisors and counselors understand the role of cognitive discourse in rupture events that commonly take place in counseling sessions. This could indicate a confrontation rupture or withdrawal rupture depending on the context of the interjections used in a counseling segment.

Fifth, supervisors and counselors should be aware of the use of filler expressions such as “I just,” which create distance or space in conversation (Kharismawan, 2017) and may be an indication of a rupture event, as filler expressions were found in all three rupture corpuses. A

fifth implication concerns cognitive processing words including “think” and “know.” These cognitive processing tokens, which were frequently found in all three alliance rupture type corpora, may indicate that a discourse segment within a counseling session includes an alliance rupture event.

A sixth implication relates to the finding of the filler expressions “I just” and “I like” in the top five words of each of the respective corpuses as they may serve a distancing function in conversation (Kharismawan, 2017). Furthermore, the personal pronoun “I” has been shown to reveal a focus of attention on the speaker’s thoughts, feelings, and behaviors (Kacewicz et al., 2014). Both these findings are important for supervisors and counselors in identifying possible rupture events.

A seventh implication relates to the node word “like” and specifically to the simile “just like” which was commonly found in the mixed rupture corpora. This is important because supervisors and counselors should be aware that similes can be used in a confrontation rupture in a defensive manner, in a withdrawal rupture to deemphasize, and in a mixed rupture as a combination of defensiveness and dismissiveness (Roberts & Krenz, 1994).

Among the recommendations for future research, three came from this study. First, further research is needed regarding words that reflect certainty in the context of a confrontation alliance rupture event including which words reflect an event, the quantity of words that indicate a rupture, and whether this language threshold that correlates to a rupture event is related to the client, counselor, or both. Second, further research is needed for words that reflect passivity within the withdrawal rupture marker event. This tacit research could help supervisors and counselors understand which words, the number of words, and whether those words are present in the client’s or counselor’s discourse. Third, further research is needed regarding filler

statements such as “I just” because they commonly include personal pronouns that indicate that clients are being more self-referential. This increase in self-referential language may occur during the course of a challenging conversation in counseling. It is important for supervisors and counselors to understand the role that pronouns and filler words play in subtle and overt rupture events.

Summary of Manuscript 2

Manuscript 2 was a methodological pilot study that explored the linguistic processes among each of the rupture type subcorpuses using the LIWC program. A total of three research questions were designed for this pilot study. RQ1 was: What is the use rate of linguistic and psychological processes of rupture-infused psychotherapy by type and general psychotherapy? RQ2 was: Do linguistic and psychological processes differ by rupture type in rupture-infused psychotherapy? If so, how do they differ? RQ3 was: Does the use rate of linguistic processes in rupture-infused psychotherapy type differ from the use rate of these processes in general psychotherapy?

The following results and subsequent explanations must be taken with caution, as this manuscript represents a methodological pilot study with significant data related limitations. Regarding RQ1, which examined the use rate of linguistic and psychological processes for rupture infused psychotherapy by type and general psychotherapy, the results are best addressed in the discussions of the findings for RQ2 and RQ3. In terms of RQ2, the linguistic and psychological processes category differences among the rupture types (confirmed through post hoc analysis), there are two potential explanations each for the findings of “she/he” words and “certainty” words. First, studies have revealed that third-person pronouns have been correlated with the monitoring of self and being socially aware in conversations (Pennebaker et al., 2003).

This may be why she/he words were found to be more frequent in withdrawal and mixed ruptures compared to the confrontation rupture corpus, as a client or counselor may be covertly more self-conscious and have increased awareness of the relationship dynamics in the session. A second explanation is that third person pronoun use shows that the target of the speaker's discourse is on others (Kacewicz et al., 2014). This finding aligns with a withdrawal or mixed rupture event where the client or counselor may be more self-conscious and want to shift the focus onto the other party's words to take the attention off themselves and their discomfort.

Regarding the second finding, "certainty words," the first possible explanation for this result is that this language represents perceived power from a linguistic perspective by the speaker (Adkins & Brashers, 1995; Han & Lind, 2017; Hart & Childers, 2004) and their commitment to the truth (Holmes, 1982). The use of certainty words, which may communicate perceived power and commitment to the truth by the counselor or client, seems logical in the context of a confrontation rupture event where one of the two parties is trying to directly prove a point, disagree, or propose an alternative explanation. The second possible explanation for this finding is that research has shown that "certainty words" increase the persuasiveness of a message (Corely & Wedeking, 2014). This discovery matches what seems to take place in a confrontation rupture where either the client or counselor may be attempting to coerce the other party regarding their point of view or their perceived view of an issue, or they believe that the words or behavior of the other party are incorrect.

Concerning RQ3, linguistic and psychological processes that distinguished the rupture corpus from baseline counseling, there were two possible explanations for each of the results. First, regarding the less frequent "positive emotion words" finding, research has shown that these words have a stabilizing effect on conversation and the ability to shift the conversation away

from the individual speaking (Lyons et al., 2006). Both explanations for a lack of positive emotion words make intuitive sense in the context of an alliance rupture event, where participants could struggle with creating distance and stabilizing the conversation. Third, research has demonstrated that positive emotion words correlate with coping in social situations (Chung & Pennebaker, 2012), which could be diminished in the context of an alliance rupture event where social dynamics could be more difficult to manage.

Regarding the second finding of “discrepancy words,” an initial explanation could be that the process of therapy is inherently cognitive in nature or includes discrepancy words (Lee et al., 2011). Consequently, both the rupture infused corpus and the general psychotherapy corpus may have higher than usual discrepancy language (cognitive content) than other spoken discourse. Second, the lower number of discrepancy words (a subset of cognitive words) in the rupture-infused corpus could be explained by an ineffective moment in counseling. Ruptures have been defined as misalignments between the client and counselor (Safran & Muran, 2016), and in those parts of the therapy session the conversation may be less cognitive than in general psychotherapy or productive therapy where the counselor and client have an intact alignment. This justification aligns with studies that have shown that highly effective moments in therapy include greater proportion of cognitive insightful discourse (McCarthy et al., 2017).

Limitations

There are seven limitations to the obtained results. First, there was a limitation to the sample size. A larger sample size would enable a more in-depth exploration of the vocabulary related to each of the rupture types and would create possible experiments in several different areas. A larger sample size would also increase the generalizability of the findings to other alliance rupture data sets. Second, we did not target specific rupture events within counseling

sessions and instead chose to analyze discourse from a full clinical hour, which would include both rupture and non-rupture discourse. The findings may have varied significantly if we had chosen to target our analysis on specific rupture events within the mock counseling sessions and excluded the non-rupture discourse. Third, the pilot study did not account for other aspects of nonverbal communications (e.g., voice tone, facial expression, and prosody). Nonverbal communication may be a vital facet of rupture events. A fourth limitation is the nesting of the unit of analysis (i.e., rupture event segment) within a larger unit of analysis (i.e., an hour-long counseling session). Because an hour-long session likely had periods where the counselor and client were in tune, this may have impacted the validity of the results. Fifth, there were differences in vocabulary based on region, as the videos were mostly filmed in one part of the country, and this may limit the ability to generalize the findings. A sixth limitation is in regard to the identity of the counselors and clients (e.g., race, age, gender, and social class of the mock video participants). The counselors consisted of 10 older White males and two adult White females. The clients were nine adult White females and one adult White male. The narrow demographic range of study participants (regarding gender, race, age, and social class) is a significant limitation regarding the study. Power dynamics regarding gender, race, age, and social class likely had a significant impact on the verbal discourse of the counseling session. A final limitation to the study relates to construct validity. It is hard to ascertain whether this pilot study truly assessed rupture events or whether the study measured another construct (e.g., fight, flight, or freeze response). Despite these limitations, the pilot study was able to show the utility of the proposed research methodology in the context of identifying alliance rupture events counseling session discourse.

There are four implications for counseling practice from the obtained results (implications must be taken with caution, as this manuscript represents a methodological pilot study with significant data related limitations).

Implications and Recommendations

There are four implications for professional practice that come from the obtained results (implications must be considered with caution, as this manuscript represents a methodological pilot study with significant data related limitations). First, supervisors and counselors need to be aware of a decreased use of third-person pronouns (she/he), as this may indicate the speaker is aware of themselves, their relationship with the other counterpart (Pennebaker et al., 2003), or their desire to shift the conversation to another (Kacewicz et al., 2014), possibly indicating a withdrawal or mixed rupture. Second, it is important for supervisors and counselors to be aware of an increased use of certainty words, which could indicate a feeling of power by the speaker and commitment to certainty (Adkins & Brashers, 1995; Han & Lind, 2017; Hart & Childers, 2004; Holmes, 1982), or even persuasiveness (Corley & Wedeking, 2014), indicating a confrontation rupture event. Third, supervisors and counselors should be cognizant of a lack of positive emotion words, as it may indicate that the counselor or client is feeling less emotionally stable (Lyons et al., 2006), may be struggling with social coping, and be less likely to uphold the social norms of conversation (Chung & Pennebaker, 2012) which may signify a rupture event. Finally, supervisors and counselors should be aware of discrepancy words, as the lower number of these cognitive oriented words, could be explained by an ineffective moment in therapy and the presence of a rupture event.

Two recommendations for further research are of note. First, because the results show that the linguistic and psychological processes that underlie language between the three types of

alliance rupture types are distinct, researchers have an opportunity to further explore the discourse of the respective rupture events and also compare them to baseline counseling discourse. Particularly, it will be important for researchers to continue this line of inquiry in order to study each rupture type's (confrontation, withdrawal, and mixed) discourse and compare it to actual language used in counseling sessions. Second, expanding on the results of this study would allow researchers to further examine alliance ruptures but in a more granular manner through analyzing rupture marker events in counseling session segments.

Linkages Between Manuscript 1 and 2

The purpose of this section of the manuscript is to report the thematic links between manuscripts 1 and 2. Included in this section are both the dissimilarities and parallels that bind the methodological pilot studies together.

Similarities included that both methodological pilot studies used the similar corpora (manuscript 1 utilized mock counseling session transcripts with rupture events, and manuscript 2 used the mock transcripts adding a general baseline counseling transcript) and were analyzed through corpus linguistic software. However, the first manuscript used #Lancsbox 6.0 (Brezina et al., 2021), while the second manuscript used LIWC (Pennebaker et al., 2015c).

While both manuscripts attempted to analyze discourse that occurred during alliance rupture events within a counseling session, the methods for doing so were unrelated. In manuscript 1, the focus went beyond the significance of individual words and examined the collection of words that a target word kept. This analysis was conducted by employing the GraphColl feature within #Lancsbox 6.0. In manuscript 2 however, the linguistic properties (first-person singular, first-person plural, third-person singular, third-person plural), along with

psychological processes (certainty, negative emotions, anxiety, differentiation, discrepancy, sadness, causation, tentative, positive emotions, anger) were explored in LIWC.

The uniqueness of both pilot studies demonstrated the utility of this methodology to help further the understanding of the underlying linguistic processes of words that subtly occur during a counseling session alliance rupture event. Additionally, collocation graphs were generated using #Lancsbox and provided a visual representation of the strength and positioning of the identified words. Furthermore, through this amalgamation of methodological approaches a contribution was made to researchers who study alliance ruptures that frequently occur within the context of a counseling session.

Contribution to the Literature

The results of these two pilot studies contribute to the methodological knowledge base and can be used to help understand the underlying linguistic and psychological processes that occur during an alliance rupture event in a counseling session. These respective manuscripts utilized a unique corpus constructed from transcripts of mock counseling session vignettes (Muran et al., n.d.) created by the most prominent therapeutic alliance rupture researcher and were designed to highlight the three distinct types of rupture events. Additionally, a reference corpus, which represented baseline counseling, was created from three video recorded sessions of Carl Rogers, Fritz Pearls, and Albert Ellis work from the series *Three Approaches to Psychotherapy* (Shostrom, 1965).

Because the use of the corpus linguistics to examine alliance ruptures (during a counseling session) was mostly absent prior to this research, the findings contributed to the totality of the methodological knowledge base in several unique ways. For example, when applying this research method to our corpora, our pilot study results demonstrated that there was

more certainty or intentional language in confrontation rupture events, that there is more passive language in withdrawal ruptures, and that cognitive words were found to be more common in all withdrawal and mixed events. Regarding collocations, rupture events commonly had words that collocated most often with the first-person pronoun “I” and were used as filler expressions and may have been used to create space for the speaker in regard to the receiver. The finding related to the increased use of first-person pronouns may have also indicated the speaker’s focus on their thoughts and emotions (Kacewicz et al., 2014), which would make sense in the context of a confrontation rupture where one becomes more self-conscious. Another node word, “know,” which was frequently collocated with “you,” formed a common expression that represented universal understanding or general knowledge. This word combo may have represented a subtle withdrawal rupture as attempting to gain universal understanding can be used to disguise disagreement. Finally, the node word “like,” which was found in the mixed rupture corpus, was strongly associated with “just” and was often used as a simile. Additionally, the phrase “just like” was at times used in confrontation ruptures to create a direct clarification in a challenging manner. The phrase “just like” was also sometimes utilized in withdrawal ruptures to subtly deemphasize some aspect of the discourse. Finally, the phrase appeared during mixed rupture discourse to either clarify or deemphasize some aspect of the conversation (Roberts & Krenz, 1994).

The gap that previously existed in the methodological research on language relating to alliance rupture types (that occur during counseling) has narrowed as a result of these manuscripts. Specifically, the second pilot study found that when withdrawal and mixed ruptures are compared to confrontation ruptures, there is more third-person singular language. This is important because research has found this type of pronoun use has been associated with self-

monitoring and general social awareness in verbal discourse (Pennebaker et al., 2003). Interestingly, research has also found that third-person pronoun use has been implicated in a focus on the speaker's attention on another (Kacewicz et al., 2014). This makes intuitive sense in the context of a withdrawal or mixed rupture, as a client or counselor may be covertly focusing their attention on the other party and away from themselves because of discomfort, or because the client feels misaligned with the counselor and does not want to communicate this directly. Additionally, the second study found that certainty words were more common in the confrontation rupture corpus when compared to the withdrawal rupture corpus. This further supports the idea that because of the nature of rupture events (direct movement towards a counselor or an aspect of counseling in discontent), certainty language may increase within the verbal discourse of the client. Research has also found certainty words relating to perceived power from a linguistic perspective by the speaker (Adkins & Brashers, 1995; Han & Lind, 2017; Hart & Childers, 2004) and a speaker's commitment to the truth (Holmes, 1982). This seems logical in the context of a confrontation rupture event compared to a withdrawal event, where one of the two parties is trying to directly prove a point, disagree, or propose an alternative explanation. A final important finding is that research has shown that certainty words increase the persuasiveness of a message (Corely & Wedeking, 2014). This discovery seems to align with what takes place in a confrontation rupture event, where persuasiveness would be important in confronting a counselor or some aspect of counseling.

Another important finding (when comparing a rupture corpus to a baseline counseling corpus) was a lower occurrence of positive emotion words. Research has found that positive emotions words create a stabilizing effect on conversation and help individuals maintain self-image and cope in social situations (Lyons et al., 2006). It makes logical sense that this

emotionally centering discourse may be less prevalent in a rupture event. A final finding of the second study (comparing a rupture corpus to a baseline counseling) was less frequent discrepancy words. This finding, is important because a lower quantity of these cognitive linked words, could be caused by an unproductive counseling conversation and the presence of a rupture event. It is note that these findings should be taken with caution as this pilot study was primarily intended to show the utility of corpus linguistic research methodology when applied to therapeutic alliance rupture event discourse and there are significant limitations to the findings.

Regarding alliance rupture events that occur during counseling sessions, these respective methodological pilot studies provide both answers and provoke additional questions.

Collectively, they demonstrate how this methodological approach to research can go beyond subjective coding, which has been the standard for discourse analysis (regarding rupture events during a counseling session), to the study of the underlying linguistic and psychological features of language that occur during a client/counselor misalignment. The importance of analyzing verbal discourse in mental health counseling has continued to grow and specifically in the field of alliance rupture research in counseling and therapy. Alliance ruptures are common occurrences in counseling sessions, and working through those ruptures has been shown again and again to be important to successful outcomes (Flückiger, 2018). These pilot studies have contributed to the methodology of therapeutic alliance research within the field of counseling and provide a more nuanced understanding of the underlying linguistic and psychological processes of alliance rupture events.

Future Research Agenda

This methodological research creates many avenues for future investigation. The study of language and its application to therapy and specifically the counseling alliance is a new line of

inquiry in the field of mental health. A future study could be conducted utilizing a similar methodology and data set used for this dissertation but instead focus on the underlying semantic qualities of the mock counseling transcripts. This clinical study would add additional context and understanding to the underlying features of the three rupture types and potentially bolster clinicians', supervisors', and educators' understanding of when a disruption in the counseling alliance occurs. Such a study could be conducted by novice researchers and would require few resources. Currently, there are few studies employing corpus linguistics as it relates to alliance ruptures; therefore, there are vast possibilities in this line of inquiry.

A second clinical study that would logically emerge from the present inquiry is a study using the results of this research but at a larger scale. This research could utilize one of the large, published therapy session manuscript repositories and attempt to discover the trends that may exist in rupture events related to specific factors that take place during the course of therapy. The potential research could examine the frequency and type of ruptures based on the therapist's theoretical orientation (CBT, psychodynamic, humanist, etc.); the client's or counselor's gender, age, or culture; or the client's presenting issue (depression, anxiety, obsessive compulsive disorder, etc.). This line of inquiry would further the ability of counselors to identify ruptures and ultimately improve client outcomes. I would also like to continue to examine collocations, or words that frequently appear in tandem with a node word, or word of interest, as that would create yet another way to identify these elusive events that occur in therapy.

I would also like to expand my line of research by adding an empirically tested therapeutic alliance measuring tool and a qualitative research component to potentiate and validate this dissertation work. This potential mixed methods study would utilize actual counseling sessions and analyze them in two ways. First, by a team of coders who would use the

Eubanks et al.'s (2019) 3RS Resolution Rating System Manual to identify alliance rupture markers by type. A second team would use a phenomenological approach to identify the specific phenomena taking place in the counseling sessions, as perceived by counselors and clients. This study would not only allow for a more accurate understanding of the linguistic and psycholinguistic features behind rupture events but would create a more precise algorithm to identify these important occurrences.

Through the dissertation process, I have learned a great deal about both the therapeutic alliance, ruptures and repairs, and the structure of the dissertation process. Specifically, I have learned the introduction, methods, results, and discussion (IMRAD) organizational structure to research and writing, which will be invaluable as a future researcher. What I have gleaned with regards to the therapeutic alliance and specifically alliance ruptures will vastly improve my abilities as a clinical supervisor and will inform my advanced clinical practice. Because of the dissertation experience I will be able to recognize alliance ruptures more precisely when they occur, alert my supervisees when they appear in their sessions, and be able to tend to these events myself when they occur in my counseling work. With regards to the IMRAD organizational structure, I will be able to readily replicate my study to further my line of research. Moreover, I will have the ability to teach this structured approach to research to my future advisees as a counselor educator and help increase the knowledge base of the counseling profession.

The corpus linguistics research methodology has also been impactful in the way I deliver clinical services as a counselor and how I will conduct research as a future social scientist. Regarding clinical work, I now know the power of language in a counseling session and specifically how it relates to the therapeutic alliance. Furthermore, I will continue to develop

insight and awareness regarding alliance rupture discourse and its underlying linguistic and psycholinguistic processes through my research. This knowledge will help me be even further attuned to what is being enacted in the counseling session and potentiate my supervision and teaching skills as a counselor educator. When thinking about my future research, this methodology is one that I understand, can interpret, and can replicate, which will help me publish innovative manuscripts, furthering the understanding of the underlying linguistic and psychological features of a counseling session alliance rupture event.

References

- Adkins, M., & Brashers, D. E. (1995). The power of language in computer-mediated groups. *Management Communication Quarterly*, 8(3), 289-322. <https://doi.org/10.1177%2F0893318995008003002>
- Althoff, T., Clark, K., & Leskovec, J. (2016). Large-scale analysis of counseling conversations: An application of natural language processing to mental health. *Transactions of the Association for Computational Linguistics*, 4, 463-476. https://doi.org/10.1162/tiuo90_a_00111
- Anthony, L. (2017). AntFileConverter (Version 1.2. 1) [software]. https://doi.org/10.1162/tacl_a_00111
- Brezina, V., Weill-Tessier, P., & McEnery, A. (2021). #LancsBox v. 6.x. [software]. <http://corpora.lancs.ac.uk/lancsbox/>
- Chung, C. K., & Pennebaker, J. W. (2012). Linguistic inquiry and word count (LIWC): pronounced “Luke,”... and other useful facts. In *Applied natural language processing: Identification, investigation and resolution* (pp. 206-229). <https://doi.org/10.4018/978-1-60960-741-8.ch012>
- Corley, P. C., & Wedeking, J. (2014). The (dis) advantage of certainty: The importance of certainty in language. *Law & Society Review*, 48(1), 35-62. <https://doi.org/10.1111/lasr.12058>
- Eubanks, C. F., Lubitz, J., Muran, J. C., & Safran, J. D. (2019). Rupture resolution rating system (3RS): Development and validation. *Psychotherapy Research*, 29(3), 306-319. <https://doi.org/10.1080/10503307.2018.1552034>
- Han, S. H., & Lind, C. J. (2017). Putting powerfulness in its place: a study on discursive style in public discussion and its impact. *Argumentation and Advocacy*, 53(3), 216-233. <https://doi.org/10.1080/00028533.2017.1337332>
- Hart, R. P., & Childers, J. P. (2004). Verbal certainty in American politics: An overview and extension. *Presidential Studies Quarterly*, 34(3), 516-535. <https://doi.org/10.1111/j.1741-5705.2004.00210.x>
- Holmes, J. (1986). Functions of you know in women's and men's speech. *Language in Society*, 15(1), 1-21.
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun use reflects standings in social hierarchies. *Journal of Language and Social Psychology*, 33(2), 125-143. <https://doi.org/10.1177%2F0261927X13502654>

- Lyons, E. J., Mehl, M. R., & Pennebaker, J. W. (2006). Pro-anorexics and recovering anorexics differ in their linguistic Internet self-presentation. *Journal of Psychosomatic Research*, *60*(3), 253–256. <https://doi:10.1016/j.jpsychores.2005.07.017>
- McCarthy, K. L., Caputi, P., & Grenyer, B. F. (2017). Significant change events in psychodynamic psychotherapy: Is cognition or emotion more important?. *Psychology and Psychotherapy: Theory, Research and Practice*, *90*(3), 377-388. <https://doi.org/10.1111/papt.12116>
- Muran, J. C., & Safran, J. D. (2016). Therapeutic alliance ruptures. In A. Wenzel (Ed.), *Sage encyclopedia of abnormal & clinical psychology* (pp. 3,512-3,514). Sage Publications.
- Newhill, C. E., Safran, J. D., & Muran, J. C. (2003). *Negotiating the therapeutic alliance: A relational treatment guide*. Guilford Press.
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2015c). *Linguistic Inquiry and Word Count: LIWC2015*. (Version 1.6) [Computer Software]. Pennebaker Conglomerates. <https://liwc.wpengine.com>
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, *54*(1), 547-577. <https://doi.org/10.1146/annurev.psych.54.101601.145041>
- Pérez-Rosas, V., Mihalcea, R., Resnicow, K., Singh, S., An, L., Goggin, K. J., & Catley, D. (2017, April). Predicting counselor behaviors in motivational interviewing encounters. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers* (pp. 1,128-1,137). Association for Computational Linguistics. <https://www.aclweb.org/anthology/E17-1106.pdf>
- Roberts, R. M., & Kreuz, R. J. (1994). Why do people use figurative language? *Psychological Science*, *5*(3), 159-163. <https://doi.org/10.1111%2Fj.1467-9280.1994.tb00653.x>
- Shostrom, E. L. (Director). (1965). *Three approaches to psychotherapy* [Film]. Santa Ana, CA: Psychological Films.

Bibliography

- Adkins, M., & Brashers, D. E. (1995). The power of language in computer-mediated groups. *Management Communication Quarterly*, 8(3), 289-322.
<https://doi.org/10.1177%2F0893318995008003002>
- Althoff, T., Clark, K., & Leskovec, J. (2016). Large-scale analysis of counseling conversations: An application of natural language processing to mental health. *Transactions of the Association for Computational Linguistics*, 4, 463-476.
- Anthony, L. (2017). AntFileConverter (Version 1.2. 1) [software].
https://doi.org/10.1162/tacl_a_00111
- Arntz, A., Hawke, L. D., Bamelis, L., Spinhoven, P., & Molendijk, M. L. (2012). Changes in natural language use as an indicator of psychotherapeutic change in personality disorders. *Behaviour Research and Therapy*, 50(3), 191-202.
<https://eprints.lancs.ac.uk/id/eprint/51045>
- Biber, D. E. (2012). Corpus-based and corpus-driven analyses of language variation and use. In B. Heine & H. Narrog (Eds.), *The Oxford handbook of linguistic analysis* (pp. 193-224). Oxford University Press.
- Bird, S., Klein, E., & Loper, E. (2009). *Natural language processing with Python: Analyzing text with the natural language toolkit*. O'Reilly Media.
- Bjekić, J., Lazarević, L. B., Živanović, M., & Knežević, G. (2014). Psychometric evaluation of the Serbian dictionary for automatic text analysis-LIWCser. *Psihologija*, 47(1), 5-32.
<https://doi.org/10.2298/PSI1401005B>
- Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research and Practice*, 16, 252-260.
<https://psycnet.apa.org/doi/10.1037/h0085885>
- Brezina, V. (2018). *Statistics in corpus linguistics: A practical guide*. Cambridge University Press. <https://doi.org/10.1080/0726860022000013166>
- Brezina, V., Weill-Tessier, P., & McEnery, A. (2021). #LancsBox v. 6.0. [software].
<http://corpora.lancs.ac.uk/lancsbox>
- Burridge, K., & Florey, M. (2002). 'Yeah-no he's a good kid': A discourse analysis of yeah-no in Australian English. *Australian Journal of Linguistics*, 22(2), 149-171.
- Chen, J., Qiu, L., & Ho, M. H. R. (2020). A meta-analysis of linguistic markers of extraversion: Positive emotion and social process words. *Journal of Research in Personality*, 89, Article 104035. <https://doi.org/10.1016/j.jrp.2020.104035>

- Chen, R., Atzil-Slonim, D., Bar-Kalifa, E., Hasson-Ohayon, I., & Refaeli, E. (2018). Therapists' recognition of alliance ruptures as a moderator of change in alliance and symptoms. *Psychotherapy Research, 28*(4), 560-570. <https://doi.org/10.1080/10503307.2016.1227104>
- Chen, W., Zhang, M., Zhang, Y., & Duan, X. (2016). Exploiting meta features for dependency parsing and part-of-speech tagging. *Artificial Intelligence, 230*(C), 173-191. <https://doi.org/10.1016/j.artint.2015.09.002>
- Chow, D. L., Miller, S. D., Seidel, J. A., Kane, R. T., Thornton, J. A., & Andrews, W. P. (2015). The role of deliberate practice in the development of highly effective psychotherapists. *Psychotherapy, 52*(3), 337-345. <https://doi.org/10.1037/pst0000015>
- Chung, C. K., & Pennebaker, J. W. (2012). Linguistic inquiry and word count (LIWC): pronounced "Luke,"... and other useful facts. In *Applied natural language processing: Identification, investigation and resolution* (pp. 206-229). IGI Global.
- Cohn, M. A., Mehl, M. R., & Pennebaker, J. W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science, 15*(10), 687-693. <https://doi.org/10.1111%2Fj.0956-7976.2004.00741.x>
- Corley, P. C., & Wedeking, J. (2014). The (dis) advantage of certainty: The importance of certainty in language. *Law & Society Review, 48*(1), 35-62. <https://doi.org/10.1111/lasr.12058>
- Decter-Frain, A., & Frimer, J. A. (2016). Impressive words: Linguistic predictors of public approval of the US Congress. *Frontiers in Psychology, 7*, Article 240. <https://doi.org/10.3389/fpsyg.2016.00240>
- Ellington, L., Kelly, K. M., Reblin, M., Latimer, S., & Roter, D. (2011). Communication in genetic counseling: cognitive and emotional processing. *Health Communication, 26*(7), 667-675. <https://doi.org/10.1080/10410236.2011.561921>
- Eubanks, C. F., Lubitz, J., Muran, J. C., & Safran, J. D. (2019). Rupture resolution rating system (3RS): Development and validation. *Psychotherapy Research, 29*(3), 306-319. <https://doi.org/10.1080/10503307.2018.1552034>
- Eubanks, C. F., Muran, J. C., & Safran, J. D. (2015). *Rupture resolution rating system (3RS): Manual* [Unpublished manuscript]. Mount Sinai-Beth Israel Medical Center.
- Eubanks, C. F., Muran, J. C., & Safran, J. D. (2018). Alliance rupture repair: A meta-analysis. *Psychotherapy, 55*(4), 508-519. <https://doi.org/10.1037/pst0000185>
- Farooq, R. (2017). A framework for identifying research gap in social sciences: Evidence from the past. *IUP Journal of Management Research, 16*(4), 66-75. <https://www.iupindia.in/705/ijmr.asp>

- Fast, E., & Horvitz, E. (2016). *Identifying dogmatism in social media: Signals and models*. <https://arxiv.org/abs/1609.00425v1>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analysis using G*Power 3.1: Test for correlation and regression analysis. *Behavioral Research Methods*, 41(4), 1149-1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Flückiger, C., Del Re, A. C., Wampold, B. E., & Horvath, A. O. (2018). The alliance in adult psychotherapy: A meta-analytic synthesis. *Psychotherapy*, 55(4), 316-340. <https://doi.org/10.5167/uzh-157613>
- Frumkin, M. R., Piccirillo, M. L., Beck, E. D., Grossman, J. T., & Rodebaugh, T. L. (2021). Feasibility and utility of idiographic models in the clinic: A pilot study. *Psychotherapy Research*, 31(4), 520–534. <https://doi.org/10.1080/10503307.2020.1805133>
- Gablasova, D., Brezina, V., & McEnery, T. (2017). Collocations in corpus-based language learning research: Identifying, comparing, and interpreting the evidence. *Language Learning*, 67(S1), 155-179. <https://doi.org/10.1111/lang.12225>
- Gablasova, D., Brezina, V., McEnery, T., & Boyd, E. (2017). Epistemic stance in spoken L2 English: The effect of task and speaker style. *Applied Linguistics*, 38(5), 613-637. <https://doi.org/10.1093/applin/amv055>
- Garner, J., Crossley, S., & Kyle, K. (2020). Beginning and intermediate L2 writer's use of N-grams: an association measures study. *International Review of Applied Linguistics in Language Teaching*, 58(1), 51-74. <https://doi.org/10.1515/iral-2017-0089>
- Gill, A. J., French, R. M., Gergle, D., & Oberlander, J. (2008, November). The language of emotion in short blog texts. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work* (pp. 299-302). Association for Computing Machinery. <https://doi.org/10.1145/1460563.1460612>
- Gries, S. T. (2020). On classification trees and random forests in corpus linguistics: Some words of caution and suggestions for improvement. *Corpus Linguistics and Linguistic Theory*, 16(3), 617-647. <https://doi.org/10.1515/cllt-2018-0078>
- Gunsch, M. A., Brownlow, S., Haynes, S. E., & Mabe, Z. (2000). Differential forms linguistic content of various of political advertising. *Journal of Broadcasting & Electronic Media*, 44(1), 27-42. https://doi.org/10.1207/s15506878jobem4401_3
- Halfon, S., Fişek, G., & Çavdar, A. (2017). An empirical study of verb use as indicator of emotional access in therapeutic discourse. *Psychoanalytic Psychology*, 34(1), 35-39. <https://psycnet.apa.org/doi/10.1037/pap0000081>
- Han, S. H., & Lind, C. J. (2017). Putting powerfulness in its place: a study on discursive style in public discussion and its impact. *Argumentation and Advocacy*, 53(3), 216-233. <https://doi.org/10.1080/00028533.2017.1337332>

- Hart, R. P., & Childers, J. P. (2004). Verbal certainty in American politics: An overview and extension. *Presidential Studies Quarterly*, 34(3), 516-535. <https://doi.org/10.1111/j.1741-5705.2004.00210.x>
- Hartung, F., Burke, M., Hagoort, P., & Willems, R. M. (2016). Taking perspective: Personal pronouns affect experiential aspects of literary reading. *PloS One*, 11(5). <https://doi.org/10.1371/journal.pone.0154732>
- Holmes, J. (1982). Expressing doubt and certainty in English. *RELC Journal*, 13(2), 9-28.
- Holmes, J. (1986). Functions of you know in women's and men's speech. *Language in Society*, 15(1), 1-21. <https://doi.org/10.1515/iral-2017-0089>
- Huang, C.-L., Chung, C. K., Hui, N., Lin, Y.-C., Seih, Y.-T., Lam, B. C. P., Chen, W.-C., Bond, M. H., & Pennebaker, J. W. (2012). The development of the Chinese linguistic inquiry and word count dictionary. *Chinese Journal of Psychology*, 54(2), 185–201. https://www.researchgate.net/publication/303135549_Development_of_the_Chinese_linguistic_inquiry_and_word_count_dictionary
- Kacewicz, E., Pennebaker, J. W., Davis, M., Jeon, M., & Graesser, A. C. (2014). Pronoun use reflects standings in social hierarchies. *Journal of Language and Social Psychology*, 33(2), 125-143. <https://doi.org/10.1177%2F0261927X13502654>
- Kahn, J. H., Tobin, R. M., Massey, A. E., & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *American Journal of Psychology*, 120(2), 263-286. <https://doi.org/10.2307/20445398>
- Kaplan, D. M., Tarvydas, V. M., & Gladding, S. T. (2014). 20/20: A vision for the future of counseling: The new consensus definition of counseling. *Journal of Counseling & Development*, 92(3), 366-372. <https://doi.org/10.1002/j.1556-6676.2014.00164.x>
- Kharismawan, P. Y. (2017). The types and the functions of the fillers used in Barack Obama's speeches. *International Journal of Humanity Studies*, 1(1), 111-119. <https://e-journal.usd.ac.id/index.php/IJHS/article/view/680/539>
- Kyle, K., Crossley, S., & Berger, C. (2018). The tool for the automatic analysis of lexical sophistication (TAALES): Version 2.0. *Behavior Research Methods*, 50(3), 1030-1046. <https://doi.org/10.3758/s13428-017-0924-4>
- Liu, D., & Lei, L. (2018). The appeal to political sentiment: An analysis of Donald Trump's and Hillary Clinton's speech themes and discourse strategies in the 2016 US presidential election. *Discourse, Context & Media*, 25, 143-152. <https://doi.org/10.1016/j.dcm.2018.05.001>

- Lyons, E. J., Mehl, M. R., & Pennebaker, J. W. (2006). Pro-anorexics and recovering anorexics differ in their linguistic Internet self-presentation. *Journal of Psychosomatic Research*, *60*(3), 253–256. <https://doi:10.1016/j.jpsychores.2005.07.017>
- McCarthy, K. L., Caputi, P., & Grenyer, B. F. (2017). Significant change events in psychodynamic psychotherapy: Is cognition or emotion more important?. *Psychology and Psychotherapy: Theory, Research and Practice*, *90*(3), 377-388. <https://doi.org/10.1111/papt.12116>
- McDonald, R. P. (2014). *Factor analysis and related methods*. Psychology Press.
- McEnery, T. (2004). *Swearing in English: Bad language, purity and power from 1586 to the present*. Routledge.
- McEnery, T., & Hardie, A. (2011). *Corpus linguistics: Method, theory and practice*. Cambridge University Press.
- McQuarrie, A. D. R., and Tsai, C.-L., (1998). *Regression and time series model selection*. World Scientific.
- Moons, W. G., Spoor, J. R., Kalomiris, A. E., & Rizk, M. K. (2013). Certainty broadcasts risk preferences: Verbal and nonverbal cues to risk-taking. *Journal of Nonverbal Behavior*, *37*(2), 79-89. <https://doi.org/10.1007/s10919-013-0146-0>
- Muran, J. C., Eubanks, C. F., & Samstag L.W. (n.d.). *Clinical tools*. <https://www.therapeutic-alliance.org/clinical-tools.html>
- Muran, J. C., & Safran, J. D. (2016). Therapeutic alliance ruptures. In A. E. Wenzel (Ed.), *Sage encyclopedia of abnormal and clinical psychology* (pp. 3,511–3,514). Sage.
- Newhill, C. E., Safran, J. D., & Muran, J. C. (2003). *Negotiating the therapeutic alliance: A relational treatment guide*. Guilford Press. <https://doi.org/10.1002/pits.22019>
- Newman, D. S., Guiney, M. C., & Barrett, C. A. (2017). Language in consultation: The effect of affect and verb tense. *Psychology in the Schools*, *54*(6), 624-639. <https://doi.org/10.1002/pits.22019>
- Newman, M. L., Pennebaker, J. W., Berry, D. S., & Richards, J. M. (2003). Lying words: Predicting deception from linguistic styles. *Personality and Social Psychology Bulletin*, *29*(5), 665-675. <https://doi.org/10.1177%2F0146167203029005010>
- Paquot, M. (2005). *EAP vocabulary in learner corpora: A cross-linguistic perspective* [Paper presentation]. *Phraseology 2005: The Many Faces of Phraseology*, Louvain-la-Neuve, Belgium.

- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, 8(3), 162-166. <https://doi.org/10.1111%2Fj.1467-9280.1997.tb00403.x>
- Pennebaker, J. W. (2011). The secret life of pronouns. *New Scientist*, 211(2,828), 42-45. [https://doi.org/10.1016/S0262-4079\(11\)62167-2](https://doi.org/10.1016/S0262-4079(11)62167-2)
- Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015a). *LIWC 2015 operator's manual*. Pennebaker Conglomerates.
- Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015b). *The development and psychometric properties of LIWC2015*. <http://hdl.handle.net/2152/31333>
- Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2015c). *Linguistic Inquiry and Word Count: LIWC2015*. (Version 1.6) [Computer software]. Pennebaker Conglomerates. <https://liwc.wpengine.com>
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, 54(1), 547-577. <https://doi.org/10.1146/annurev.psych.54.101601.145041>
- Pennebaker, J. W., Rim, B., & Paez, D. (Eds.). (2013). *Collective memory of political events: Social psychological perspectives*. Psychology Press.
- Pérez-Rosas, V., Mihalcea, R., Resnicow, K., Singh, S., An, L., Goggin, K. J., & Catley, D. (2017, April). Predicting counselor behaviors in motivational interviewing encounters. In *Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics: Volume 1, Long Papers* (pp. 1,128-1,137). Association for Computational Linguistics. <https://www.aclweb.org/anthology/E17-1106.pdf>
- Project MATCH Research Group. (1998). Therapist effects in three treatments for alcohol problems. *Psychotherapy Research*, 8(4), 455-474.
- Rayson, P., & Garside, R. (2000, October). Comparing corpora using frequency profiling. In *Proceedings of the workshop on Comparing corpora-Volume 9* (pp. 1-6). Association for Computational Linguistics. <http://dx.doi.org/10.3115/1117729.1117730>
- Roberts, R. M., & Kreuz, R. J. (1994). Why do people use figurative language? *Psychological Science*, 5(3), 159-163. <https://doi.org/10.1111%2Fj.1467-9280.1994.tb00653.x>
- Rosnow, R. L., & Rosenthal, R. (2003). Effect sizes for experimenting psychologists. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 57(3), 221-237. <https://psycnet.apa.org/doi/10.1037/h0087427>
- Safran, J. D., & Muran, J. C. (2000). Resolving therapeutic alliance ruptures: Diversity and integration. *Journal of Clinical Psychology*, 56(2), 233-243.

- Safran, J. D., Muran, J. C., Demaria, A., Boutwell, C., Eubanks-Carter, C., & Winston, A. (2014). Investigating the impact of alliance-focused training on interpersonal process and therapists' capacity for experiential reflection. *Psychotherapy Research*, 24(3), 269-285. <https://doi.org/10.1080/10503307.2013.874054>
- Safran, J. D., Muran, J. C., & Eubanks-Carter, C. (2011). Repairing alliance ruptures. *Psychotherapy*, 48(1), 80-87. <https://doi.org/10.1037/a0022140>
- Sexton, J. B., & Helmreich, R. L. (2000). Analyzing cockpit communications: The links between language, performance, and workload. *Human Performance in Extreme Environments*, 5(1), 63-68. <https://doi.org/10.7771/2327-2937.1007>
- Shostrom, E. L. (Director). (1965). *Three approaches to psychotherapy* [Film]. Santa Ana, CA: Psychological Films.
- Simmons, R. A., Gordon, P. C., & Chambless, D. L. (2005). Pronouns in marital interaction. *Psychological Science*, 16, 932-936. <https://doi.org/10.1111%2Fj.1467-9280.2005.01639.x>
- Smith-Keiling, B. L., & Hyun, H. I. F. (2019). Applying a computer-assisted tool for semantic analysis of writing: Uses for STEM and ELL. *Journal of Microbiology & Biology Education*, 20(1). <https://doi.org/10.1128/jmbe.v20i1.1709>
- Sonnenschein, A. R., Hofmann, S. G., Ziegelmayr, T., & Lutz, W. (2018). Linguistic analysis of patients with mood and anxiety disorders during cognitive behavioral therapy. *Cognitive Behaviour Therapy*, 47(4), 315-327. <https://doi.org/10.1080/16506073.2017.1419505>
- Staples, S., Egbert, J., Biber, D., & Conrad, S. (2015). Register variation a corpus approach. In D. Tannen, H. E. Hamilton, & D. Schiffrin. (Eds.), *The Handbook of Discourse Analysis*, (2nd ed., pp. 505-525.). Wiley. <https://doi.org/10.1002/9781118584194.ch24>
- Sullivan, F. R., Kapur, M., Madden, S., & Shipe, S. (2015). Exploring the role of 'gendered' discourse styles in online science discussions. *International Journal of Science Education*, 37(3), 484-504. <https://doi.org/10.1080/09500693.2014.994113>
- Tadajewski, M., & Hower, P. (2011). Intellectual contributions and gap-spotting. *Journal of Marketing Management*, 27(5-6), 449-457. <https://doi.org/10.1080/0267257X.2011.562364>
- Tausczik, Y. R., & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24-54. <https://doi.org/10.1177%2F0261927X09351676>
- Vaughn, L. A. (2018). Contents of hopes and duties: A linguistic analysis. *Frontiers in Psychology*, 9, Article 757. <https://doi.org/10.3389/fpsyg.2018.00757>

- Waters, T. E., Steele, R. D., Roisman, G. I., Haydon, K. C., & Booth-LaForce, C. (2016). A linguistic inquiry and word count analysis of the Adult Attachment Interview in two large corpora. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences du Comportement*, 48(1), 78-88. <https://dx.doi.org/10.1037%2Fcbcs0000035>
- Weisser, M. (2017). Corpora. In A. Barron, Y. Gu, & G. Steen (Eds.), *The Routledge handbook of pragmatics* (pp. 41-52). Routledge.
- Wilson, A. (2013). Embracing Bayes factors for key item analysis in corpus linguistics. In M. Bieswanger & A. Koll-Stobbe (Eds.), *New approaches to the study of linguistic variability* (pp. 3–11). Peter Lang. <https://eprints.lancs.ac.uk/id/eprint/51045>
- Wolohan, J. T., Hiraga, M., Mukherjee, A., Sayyed, Z. A., & Millard, M. (2018, August). Detecting linguistic traces of depression in topic-restricted text: Attending to self-stigmatized depression with NLP. In *Proceedings of the First International Workshop on Language Cognition and Computational Models* (pp. 11-21). Association for Computational Linguistics. <https://www.aclweb.org/anthology/W18-4102.pdf>
- Young, R. A., Domene, J. F., Valach, L., & Socholotiuk, K. (2021). Exploring human action in counseling psychology: The action-project research method. *Journal of Counseling Psychology*, 68(3), 331–343. <https://doi.org/10.1037/cou0000533>
- Zilcha-Mano, S., Muran, J. C., Hungr, C., Eubanks, C. F., Safran, J. D., & Winston, A. (2016). The relationship between alliance and outcome: Analysis of a two-person perspective on alliance and session outcome. *Journal of Consulting and Clinical Psychology*, 84(6), 484-496. <https://doi.org/10.1037/ccp0000058>

Appendices

Appendix A: IRB Disposition



Oregon State University
Research Office

Human Research Protection Program
& Institutional Review Board
B308 Kerr Administration Bldg, Corvallis OR 97331
(541) 737-8008
IRB@oregonstate.edu
<http://research.oregonstate.edu/irb>

Date of Notification	November 05, 2019	Study Number	IRB-2019-0392
Notification Type	Oversight Determination		
Principal Investigator	Cass Dykeman		
Study Team Members	Jacques, Justin G		
Study Title	A corpus linguistic analysis on counseling video mock vignettes examining ruptures within the counseling relationship.		
Funding Source	None	Cayuse Number	N/A

DETERMINATION: RESEARCH, BUT NO HUMAN SUBJECTS

It has been determined that your project, as submitted, does meet the definition of research but **does not** involve human subjects under the regulations set forth by the Department of Health and Human Services 45 CFR 46.

Additional review is not required for this study.

Please do not include HRPP contact information on any of your study materials.

Note that amendments to this project may impact this determination. Please submit a new request if there are changes (e.g., funding, data sources, access to individual identifiers, interaction with research subjects, etc.).

The federal definitions and guidance used to make this determination may be found at the following link: [Human Subject](#)

Appendix B: Student Biography

Justin Jacques is a Licensed Mental Health Counselor in Washington, D.C. He received his Bachelor of Arts degree in Health Promotion with a focus on wellness from the University of Northern Iowa. Justin completed his Master of Arts degree in Counseling Psychology and Education from the University of Colorado at Denver and an Education Specialist degree in counseling from The George Washington University. He also has a certificate in Learning and Organizational Change from Northwestern University. Justin is pursuing his doctorate in Counselor Education and Supervision at Oregon State University. His professional experiences include clinical work in residential treatment, employee assistance programs, peer diversion programs, college counseling centers, and working with Ph.D. students in science and medicine. His research interests focus on athletes, veterans, the therapeutic alliance, and the use of technology in counseling.