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ALLIANCE RUPTURES AND EMBODIED AROUSAL IN PSYCHODYNAMIC PSYCHOTHERAPY: AN EXPLORATORY STUDY

Anna Mylona & Evrinomy Avdi
Aristotle University of Thessaloniki, Greece

Abstract: This exploratory study aimed to deepen our understanding of relational and embodied processes implicated in psychotherapy, by examining the association of alliance ruptures with therapeutic dyad’s autonomic arousal during psychotherapy sessions. A central assumption of the study was that the therapeutic alliance is a core and dynamic aspect of the therapy process, shaped by the mutual influence of therapist and client on both verbal/explicit and embodied/implicit levels. The research material consisted of 12 video-recorded sessions drawn from seven psychodynamic therapy cases; it included data regarding the activation of the autonomic nervous system, as reflected in the Absolute Stress Vector, an index derived from heart-rate measurements, and ruptures in the therapeutic alliance, as coded by the Rupture Resolution Rating System. A multilevel model (MLM) was applied to explore possible relationships between autonomic arousal and the specific type of rupture (no rupture, withdrawal, confrontation, mixed). The MLM showed that clients displayed higher autonomic arousal during periods of mixed ruptures compared to periods of no rupture, of confrontation and withdrawal rupture; and lower arousal during episodes of confrontation ruptures as compared to periods of no rupture. Based on this exploratory study, mixed ruptures seem to reflect a distinct pattern of disaffiliation in the therapeutic relationship, and which merits further investigation in relation to its contribution to therapy process.

Keywords: Alliance ruptures, Autonomic nervous system, Embodied arousal, Psychodynamic psychotherapy

Address: Anna Mylona, School of Psychology, Aristotle University of Thessaloniki, 541 24 Thessaloniki, Greece.
E-mail: annamylona@psy.auth.gr

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INTRODUCTION

A key aspect of the process of psychotherapy, which has consistently been shown to be a robust predictor of the therapeutic outcome, is the therapeutic or working alliance (Fluckiger et al., 2018). The therapeutic alliance is a transtheoretical concept, conceptualized in terms of Bordin’s (1979) tripartite definition as consisting of agreement on the goals and tasks of treatment, and the development of an affective bond in the therapeutic dyad. The therapeutic alliance has been studied extensively in relation to its association with therapy outcome, whereas less is known about the moment-to-moment interactional processes that are implicated in building, negotiating, and repairing the therapeutic alliance in everyday clinical practice (Mellado et al., 2017). This study aimed to further our understanding of the clinical manifestation of alliance ruptures in psychodynamic psychotherapy and examine these in relation to embodied aspects of the interaction. The role of implicit, nonverbal processes in therapeutic change is increasingly recognized in contemporary psychotherapy theory and research (Bruschweiler-Stern et al., 2002); this is an assumption that we espouse, and for this reason we examined therapeutic interaction multimodally, namely in both verbal and nonverbal terms. Next, we present a review of the contemporary research on the processes of alliance rupture and repair in therapy, which consists of a clinically relevant relational process factor, followed by an outline of the emerging research paradigm of embodiment in psychotherapy that highlights clinically relevant affective and interpersonal processes.

Research on ruptures and repairs in the therapeutic alliance

Following the first period of empirical research on the therapeutic alliance, which investigated the relationship between the therapeutic alliance and the outcome of psychotherapy, the so-called ‘second-generation’ alliance research (Safran et al., 2011) aims to examine the processes implicated in the formation and negotiation of the therapeutic alliance (henceforth alliance) in the moment-by-moment interaction, and to identify factors affecting these processes. Safran and Muran (2000) proposed a reconceptualization of the alliance as a ‘dynamic process of intersubjective negotiation’, rather than being stable once it has been established. There is evidence that the quality of the alliance fluctuates over the course of therapy, in sequences of rupture and repair; such fluctuations and their management have been considered potentially beneficial for therapy outcome (Eubanks et al., 2018). Indeed, studies examining the developmental trajectory of the alliance over the course of therapy suggest that a fluctuating pattern of alliance or a V-shaped rapid alliance-repair pattern is associated with greater improvement and symptom reduction compared to stable and linear growth alliance pattern (Kivlghan & Shaughnessy, 2000; Stiles et al., 2004; Strauss et al., 2006). In this literature, alliance ruptures are defined in terms of strains or breakdown in the collaboration between client and therapist and/or of a deterioration in the quality of
relatedness. It has been argued that ruptures occur when therapist and client become unwittingly involved in cycles of interpersonal communication that reflect the clients’ underlying dysfunctional interpersonal schemas (Safran & Muran, 2000). Ruptures are categorized as either withdrawal ruptures, where the client moves away from the therapist or disengages from their emotions or some aspect of therapy, or confrontation ruptures, where the client moves against the therapist expressing directly concerns about the therapy progress, or therapy itself; finally, mixed ruptures entail episodes that contain aspects of both withdrawal and confrontation. Alliance rupture resolutions take place when therapeutic collaboration recovers, and the therapeutic dyad returns to the work of therapy with a strong affective bond. Rupture resolutions are considered to take place primarily through the therapist’s attempt to attend to the rupture experience, to facilitate exploration of avoidance and expression of the client’s underlying wish and/or need (Safran & Muran, 2000).

There is evidence that alliance ruptures are common clinical phenomena (Eubanks-Carter et al., 2010), and reported prevalence varies depending on the method used for their identification. Using post-session questionnaires, clients report alliance ruptures occurring in 19% - 42% of sessions, whilst therapists report ruptures in 43% - 56% of sessions (Eames & Roth, 2000; Sommerfeld et al., 2008). Indirect self-report of ruptures, calculated through observed fluctuations in alliance measures, suggest that rupture-and-repair sequences range from 21.5% - 56% of treatments (Stiles et al., 2004; Strauss et al., 2006). On the other hand, studies that employ observer-based methods report significantly higher prevalence, with ruptures manifesting in 77% - 100% of sessions (Eubanks et al., 2018). Drawing on the above, it seems that clients tend to underreport ruptures as compared to therapists, and that observer-based methods show greater sensitivity in the identification of ruptures as compared to both indirect (Coutinho, Ribeiro, Sousa, & Safran, 2014) and direct self-report measures (Sommerfeld et al., 2008), with the latter being more prone to social desirability bias and, also, possibly affected by reduced insight regarding ruptures.

The most widely used observer-based coding system for the identification of alliance ruptures and resolution attempts is The Rupture Resolution Rating System (3RS) developed by Eubanks-Carter, Muran, and Safran (2015), with good to excellent interrater reliability (Eubanks et al., 2019). In addition to its sensitivity to identifying ruptures, the 3RS enables the examination of the moment-to-moment quality of alliance and provides rich information regarding the relational and interactional processes in the therapeutic relationship. To date, there is a relatively small number of studies that use the 3RS to study alliance processes in naturalistic settings and findings from these studies are mixed. Studies investigating the trajectory of ruptures over the course of therapy suggest a non-linear pattern, whereby ruptures tend to occur in phases or in single peak sessions (Gersh et al., 2017; Schenk et al., 2019). In relation to rupture type, withdrawal ruptures seem to occur more frequently than confrontation ruptures (Schenk et al., 2019). Furthermore, early sessions have been found to entail more withdrawal ruptures, while later sessions by more confrontation ruptures (Gersh et al., 2017).
Findings regarding the association between rupture and outcome are mixed. Early treatment ruptures seem to be associated with poorer outcomes (Gersh et al., 2017). Confrontation ruptures were found to predict a sudden symptom increase in clients with anxiety and depressive disorders (Ehrlich & Lutz, 2015), appear to have higher impact on the alliance (Schenk et al., 2019) and their frequency is more predictive of dropout than withdrawal ruptures (Coutinho, Ribeiro, Fernandes, et al., 2014; Eubanks et al., 2019). Qualitative studies suggest that confrontation ruptures can have a strong negative impact on the therapeutic relationship, as both therapists and clients were found to report more intense negative feelings, including anger, reject and disappointment by clients; guilt and a sense of incompetence by therapists (Coutinho et al., 2011). Withdrawal ruptures, on the other hand, have been found to occur more frequently in unrecovered, as compared to recovered, clients with borderline personality disorder (Boritz et al., 2018). Finally, there is evidence that inadequate rupture resolution is predictive of dropout (Eubanks et al., 2019).

In summing the above, to date, research on alliance rupture and repair processes is promising but still developing and findings are mixed. Further research focusing on the relational and embodied processes taking place in the therapeutic encounter could deepen our understanding of clinical process.

**Embodiment in psychotherapy**

This study is part of a recent trend in psychotherapy research that focuses on the *embodied level*, in line with the so-called affective and corporeal turn in psychology and psychotherapy (Willis & Cromby, 2020). In this context, several contemporary studies examine social and clinical interactions in relation to underlying psychophysiological processes of participants, as indexed by concurrent, continuous measures of the autonomic nervous system (ANS) (Palumbo et al., 2017). The ANS functions largely below the level of conscious awareness and consists of two complementary branches working in synergy: the Sympathetic Nervous System (SNS), the ‘fight-or-flight’ system that prepares the organism to take action in states of emergency, and the Parasympathetic Nervous System (PNS), described as the ‘rest-and-digest’ system with restorative functions. The ANS activation is assessed by psychophysiological measures of cardiac (Heart Rate-HR, Heart Rate Variability-HRV), electrodermal (EDA) and respiratory activation. These measures reflect sympathetic and parasympathetic activity and are considered descriptors of affective arousal and self-regulation processes. EDA reflects sympathetic activation and is generally considered a measure of arousal and stress, whereas cardiac measures (HR-HRV) are related to both sympathetic and parasympathetic activity and are thought to reflect complex, socio-emotional processes (Oliveira-Silva & Goncalves, 2011) related with psychological functioning, such as affect-regulation, anxiety, depression (Appelhans & Luecken, 2006; Ode et al., 2010).

There is evidence that a variety of emotions (e.g., joy, anger, fear) are accompanied by increased autonomic activity regardless of the valence of affect (Kreibig, 2010). ANS
activation is of interest to psychotherapy as it represents a physiological arousal component of affective responses. Next, we briefly present empirical evidence on autonomic arousal in naturalistic clinical settings.

Studies of ANS activation in actual therapy sessions, although limited, highlight the relevance of embodied arousal for significant semantic and affective moments of in-session process. Del Piccolo and Finset (2018) in their review of studies investigating clients’ autonomic activity during psychotherapeutic interaction suggest that client’s arousal level is related to the intensity of emotional expression (positive-negative), with an emphasis on negative emotions, as well as to ambivalent and confused emotions. In one of the earliest psychophysiological studies in naturalistic clinical settings, Di Mascio, Boyd, and Greenblatt (1957) found that during sessions where the client showed more tension, therapeutic dyad’s heart rate tended to be higher. Other studies found associations between heightened autonomic arousal in therapists and clients with periods of negative and conflictual in-session affective interactions (Stanek et al., 1973). In more recent studies, increased autonomic arousal has been found to be associated with identity blaming between members of couples in couple therapy (Päävinen et al., 2016), while participants’ intense autonomic activity was reported when painful topics were discussed in therapy, as well as when the clients’ talk was mirrored by the therapists (Seikkula et al., 2015). Laitila et al. (2019) reported that therapists’ autonomic arousal is associated with therapeutic activities, whereas the clients’ arousal with orientation toward the future and change.

Similarly, a small number of studies have investigated psychophysiological responses in social interactions and suggest that embodied responses, as reflected in ANS activation, are associated with affective, affiliative, emotional engagement and self-construction processes. For example, increased autonomic activity was found to be associated with self-construction and identity negotiation processes in conversation (Lyons & Cromby, 2010). In another study, verbal and nonverbal displays of affiliation decreased the storyteller’s but increased the recipient’s level of autonomic arousal (Peräkylä et al., 2015). Furthermore, listening to an ambivalent story, increased the recipients’ autonomic activity; this observation was thought to reflect difficulties in affiliating with the storytellers’ ambivalent stance (Voutilainen et al., 2014).

Nonverbal synchrony between the client and the therapist concerns the dynamic, temporal coordination of individuals’ behaviours in interactive contexts (for a review see Kleinbub, 2017) and empirical evidence of nonverbal synchrony in psychotherapy (e.g., body movement, facial expression, prosody, vocal pitch, physiological responses) highlights its significance for the therapeutic alliance (Koole & Tschacher, 2016). Studies that adopt an interpersonal physiology design in naturalistic clinical settings, suggest that physiological synchrony occurs more frequently in the context of socially and emotionally positive interpersonal exchanges, and is associated with the establishment of rapport, connectedness and empathy as perceived by the client (Di Mascio et al., 1957; Marci et al., 2007; Stanek et al., 1973). Furthermore, nonverbal synchrony between therapist and client have been found to
be relevant for the formation and negotiation of the alliance (Avdi & Seikkula, 2019; Kykyri et al., 2019).

To date, research on embodied arousal in the context of psychotherapy is still theoretically and methodologically fragmented, and the role of autonomic arousal in affect regulation processes in therapy remains unclear (Kleinbub, 2017), which limits our capacity to interpret findings regarding ANS activation in therapy. Nevertheless, this developing area of research supports the clinical relevance and the added value of adopting an embodied perspective in the study of psychotherapy alliance process. We would argue that the study of implicit, non-conscious, embodied processes can provide insights about the intrapersonal and relational aspects of clinical interaction, as well as about management of critical moments in clinical encounters, such as those where the therapeutic dyad seems to not be “on the same page”.

Drawing upon research findings that associated increased physiological arousal in therapy with negative affect and tension in the therapeutic process (Del Piccolo and Finset, 2018; Di Mascio et al., 1957; Stanek et al., 1973), in this case-series study we explored possible links between autonomic arousal and ruptures in the alliance, to deepen our understanding of affective, embodied aspects of ruptures. Our assumption was that client and therapist are likely to display greater autonomic activation during in-session periods characterized by alliance ruptures, rather than periods without rupture. In addition, we aimed to explore any systematic associations between the different alliance rupture categories (no rupture, withdrawal, confrontation, mixed) and participants’ autonomic arousal. No hypothesis was formulated as there is no prior evidence that could lead to specific predictions.

METHOD

The material for this study was collected in the context of a broader research project called ‘Relational Mind in Events of Change in Multi-Actor Therapeutic Dialogues’ that aims to increase our understanding of attunement and embodied synchrony, investigating therapeutic interaction on multiple modalities, that is participants’ verbal, non-verbal and autonomic responding (Seikkula et al., 2015). The research material was collected in a community mental health centre in Greece that provides long-term individual psychodynamic therapy.

Participants

Two experienced female therapists, one a psychiatrist and one a clinical psychologist, participated in the study. Given the naturalistic design of the study, there were no specific inclusion criteria. Clients were informed about the study by a member of staff at the intake
meeting and, if interested, they were fully informed about the study by a graduate researcher (first author). Over a recruitment period of 19 months, 17 clients were approached and informed about the study; ten (58.8%) refused to participate for personal or practical reasons. Seven clients participated in the study, two men and five women. Participants ranged in age from 22 to 37 years ($M = 30, SD = 5.92$). The clients presented various difficulties relating to depression, anxiety, and interpersonal difficulties. Sessions took place face-to-face, on a weekly basis; the therapy was psychodynamic, and the therapists worked in their usual clinical style.

Ethical approval for the study was obtained by the Scientific Committee of the mental health centre. Informed consent was obtained from all participants. The research material is stored securely, and all session and interview transcripts are fully anonymized.

**Procedure**

All sessions were video recorded using a web-camera. Before the onset of therapy, the Adult Attachment Interview (AAI) (George et al., 1996) was conducted with each client. Near the onset of treatment (usually in the third session) and periodically in the course of therapy (every six months if therapy continued) ‘measurement sessions’ were scheduled for the collection of ANS data. Furthermore, before the onset of therapy and before each measurement session, the CORE-OM questionnaire (Evans et al., 2000) was completed by the client. The Working Alliance Inventory-Short Revised (WAI-SR, Hatcher & Gillapsy, 2006) was completed by both client and therapist after each measurement session. Within 24 hours of each measurement session, both the therapist and the client had individual Stimulated Recall Interviews (SRI) (Kagan et al., 1963) with the researcher.

One hundred and forty-two sessions were recorded in total; the mean duration of therapy was just over 20 sessions, with a range between 4 and 53 sessions. The material for this study was drawn from 12 measurement sessions, drawn from all seven psychoanalytic therapies/cases and collected over a period of 34 months (January 2016 - November 2018). These sessions took place at different stages of therapy: Six were from the initial phase of therapy (third or fourth session), five from the middle phase (at six months) and one from the final phase (one year). The research material used in this paper consists of the video and transcripts of the sessions as well as measurements of participants’ autonomic arousal during the sessions. Findings from the AAI, SRI and self-report questionnaires are not discussed in this study.
Measures

Autonomic Nervous System Data (ANS)

During the measurement sessions, both therapist and client wore mobile heart rate monitors (Firstbeat® Bodyguard) that recorded their heart rate throughout the session. These monitors were attached to their chest with two disposable electrodes, one to the skin below the right collarbone and one to the left side of the body below the heart. Data regarding the heartbeat and the speed of exercise as declared in the diary information provided by the participants were analysed through the Firstbeat PRO Wellness Analysis Software® (version 1.4.1). It calculates HRV-derived second-by-second indices, using the short-time Fourier Transform method (STFT), and HR- and HRV-derived variables that describe respiration rate and oxygen consumption (VO2) using neural network modelling of data. These indices reflect the activity of the sympathetic (absolute stress vector, ASV) and parasympathetic (absolute relaxation vector, ARV) nervous system (e.g., Kinnunen et al., 2006) – stress and relaxation, respectively. More specifically, the Absolute Stress Vector (ASV) is calculated from the heart rate, high frequency power, low frequency power and HRV-derived respiratory variables (HRV). HRV computed through RMSSD. The algorithm is based on the principle that ASV is high when the heart rate is elevated, when HRV is reduced, and when the respiration rate is low, relative to heart rate and HRV (Kinnunen et al., 2006). In other words, ASV an HRV-derived index, served in our study as a measure of in-session moment-to moment sympathetic arousal. ASV has recently been used in studies examining physiological arousal in psychotherapy (e.g., Avdi & Evans, 2020; Avdi & Seikkula, 2019; Kykyri et al., 2017; Seikkula et al., 2015).

Therapeutic alliance ruptures

The observer-based Rupture Resolution Rating System (3RS) (Eubanks et al., 2015) was used to code the measurement sessions in terms of alliance ruptures. This system focuses on the client’s behaviour and uses several rupture markers associated with withdrawal (e.g., denial, minimal responses, abstract communication, content-affect split, avoidant topic shifts) and confrontation (e.g., complaints, reject interventions) ruptures. Through the 3RS coding we aimed to have a broad description of the quality of dyadic clinical interaction in the session and note any fluctuations in the quality of the alliance. The coding manual suggests sessions to be split into five-minute segments, as this provides an optimal time frame for ruptures to be identified. Coding is based on the session video and transcript and each 5-minute segment is coded separately; if rupture markers are present in any given 5-minute segment this is coded as entailing a rupture and the type of rupture (withdrawal, confrontation or mixed) is determined, based on the categories of rupture markers described in the coding manual.
Two graduate clinical psychologists coded ruptures following the 3RS. The coders self-trained in the coding system for approximately 50 hours. Training consisted of familiarizing themselves with the 3RS manual and the relevant literature, coding the manual’s examples, and then independently coding sessions – not used in the study – followed by discussion. Nine sessions were coded independently, until adequate reliability achieved. Overall percent agreement in the training phase approached 0.61, with a kappa value of 0.30. Sessions were coded using both the video and transcripts of the sessions. Next, the two coders rated independently 33% of the data set, randomly selected, and the rest of the data was coded by the first author. Overall percent agreement for these codings was 0.90, with a kappa value of 0.29 (Cohen, 1968). Kappa values are influenced by prevalence effect in the data, making large kappa scores hard to attain (Sim & Wright, 2005). In this study, the kappa score was possibly affected by the prevalence of ruptures, which were unevenly distributed across sessions (see results), as well as the small sample. The prevalence effect, calculated as the ratio of most prevalent code to all code instances was 0.85, so the kappa corrected for prevalence effect increased to 0.8.

Exploratory data analysis

Exploratory data analysis was carried out across the 12 sessions to describe the data in an exploratory spirit; we also applied a multilevel model (MLM) to the data, which aspired to give preliminary answers about any systematic links between 3RS categories and ASV and to generate hypotheses for further exploration in larger data sets.

ASV is a sequentially dependent, autocorrelated measure, as each ASV value is strongly dependent upon the previous value. Furthermore, ASV measurements are nested within sessions/clients (therapies), and clients nested within therapists. These facts violate the assumption of independence of observations and so conventional statistical analyses, such as ANOVA, would provide spurious, inflated results (Kleinbub, 2017). Therefore, in this study a Multilevel Model (MLM) was employed to assess the relationship between rupture categories and participants’ ANS activation. MLM is increasingly used in psychotherapy research, as it allows researchers to assess group-level trends, while accounting for individual differences in nested data (Tasca & Gallop, 2009). The MLM applied in this data set treated 3RS coding as the independent variable, ASV as the dependent variable and tested whether the 3RS rupture types appear to be non-randomly associated with the ASV values within the 3RS segments, examining each session separately. The levels of the MLM were the whole sessions and 3RS rupture segments. The 3RS rupture categories (no rupture, withdrawal, confrontation, mixed rupture) were treated as ‘fixed effects’, which means that the model tested whether there is a systematic relationship between participants’ ASV and 3RS rupture categories across the 12 sessions. The mean ASV was treated as ‘free’, thus allowing therapist, client, and session effects to result in a mean session ASV that may vary across the sessions. The method took into account autocorrelation (AR) and more specifically lag-1 autocorrelation (AR1), i.e.,
correlation between two successive ASV values. Separate analyses were conducted for the clients’ and therapists’ ASV and missing values were omitted from the analysis. The software R version 3.6.1 and the \textit{lme} function from the \textit{Nlme} package (Non-Linear Mixed effects) (Pinheiro & Bates, 2019) was used for the estimations.

In this exploratory data analysis, $p$-values were assumed as indicative and descriptive of the differences in participants’ ASV between rupture categories, rather than formal estimates because of the relatively small sample and the issue of non-independence of measurements.

**RESULTS**

Table 1 presents the prevalence of ruptures overall and per session in our data. Ruptures were coded in 8 of the 12 sessions (66%), and in 33 of the total 117 five-minute segments (28.2%). As for the specific type of ruptures, there were 18 withdrawal rupture segments (56.2% of the total rupture segments), 7 confrontation (21.2%) and 8 mixed (24.2%).

<table>
<thead>
<tr>
<th>Case_Session</th>
<th>Sessions’ segments</th>
<th>No rupture segments</th>
<th>Coded Ruptures</th>
<th>Withdrawal</th>
<th>Confrontation</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1_03</td>
<td>11</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1_15</td>
<td>11</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2_07</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3_03</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4_03</td>
<td>9</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>4_17</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5_03</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5_16</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5_35</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6_04</td>
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<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7_03</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7_19</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>117</td>
<td>84</td>
<td>33</td>
<td>18</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 1. Prevalence of specific rupture types overall and per session of the dataset

<table>
<thead>
<tr>
<th>Rupture Type</th>
<th>Withdrawal</th>
<th>Confrontation</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>71.7%</td>
<td>28.2%</td>
<td>56.2%</td>
</tr>
<tr>
<td></td>
<td>21.2%</td>
<td>24.2%</td>
<td></td>
</tr>
</tbody>
</table>
**Associations of participants’ autonomic activation with rupture occurrence**

Table 2 presents findings for rupture as a two-level variable (rupture-no rupture). The \( p \)-values obtained from the analysis did not reveal any significant effect of rupture occurrence on either participant’s ANS arousal.

**Table 2. Fixed effects of rupture occurrence on clients’ and therapists’ ASV**

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimate</th>
<th>SE</th>
<th>( t )-value</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLIENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>152.199</td>
<td>8.455</td>
<td>17.999</td>
<td>.000</td>
</tr>
<tr>
<td>Rupture</td>
<td>.430</td>
<td>.570</td>
<td>.755</td>
<td>.450</td>
</tr>
<tr>
<td><strong>THERAPIST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>118.233</td>
<td>3.728</td>
<td>31.256</td>
<td>.000</td>
</tr>
<tr>
<td>Rupture</td>
<td>-.485</td>
<td>.394</td>
<td>-1.229</td>
<td>.218</td>
</tr>
</tbody>
</table>

**Associations of participants’ autonomic activation with rupture type**

Table 3 presents findings taking rupture as a four-level variable (i.e., including withdrawal, confrontation, mixed, and no rupture) with participants’ ANS arousal in each rupture type compared to that in no rupture segments. The \( p \)-values obtained from the analysis revealed significant effects of rupture type on clients’ ANS arousal, but no such effects were observed for therapists during episodes of rupture. More specifically, the exploratory analysis showed that episodes of mixed rupture were significantly associated with increased clients’ arousal, compared to periods of no rupture (Intercept = 18.96, \( t(34665) = 11.55, \ p < .0005 \)). Furthermore, episodes of confrontation ruptures were found to be significantly associated with clients’ lower arousal, compared to no ruptures (Intercept = -2.78, \( t(34665) = -2.53, \ p < .005 \)), contradicting our assumption regarding increased arousal during rupture episodes.
As this first analysis showed significant differences only for the clients’ arousal, a Tukey pairwise comparison test between clients’ autonomic arousal on rupture types was subsequently conducted (see Figure 1). Each vertical line illustrates each comparison between clients’ mean arousal during rupture types. The lines’ horizontal position in the graph is determined by the comparison’s p value. As can be seen in Figure 1, the pairwise comparison between clients’ arousal in rupture types revealed significant comparisons between mixed and confrontation rupture episodes, as well as between mixed and withdrawal rupture episodes (p < .001); i.e., clients’ arousal was significantly increased during mixed rupture episodes compared both to withdrawal and confrontation rupture episodes. On the other hand, no significant difference was found in the clients’ arousal between confrontation and withdrawal ruptures.
Figure 1. Pairwise comparisons of clients’ estimated means of arousal between the four-rupture levels

Note: 0: No rupture, 1: Withdrawal, 2: Confrontation, 3: Mixed rupture.

Each comparison is denoted with a vertical line that joins the two estimated means being compared. Comparison’s horizontal position in the graph is determined by the $P$ value of that comparison.

To illustrate this distinct, mixed type of alliance rupture, a brief extract from one session is presented below. The extract is drawn from the third therapy session; the client Helena¹, in her forties, sought treatment for long-standing anxiety and health-related phobias. The therapist was an experienced, female psychoanalyst. Just prior to this extract, Helena discussed having episodes of binge-eating, which she understood as an attempt at emotional regulation.

1. Th: You feel that food comforts you somewhat

¹ Pseudonym is used.
H: At that particular moment yes but afterwards I feel under even more pressure (53)² that’s all [laughter] (22) Now I have to talk on my own, how, how will we go on?

2. Th: (7) How (. ) I can't, if I talk for you (. ) what will we be doing here? (. ) I feel that one reason you're coming here is a wish to find your own voice

3. H: I just, like I said last time, I generally am not good, good at talking (. ) on my own about myself (. ) [Laughter]

4. Th: Why?

5. H: I don't know, perhaps I have never done it before (. ) I can't, I think that, I don't know.

6. Th: That, what?

7. H: that I need a direction (. ) so, what can I say now? (. ) There are so many things that trouble me, the things I have already discussed here

8. Th: And here we will have a lot of time (8) for you to talk about anything that troubles you (. ) we will not have all that time today, but we will have the time (. ) for everything to be discussed (. )

9. H: [sigh] (51)

Th: Tell me

10. H: I don't know, I can't talk on my own, I don-, I don't know (47) I don't know, I don’t- I don't- I don't think I can manage to talk for fifty minutes on my own [irritated tone of voice]

In this interaction episode, Helena remains silent for a relatively long interval and then expresses a complaint about the therapeutic activity of free association, while showing incongruent emotional responses (i.e., she smiles whilst expressing a complaint and negative affect); this is considered an example of content-affect split (turn 1). As the therapist attempts to explain the rationale of the treatment, Helena withdraws, assumes a self-critical stance (turn 3), responds minimally (turn 5) and then complains about the therapist’s non-directive stance (turn 7). Next, the therapist attempts to engage her in exploring her experience, but Helena continues displaying markers of a mixed rupture: complaining about therapeutic activities and therapist (markers of confrontation rupture - turn 10), accompanied by minimal responses and content-affect split (markers of withdrawal ruptures - turns 9, 10). We would argue that Helena’s way of interacting reflects her ambivalence towards further exploring her dissatisfaction, frustration and need for guidance, which is enacted as resistance in the session.

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² Transcription notation: the symbol (.) denotes brief pauses of up to four seconds duration. Longer pauses are marked with the number of seconds in parentheses, e.g., (7). [] denotes non-verbal cues, e.g., [smile]. Underlined word denotes emphasis.
This study is the first, to our knowledge, to investigate the embodied correlates of alliance ruptures in the context of individual psychotherapy in a naturalistic setting. Findings from this small-scale, case-series, exploratory study provide some support for a relationship between embodied arousal and the process of alliance ruptures for clients. More specifically, clients in this study were significantly more aroused during episodes of mixed ruptures compared to other types of rupture types (withdrawal, confrontation) as well as compared to periods of no rupture, and significantly less aroused during episodes of confrontation rupture as compared to periods of no rupture. Interestingly, the same analysis regarding therapists’ physiological arousal did not yield significant differences during ruptures or between rupture types.

As already discussed, mixed ruptures entail markers of both confrontation and withdrawal within the same 5-minute segment; in this data set, mixed ruptures entailed a mixture of opposition, disaffiliation, active resistance to the therapeutic process and reluctance to engage. We conceptualize mixed ruptures as distinct and complex patterns of ruptures in the alliance characterized by the ambivalent expression of negative affect. From a clinical perspective, in-session affective arousal could be seen to reflect distinct, and presumably habitual patterns of emotion regulation, associated with problematic interpersonal patterns that manifest as ruptures (Safran & Muran, 2000). In some recent studies, mixed ruptures have been identified as important for better understanding clients’ ambivalence and resistance (Urmanche et al., 2019). In this literature, resistance is conceptualized as the interpersonal manifestation of the intrapsychic process of ambivalence (Engle & Arkowitz, 2008). The finding that mixed ruptures are associated with increased physiological arousal for clients is in line with findings of increased autonomic arousal during conflictual interactions characterized by tension (Di Mascio et al., 1957; Stanek et al., 1973) or inhibition and suppression of emotional expression with the consequent lack of affiliation (Butler et al., 2003; Hughes et al., 1994).

On the other hand, no significant association of increased arousal in withdrawal rupture episodes was found; given that withdrawal ruptures reflect clients’ disengagement from affect, this finding contradicts our assumption of increased arousal during rupture episodes, as well as evidence connecting emotional inhibition with increased autonomic arousal (Butler et al., 2003). Another unexpected finding was that clients’ ANS arousal during confrontation ruptures was lower than during periods of no rupture, contradicting our assumption of increased arousal in all rupture types. In this data set confrontation ruptures were manifest through clients’ disagreement concerning the therapists’ interventions, instances of self-defence and slight complaints. One possible explanation for this observation might be that the open expression of disagreement and negative affect might be associated with a release of tension and, thus, reduced ANS arousal. This finding is partly consistent with findings that arousal tends to be lower during segments of sessions that are characterized by antagonism toward the therapist (Di Mascio et al., 1957), highlighting its tension...
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reductive/release effects for clients. The fact that no significant differences were observed in clients’ arousal between periods of rupture and no-rupture could be partly explained by the fact that clients’ arousal was in opposite direction in confrontation and mixed ruptures as compared to no-rupture segments.

As already mentioned, no differences were found in therapists’ autonomic arousal between periods characterized by strains in the alliance as compared to periods of good collaboration. Although preliminary, these findings support the view that therapists and clients engage in the emotional work of therapy with differing affective intensity and that the therapeutic encounter is a ‘safe ground’ for experienced therapists, even during times of relational strain. It has been argued, along similar lines, that therapists have well-developed emotion regulation strategies through their training and clinical experience (Messina et al., 2013).

Limitations of this exploratory study primarily concern the generalizability of findings relating to the relatively small sample. As such, we suggest that findings and their interpretation be treated as observed tendencies. Other methodological challenges include the fact that ASV is not a normally distributed variable and that alliance ruptures were also unevenly distributed in the sessions, which has probably affected the power of statistical analysis. Similar high variability in the distribution of alliance ruptures between sessions has been reported in other studies (Gersh et al., 2017; Schenk et al., 2019), so this may reflect a more widespread clinical phenomenon of periods of tension and relational negotiation. Another methodological challenge in this study concerns the different time scale of the two variables: autonomic arousal measured in one-second intervals, whilst alliance ruptures in five-minute periods. In terms of clinical process, there is evidence that some important interactional and interpersonal processes take place in split-seconds, often below conscious awareness (Beebe & Lachmann, 2002) whereas others, such as shifts in meaning construction and alliance ruptures emerge in tonic time scales, which last from several minutes to larger temporal scales (Koole et al., 2020). This poses a major methodological challenge in studies that aim to explore links between observational data on behaviour, discourse, and therapeutic interaction with continuous physiological data (Hulsman et al., 2011). In terms of the specific design used in this study, coding ruptures in time periods briefer than five minutes might give better resolution of the temporal process and help explore associations with ANS, but in a more micro-process research approach. Future research in this field could utilize an idiographic case study design to examine within therapeutic dyad interaction integrating multiple modalities.

The findings from this preliminary study, although limited in generalizability, point to the the usefulness and clinical relevance of examining embodied reactions, as reflected in ANS activation, for studying affiliative and interactional aspects of therapy and in-session process. Our study provides preliminary insights concerning clients’ self-regulation process. Such moments of mixed rupture need to be attended to by researchers and therapists, given their distinct character in interpersonal terms the physiological - presumably affective- load
they hold for clients, as well as their arguably significance for the process of therapy. It has been argued that addressing and working through alliance ruptures, especially through metacommunication strategies, benefits clients’ emotional regulation resources, the development of the therapeutic alliance and therapy outcome (Muran, 2019). Further research is needed to examine optimal ways of therapeutically responding to such difficult moments in therapy.

REFERENCES


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