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Investigating defense interpretation depth using lag sequential analysis

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Summary

Objective: This study investigated the association between therapist interventions and patient defensive functioning in *low-alliance* and *high-alliance* sessions over the course of short-term dynamic psychotherapy (STDP) (*n*= 22).

Method: Lag sequential analysis was used to determine if there were predictable sequences of therapist interventions and patient defenses in low-alliance and high alliance sessions and whether these two sequences differ.

Results: The results of this study suggest that sequences between alliance session groups are different. Specifically, defense interpretation depth unfolds in a predictable fashion during a low-alliance session while supportive strategies appear more predictable during high-alliance sessions.

Conclusions: Defense interpretation depth is a clinical construct that warrants further study in psychotherapy research.

defense mechanisms, interpretation, therapeutic alliance, therapist technique, psychodynamic therapy

In general, the use of interpretations has been associated with positive outcome in psychodynamic psychotherapy [1-2]. However, the relationship between interpretation and outcome may be related to a number of factors, including patient characteristics [3-4] and the therapeutic alliance [5].

Psychotherapy studies often fail to account for the interactive manner in which psychotherapy unfolds and analyze the psychotherapy process from a static perspective. Oftentimes, interpretations are summed up or averaged across entire treatments in an attempt to answer the question "How much is needed?" By doing so, these studies neglect to examine how the interaction of patient and therapist in psychotherapy is a shifting and non-linear process.

Several studies [6-8] have been drawn to lag sequential analysis in an attempt to capture a more accurate view of how the use of therapeutic techniques in psychotherapy actually transpires. Using lag analysis, Milbrath and colleagues [7] found that therapists structured their interventions around patient level of subjective distress and functioning. They also found greater proportions of defense interpretations used with patients who showed better overall functioning.

In a pilot study, Terraz et al. [8] concluded that therapists often have one goal in mind when using interventions with patients. The one notable

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exception was the finding that alternating supportive and interpretive interventions was associated with improving alliances. The authors suggest that therapists should exercise caution when making interpretations in dynamic psychotherapy. However, this study did not consider the content of the interpretation as a potential factor in the analysis. It would be reasonable to assume that not simply dosage effects, as pointed out by Terraz et al. [8], but also the content of interpretations (e.g. depth) could have an effect on both the alliance and patient defenses; not only too many interpretations but also interpretations that are addressing material that is too far outside the patient's level of awareness should be examined.

Drapeau and colleagues [6] found that both therapists' use of interventions and patients' use of defenses could be segmented into predictable chains of sequences. However, they failed to find an interaction between the two. This may be due in part to the fact that the study examined brief psychodynamic interventions (BPI; 4 sessions) and thus important aspects of the patient–therapist interaction had yet to be established in the process. This is further confounded by the fact that only session one of the BPI was investigated. In addition, Drapeau et al. [6] did not consider the state of the therapeutic alliance for the sessions included in the analysis, which may explain why they failed to find an interaction between therapist interpretation and patient defenses. Also, no study to date has considered the depth of defense interpretation in a lag analysis. Defense interpretation depth has been identified as a potential important avenue of enquiry for psychodynamic psychotherapy research [9]; it refers to the degree to which a therapist's interpretation addresses unconscious material that is assumed to be deeper in consciousness. It was first proposed by Fenichel [10] as the "surface to depth" rule and later described in greater detail by Greensen [11] in his examination of therapeutic technique in psychodynamic psychotherapy.

In an attempt to address some of the limitations mentioned above, this study used lag sequential analysis to study short-term dynamic psychotherapy (STDP). In contrast to previous studies that have used this methodology, the present study incorporated therapeutic technique, alliance and defense mechanisms into the analysis and examined whether there are: 1) sequences of therapist interventions in low-alliance sessions and sequences of therapist interventions in high-alliance sessions and whether these two differ; 2) sequences of patient defenses that lead to sequences of therapist interventions in low-alliance sessions and sequences of therapist interventions in high-alliance sessions and whether these two differ; and finally, 3) sequences of therapist interventions that lead to sequences of patient defenses in low-alliance sessions and sequences of therapist interventions that lead to sequences of patient defenses in high-alliance sessions and whether these two sequences differ.

METHOD

Participants

The present naturally selected sample consists of 22 students who received one to two sessions per week of manualized [12] STDP at the University of Lausanne, Switzerland (UNIL-EPFL), ranging in duration from 6 months to 1 year. This particular form of treatment has already been in use for many years in Lausanne.

Participants were at least 18 years old and had been referred to the UNIL-EPFL outpatient clinic for psychiatric or psychotherapeutic assessments. They received an information document and were given a written informed consent form to read and fill out. All participants presented with an anxiety disorder, depressive disorder or personality disorder that satisfied DSM-IV-TR criteria [13]. Participants who showed signs of organic or delirium disorder, substantial alcohol or drug dependence, schizophrenia or other psychotic disorders, bipolar disorders, intellectual disability and antisocial personality disorder were excluded from the sample. Diagnoses were made by an independent clinician on the basis of a formalized DSM-IV-TR semi-structured interview.

The sample for this study was drawn from a larger sample of psychotherapy process research from the University of Lausanne, Switzerland. The average age of participants for the sample was between 19 and 30 years of age (M=24.36, SD=3.02). Participants received on

average 31.55 sessions (range 8–44 sessions) of STDP.

The present STDP sample addresses some limitations from previous studies that have investigated therapeutic technique and defense mechanisms. Most significantly, Ambresin et al [14], Despland et al [15] and Drapeau et al [6] have all examined an ultra-brief (4 sessions) version of psychodynamic psychotherapy, which is not necessarily an accurate representation of the usual manner in which dynamic psychotherapy is conducted.

PSYCHOTHERAPISTS

The psychotherapists recruited for the current study were nine experienced STDP clinicians (5 male and 4 female) who have on average more than 10 years of experience with the model. Each psychotherapist saw on average 2.44 participants each. These psychotherapists are also responsible for supervising trainees at the Center for Psychoanalytic Psychotherapy (CEPP) at the UNIL-EPFL in Lausanne.

INSTRUMENTS

Measures included in the study were designed to assess the therapeutic alliance, therapist interventions and defense mechanisms.

Alliance

Alliance strength for individual sessions was rated using the Helping Alliance Questionnaire (HAq-II) [16]. The HA-q shows acceptable levels of convergent validity with other self-rated measures of alliance in use today in research [17]. Two such measures, the Working Alliance Inventory (r=0.74) and California Psychotherapy Alliance Scale (r=0.74) have been shown to be correlated with the HA-q.

The alliance was assessed at every session. Each participant's individual alliance score was used to determine what constituted a low-alliance or a high-alliance session. For example, a high-alliance session was defined as a HA-q score that was 1.5 standard deviations above the average HA-q score for that individual participant. Likewise, a HA-q score of 1.5 standard deviations below an individual participant's mean alliance score was used as a cut-off for a low-alliance session. Using this method allowed for each participant's alliance score to set the defining criteria for identifying either a low-alliance or a high-alliance session. Only sessions identified as either a low-alliance or a high-alliance session were included in the present analysis. In total, there were 19 low-alliance and 22 high-alliance sessions for the current sample of 22 participants. The discrepancy between these numbers is due to the fact that it was not possible to transcribe 3 low-alliance sessions because of low audio quality.

Therapist interventions

Therapist in-session interventions were captured using the Psychodynamic Intervention Rating Scale (PIRS) [18]. The PIRS categorizes 10 types of interventions divided into two broad categories: interpretive interventions (defense interpretations, transference interpretations) and supportive interventions (clarifications, reflections, associations, support strategies, questions, contractual arrangements, work-enhancing strategies, acknowledgments). Defense and transference interpretations are further classified into "levels" or depths of interpretation ranging from one to five. This organization of interpretations by depth was conceptualized by Greensen [11] originally as a way to guide clinical work. Level 1 interpretations focus on some defensive or transference process that the patient unconsciously engages in during therapy. Levels 2, 3 and 4 are organized around the concept of whether or not the therapist mentions a motive (implicitly or explicitly) for the process that has been highlighted by the therapist for analysis. The final level of depth for an interpretation is level 5 when using the PIRS. In these cases, the rater identifies that the interpretation includes not only the process and motive used by the patient, but also the historical origins of this process from the patient's life.

Raters were trained to classify the verbal utterances of therapists during psychotherapy sessions by means of verbatim transcripts according to the interventions described above. If the

rater decides that an interpretative intervention was used by the therapist, then he or she must also note the depth level of the interpretation on the scale of 1–5. Approximately 20% of the sample was selected to calculate interrater reliability using intra-class correlation coefficients (ICCs). Disagreements were resolved by means of a consensus meeting, where both raters compared their ratings of the same transcript. Pre-consensus interrater reliability between raters is expected to be above 0.70 prior to the consensus meeting. If a rater falls below that level of reliability, retraining on the PIRS may be necessary.

Reliability for the PIRS of the larger sample from which the current sample is drawn has been published elsewhere [19]; the mean intra-class coefficient (ICC 2, 1) for all PIRS categories was 0.77 (range=0.65–0.94).

DEFENSE MECHANISMS

The observer-rated Defense Mechanism Rating Scales (DMRS) [20] was used to rate defense mechanisms for the sample. The scale requires trained raters to rate 30 defenses based on a seven-level hierarchy (see Table 1) and compute an overall defensive functioning (ODF) score. Each defense level consists of anywhere from three to eight individual defense mechanisms. The hierarchy of defense levels is grounded in empirical research [21-22] that conceptualizes defenses mechanisms existing on a continuum from adaptive/mature to maladaptive/immature. Numerous psychotherapy studies have used the DMRS and the reliability of the measure is well documented in the literature [23-25].

Table 1. The Hierarchy of Defenses

	Level	Defense Mechanism
⇧ Mature	Level 7 – Adaptive	Self-assertion, Self-observation, Affiliation, Altruism, Sublimation, Suppression, Anticipation, Humour
	Level 6 – Obsessional	Undoing, Isolation of Affect, Intellectualization
	Level 5 – Neurotic	Reaction Formation, Displacement, Dissociation, Repression
	Level 4 – Minor-Image Distortion (Narcissistic)	Idealization of Self/Other, Devaluation of Self/Other, Omnipotence
	Level 3 – Disavowal	Denial, Projection, Rationalization, Autistic fantasy
Immature	Level 2 – Major-Image Distortion (Borderline)	Splitting of Self/Other, Projective Identification
	Level 1 – Action	Acting Out, Passive-Aggression, Help-Rejecting Complaining (HRC)

Raters were trained to segment and rate defense mechanisms from the verbal utterances of participants' transcribed psychotherapy sessions according to the method outlined by Perry [20] in the DMRS manual. The DMRS is scored in two parts. The first score, ODF, is calculated by taking the weighted mean of each defense mechanism scored by level. ODF is a global measure of overall defense maturity for the participant for a particular session. For example, an ODF=5.5 would indicate that for a given psychotherapy session, the participant's average defense falls at the midpoint of level 5 (neurotic) and level 6 (obsessional). The second score for the DMRS involves calculating the proportion of defenses that constitute each level for the participant's session. Proportional scores provide a more detailed picture of which defense levels are employed most often by participants. Approximately 20% of all transcripts used in the study were selected for interrater reliability analysis. This was calculated in order to determine level of agreement for different raters. Intra-Class Coefficients (ICC 2, 1) for the DMRS of the current sample varied between 0.81 and 0.95 for defense levels [26].

In order to conduct a lag sequential analysis, it was necessary to combine DMRS defense levels into 3 categories: immature (levels 1–4: total of 12 defense mechanisms), mid-level (levels 5–6: 7 defense mechanism), mature (level 7: 8 defense mechanisms). Dividing the defense levels in this manner maintains the empirically validated hierarchy of defenses most commonly used in the

literature on which the DMRS is based [22,27]. A number of other defense measures also use this organization of defenses (e.g. Defense Style Questionnaire; DSQ) [28]. Defenses in this hierarchy are grouped together based on general functionality. For example, levels 1 through 4 are considered to be the least mature or maladaptive defenses, whereas level 7 defenses are considered to be signs of psychological maturity and show the ability to resolve intrapsychic conflict.

DATA ANALYSIS

Lag sequential analysis is a statistical procedure that aims to identify patterns of organized behaviors from a large set of categorized behaviors. These patterns are divided into chains, where the maximum length is predetermined by a series of non-random conditional probabilities. With this analysis, a particular behavior is chosen as a criterion or target event (e.g. therapist comment), then transitional probabilities are computed for each subsequent behavior [29]. The behavior that occurs after the target event is referred to as Lag 1, the second as Lag 2, and so on. These transitional probabilities are then tested for significance using *z*-scores. *Z*-scores above 1.65 represent a trend, while those above 1.96 represent statistical significance at the 0.05 level. Every time the specified behavior of interest occurs, the probabilities are used to determine the likelihood that we can predict a subsequent behavior. The equation K^2 multiplied by 4 (or $K2 \times 4$) is typically used to determine the total number of lags that can appropriately be investigated given the amount of data available, where *K* refers to the total number of codes [29]. In the first part of the analysis where therapist interventions only were examined, *K* is equal to seven: three codes representing the three levels of interpretation depth (D1, D3, D5) and four codes representing supportive strategies (reflection, support strategies, associations, clarifications). In the second and third part of the analysis, *K* is equal to ten: the seven codes representing therapist interventions plus three codes for patients' defensive functioning (immature, mid-level, mature).

RESULTS

The first part of the analysis sought to determine if there were sequences of therapist interventions in low-alliance sessions and sequences of therapist interventions in high-alliance sessions and whether these two differ using the PIRS to categorize interventions. In total, 19 low-alliance sessions were examined and 22 high-alliance sessions were examined.

LOW-ALLIANCE SESSIONS

Results revealed patterns of interventions used by therapists in these sessions. The first sequence, depicted in Figure 1, showed that when

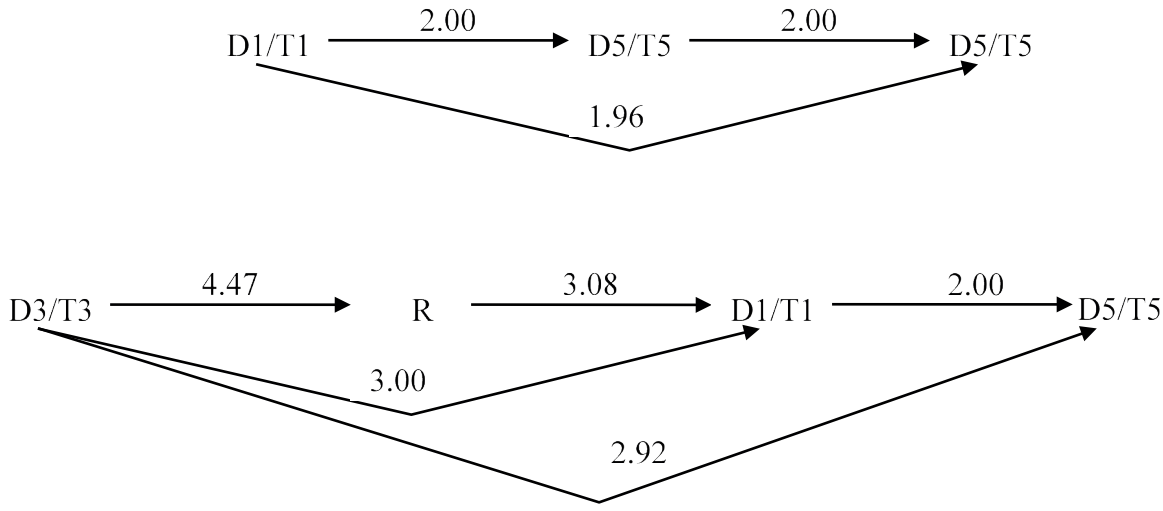

Figure 1. Lags for Therapist Interventions, Low-alliance Sessions

therapists make defense interpretations at level 1 (D1/T1) they would then follow up with a series of two deeper defense or transference interpretations (D5/T5) in low-alliance sessions. The second sequences showed a somewhat similar pattern albeit in a less linear fashion. Therapists would begin with a mid-level interpretation (D3/T3) before using a non-interpretive technique aimed at reflecting the emotional content of the patient's words back to them (reflection). Next, the therapist would make a low-level interpretation (D1/T1) before following it up with a deeper level interpretation (D5/T5). In both sequences the lag chains end with the deepest level of defense interpretation. The significant lags are shown below, along with the *z*-scores for each connection in the sequence.

The second and third lag analyses incorporated therapist interventions as well as patient defense mechanisms, depicted in Figure 2. In the second part of the analysis, four sequences were found for low-alliance sessions. In total, five sequences were found. In the first sequence, an immature defense (LD) was followed by a therapist support strategy (SS) followed by a mid-level defense interpretation (D3/T3). However, this lag represents a trend (z>1.65) and is not statistically significant.

A second sequence started with a mid-level defense (MD) followed by two therapist associations (Ass) is shown in Figure 2.

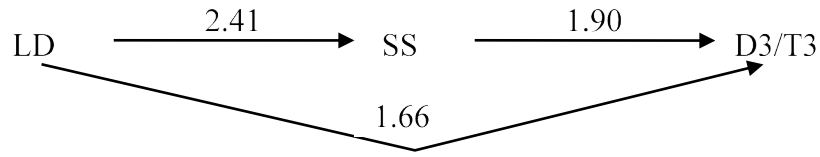

Figure 2. Lags for Patient Defense and Therapist Interventions, Low-alliance Sessions

The third, fourth and fifth sequence all started with a mature-level defense (HD). These sequences are statistical trends. In the third sequence, the mature-level defense (HD) was followed by a mid-level defense (MD) and then followed by a deep defense interpretation (D5/T5). The fifth sequence started with a mature-level (HD) defense followed by another mature-level defense (HD), followed by a therapist reflection (R). Finally, the fifth sequence again started with a mature-level defense (HD) followed by a mid-level defense interpretation (D3/T3), followed by

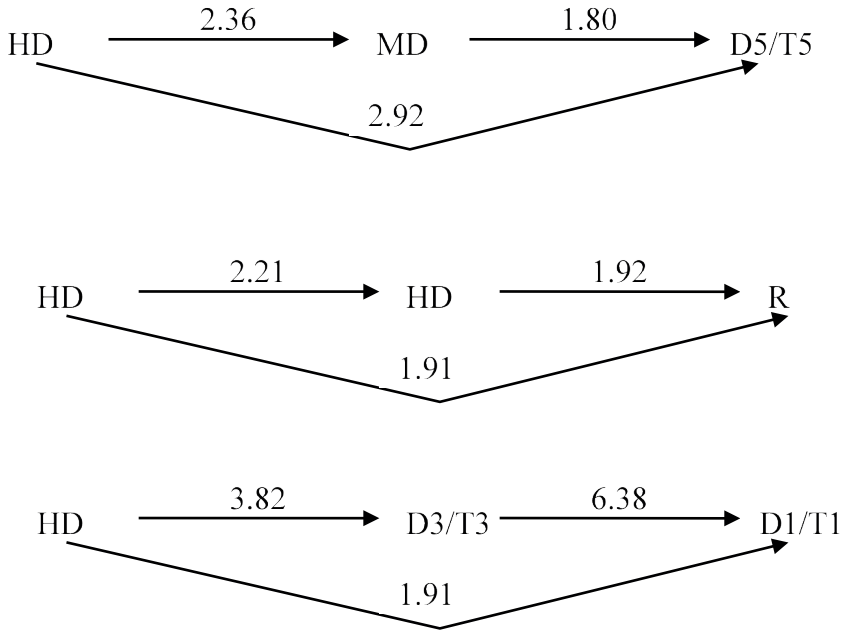

Figure 3. Lags for Patient defenses and Therapist Interventions, Low-alliance sessions

a low-level defense interpretation (D1/T1). These three sequences are depicted in Figure 3.

The third lag analysis also incorporated therapist interventions and defense mechanisms. No sequences were observed for therapist interventions that led to patient defense for low-alliance sessions.

HIGH-ALLIANCE SESSIONS

The lags described above for the low-alliance sessions were not found in the high-alliance sessions examined. The sequences of supportive interventions found for high-alliance sessions are shown in Figure 4. This sequence represents a statistical trend. Therapists would start with a support strategy aimed at providing support to the patient and persist for up to four lags. Although a number of significant smaller chains (Lag 1)

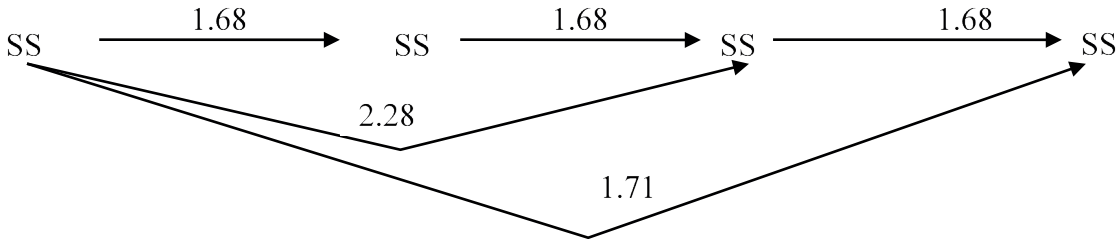

Figure 4. Lags for Therapist Interventions, High-alliance Sessions

were found in the high-alliance sessions that linked different supportive strategies together, no replicable sequences past Lag 1 were found for different sessions and thus will not be reported.

As was the case for low-alliance sessions, high-alliance sessions were examined for patient defense that led to therapist interventions. In total three sequences were found (shown in Figure 5). All three began with immature-level defense (LD). The first sequence continued with two therapist support strategies (SS). The second sequence continued with a mature-level defense (HD), followed

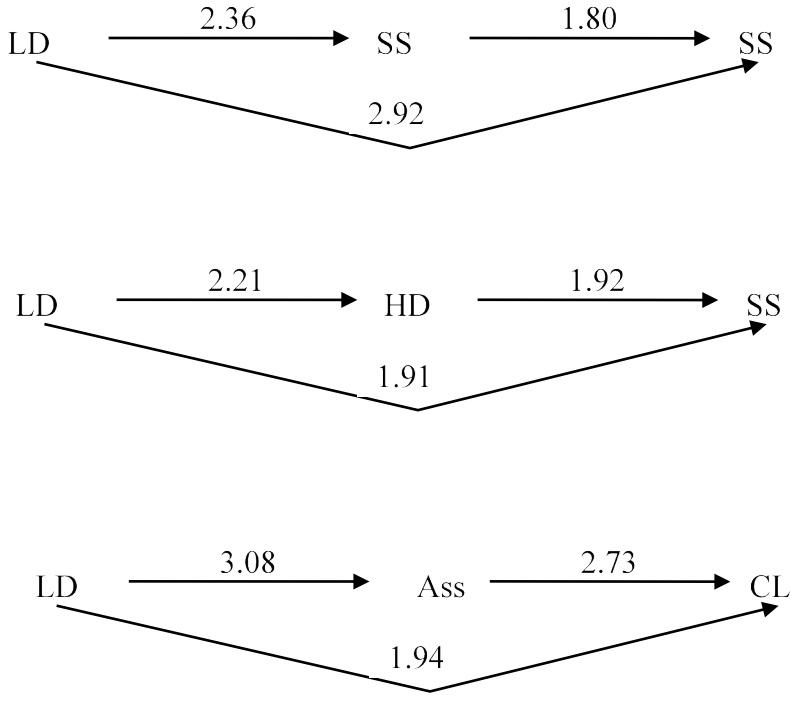

Figure 5. Lags for Patient Defenses and Therapist Interventions, High-alliance Sessions

by a therapist support strategy (SS). The final sequence was significant to Lag 3 and followed the original immature defense (LD) with a therapist association (Ass), followed by a clarification (CL).

No sequences were observed for therapist interventions that led to patient defense for low-alliance sessions.

DISCUSSION

It is important to note that a number of the sequences reported were not statistically significant but rather represent a statistical trend. As a result, the following conclusions should be interpreted with caution. In the interest of illuminating the importance of defense interpretation depth as a variable of interest, however, they will be included in the discussion section of this study.

Differences were found when comparing the interventions of therapists for low-alliance and high-alliance sessions in this sample of patients seen in short-term (40 sessions) dynamic psychotherapy at the University of Lausanne. These results are consistent with previous studies by Drapeau et al. [6] and Terraz et al. [8]. Drapeau et al. [6] found that therapists tend to structure their interventions in psychodynamic psychotherapy in a predictable manner. For example, both the present study and Drapeau et al. [6] found that therapists tend to use a number of support strategies in sequence. However, the present study found this sequence in the high-alliance sessions and not in low-alliance sessions. This is most likely due to the fact that the Drapeau et al. [6] study did not specifically examine low-alliance and high-alliance sessions. Thus, it appears that different sequences account for the behavior of therapists during a low-alliance session. In high-alliance sessions, the alliance is by definition stronger and may therefore be associated with the use of more supportive sequences than is the case when the alliance is in a weaker or disrupted state.

One interesting finding to emerge from the data suggests that therapists make progressively deeper interpretations within a low-alliance session in a predictable fashion. However, it is not possible to determine from these data whether or not these sequences are the cause or the effect of the low-alliance. Nonetheless, the results indicate that therapists using deeper interpretations should exercise caution, especially if they have reason to suspect that the therapeutic alliance is not in an optimal state. Deeper defense interpretations may represent a "high-risk/high-gain" therapeutic challenge in that the potential to point something out to the patient is evident as the low-alliance is unfolding in the session. On the other hand, it may alienate the patient and make them feel judged or criticized. It also may raise issues regarding timing of the interpretation as a means of understanding whether or not the benefits outweigh the gains in a particular therapeutic interaction.

Also consistent with previous investigations was the finding that therapists tend to have one goal in mind when intervening in-session [8]. Sequences for therapist interventions showed an interpretive end in mind with respect to low-alliance sessions and a supportive one in the high-alliance sessions. It would be premature to conclude that support is associated with high-alliance and interpretation with low-alliance as that does not accurately represent the data, but perhaps the idea of having one "deep interpretation" goal in mind (or reaching the D5/T5 level of interpretation) is problematic. The present study did not find any evidence to support Terraz et al.'s [8] finding that alternating support and interpretation was associated with improving alliances. There are two possible reasons for this. First, it is possible that since Terraz et al. [8] did not examine the low-alliance and high-alliance cycle but rather overall alliance score that these findings did not emerge. Second, it is possible that therapists depart from this pattern when the alliance is in trouble into a more linear way of intervening, where they interpret difficulties in the therapeutic relationship and use support to get the relationship back into a more stable position. This is speculative at the current time but future studies could potentially target this notion.

Contrary to what Drapeau et al. [6] found, the current investigation found sequences of defenses that led to therapist interventions, providing evidence for our second hypothesis. This finding is unique because it suggests that patterns of interaction in a therapeutic dyad differ when the added consideration of the therapeutic alliance

is considered. That is, low-alliance sessions and high-alliance sessions showed differing sequences of interactions when the sequences began with patient defense mechanisms. Interestingly, the opposite was not true, and no sequences were found for therapist interventions that led to patient defenses. It is possible that psychotherapists are reacting to patient defense mechanisms and intervening accordingly, whereas patients may not be paying as close attention to the interventions of their psychotherapists.

Beginning with low-alliance sessions, it seems as though therapists are using a combination of support and interpretation with all three levels of defense mechanisms (immature, mid-level and mature defenses). Consistent with what was observed when therapist interventions only were examined, patterns involving the use of defense interpretations were present only in low-alliance sessions and not in high-alliance sessions. Thus, even though similar overall defensive functioning was observed between the two session groups, it appears that therapists differ in the way they deal with these defenses technically. For instance, a therapist appears more likely to interpret a defense-like denial if there is a therapeutic low-alliance, whereas the same therapist may use a support strategy if that defense is used in a high-alliance session.

No evidence was found to support the third hypothesis, or, in other words, no lags were found for therapist interventions that predicted patient defenses for either low-alliance or high-alliance sessions. This result is somewhat surprising given that lag chains were found for the other two analyses. One potential explanation for this could be that patients are not reacting to therapist interventions on a moment-by-moment basis; this would not have been detected by the lag methodology. Patient reactions to therapist interventions could possibly be seen in more global measures, such as alliance ratings or attitudes toward their therapist and therapy. Given that lag only examines the moment-to-moment unfolding of psychotherapy, these more global aspects may be unmeasurable by lag analysis.

Studies that use lag methodology are susceptible to statistical power issues and the current study also suffers from this limitation. The number of sessions used in the analysis was limited due to the fact that only participants who experienced low-alliance and high-alliance sessions were included. While this can be seen as simply a result of the fact that a highly specialized therapeutic phenomenon was examined (therapeutic low-alliance and defense mechanisms), by the same token it also reduces the overall statistical power of the dataset by limiting the number of usable psychotherapy sessions. Furthermore, since a number of sequences found were statistical trends, more statistical power would shed light on whether or not these trends become significant or remain at the trend level.

Another limitation to note is that although not directly investigated, individual psychotherapist effects may have played a role in the findings. Namely, some psychotherapists may have more predictable patterns of therapeutic interaction than others thereby, influencing the degree to which patterns in the form of lags are represented. This was not investigated in the current study.

Future research could use lag analysis to examine how psychotherapist–patient dyads behave over the course of psychotherapy and elucidate whether predictable patterns emerge within a dyad that either lead to or cause a disruption in the alliance. In order to do this, larger studies must be conducted. Specifically, it would be important to determine whether the interpretation of defense mechanisms is a fruitful avenue of therapeutic investigation, both in the clinical and in the empirical sense.

CONCLUSIONS

The study suggests that defense interpretation depth is a valuable avenue of investigation for psychodynamic psychotherapy. Findings indicate that therapists make progressively "deeper" interpretations of patient defense mechanisms during low-alliance sessions, whereas supportive strategies were associated with high-alliance sessions. Examining the moment-to-moment unfolding of psychotherapy provided a different vantage point from which to observe therapeutic action and highlights the role played by micro-process variables in psychotherapy research.

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