Therapist Emotional Reactivity and Performance Following a Motivational Interviewing Workshop With and Without Deliberate Practice

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Abstract

Some individuals are more reactive to emotional stimuli than others, and this is particularly relevant to psychotherapists due to their frequent interaction with emotionally evocative material. Therapist reactivity can be particularly triggered during challenging clinical moments such as resistance, leading to negative therapy process which can be detrimental to client outcome. Motivational Interviewing (MI) is a therapeutic approach that specifically focuses on exploring ambivalence about change and minimizing resistance in psychotherapy, and therefore is a beneficial strategy to address many challenging interpersonal moments in psychotherapy. Therapists would benefit from training in MI to specifically address these challenging clinical moments, and this may be especially important for therapists who are highly emotionally reactive. Deliberate Practice (DP) has shown promise as a training approach that may result in greater maintenance of skill, and therefore may be explored as a more impactful and long-lasting way to train therapists in MI. The present study involved both traditional and DP training in the context of a continuing education workshop. The impact of training type on therapist reactivity to challenging clinical moments was examined immediately following training, and four months later. The relationship between therapist reactivity, performance, and type of training was also investigated. Eighty-eight community therapists participated in training to use MI principles to effectively manage client ambivalence and resistance. Therapists were randomly assigned to receive a 2-day training workshop based on DP principles, or to receive a 2-day traditional didactic workshop. Self-reported arousal to video vignettes of difficult scenarios was collected prior to the workshop, immediately following the workshop, and 4 months later, and therapists participated in 20-minute interviews with ambivalent volunteers at both post-workshop and follow-up. Therapist dynamic Respiratory Sinus Arrhythmia (dynamic RSA) was measured during these interviews as a psychophysiological measure of emotional reactivity, and interviews were

coded for resistance to measure therapist performance. Results demonstrated a decrease in self-reported arousal only for those who engaged in DP training, though this was not maintained at follow-up. There was a difference in dynamic RSA between groups at post-treatment, where the DP group uniquely demonstrated quadratic change, indicating the training had a differing effect. Despite this differing trajectory, RSA showed an overall increase at both post-workshop and follow-up in both groups. This suggests that regardless of training type, therapists were regulating their emotions and possibly having a compassionate response, rather than a stress response, to these interviews. Dynamic RSA between workshop groups was unable to be assessed at follow-up due to a smaller sample size for psychophysiological assessment. In the investigation of the impact of training on performance, greater self-reported arousal was found to predict less resistance in interviews, but there was no relationship observed between psychophysiological arousal and resistance. This study supports the efficacy of DP training in reducing therapist arousal to difficult clinical scenarios, and the importance of continued DP in order to maintain one's skills. Clinical and training implications are discussed.

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Table of Contents

List of Tables

List of Figures

Therapist Emotional Reactivity and Performance Following a Motivational Interviewing Workshop With and Without Deliberate Practice

How would you react if someone you were trying to support became angry with you, or discounted your efforts? Some people might feel unhelpful and rejected, struggling to come up with what to say next. Others might feel calm, understanding this person is struggling, and continuing to talk it through with them. The responses to such an interaction can vary, and part of what decides one's response in such a situation may be one's levels of *emotional reactivity*: the intensity, speed, and duration with which one experiences an emotion following an emotional trigger (Strelau & Zawadski, 1995; Zelkowitz & Cole, 2016). While there is extensive research on the negative impact of high emotional reactivity for the general and clinical populations (e.g., Tache et al., 2020; Stepp et al., 2016), less attention has been given to emotional reactivity in therapists, despite their work involving regular exposure to highly emotional material and clients. As research interest in therapist characteristics and their influence on psychotherapy process and outcomes grows (Muran & Eubanks, 2020), it is important that the impact of therapist emotional reactivity be investigated, particularly as research suggests that therapist negative emotional reactions to clients can be detrimental to treatment (e.g., Westra et al., 2012).

Therapist characteristics are particularly influential when therapists are under stress (Saxon & Barkham, 2012), such as when there is negative interpersonal process between the therapist and their client. Negative process refers to moments of disagreement, tension, or disconnect between client and therapist, which may include resistance, ambivalence, and/or a rupture in the therapeutic alliance (Hoffman & Weinberger, 2013). Research has demonstrated that these moments of disagreement are some of the most influential when predicting client treatment outcome (e.g., Muran et al., 2009), and therefore it is important that these moments be navigated skillfully by the therapist. Unfortunately, these are the same

moments which derail and de-skill therapists, as therapists can feel pulled to defend themselves or the therapy, and argue with their client (Boswell et al., 2013). Such responses cause conflict to persist and can significantly damage the therapeutic relationship and negatively impact client outcome (Binder & Strupp, 1997). Furthermore, conflicts in the therapeutic relationship are associated with poorer therapist mental health and job satisfaction (Muran & Eubanks, 2020; Rzeszutek et al., 2015). Given the increased emotional distress experienced in those who are emotionally reactive, conflicts may be even more detrimental to these therapists, compared to those therapists who are less emotionally reactive. Training therapists to manage their own emotional reactions and to respond in a way which reduces conflict would therefore be important for both client and therapist functioning, and may be particularly important for therapists who are emotionally reactive.

Motivational Interviewing (MI) is a therapeutic approach which focuses on exploring ambivalence and minimizing resistance (Miller & Rollnick, 2013), and several studies have demonstrated that using MI during moments of disagreement can reduce further disagreement and improve outcomes (Aviram & Westra, 2011; Hara, 2020; Westra et al., 2016). Training in MI would therefore be useful in order to teach therapists to respond to difficult moments in therapy. However, traditional training methods in psychotherapy, such as didactic seminars, have not shown lasting skill improvement (Miller et al., 2004). Research demonstrates that incorporating repeated practice, expert feedback, and focusing practice on the more challenging examples leads to the most effective learning (e.g., Miller et al., 2004; Oudejans et al., 2009). Such training is referred to as Deliberate Practice (DP; Ericsson & Pool, 2016). Thus, training therapists in MI using DP strategies may lead to effective learning for managing difficult clinical scenarios.

Considering the impact of difficult clinical scenarios on therapist functioning and client outcome, it is important to understand how individual differences in therapist

emotional reactivity and their ability to regulate can contribute to the psychotherapy process, and how therapist training in managing these scenarios might benefit the therapy process. With these issues in mind, the present study sought to examine emotional reactivity in therapists, and how this might impact their performance in managing resistance. It also focused on the question of whether different types of training, traditional didactic or DP, might influence therapist reactivity.

A review of the current research surrounding these topics follows. First, I will define emotional reactivity and regulation, and describe the impacts of emotional reactivity on therapists and the therapeutic process. Next, I will describe ways in which emotional reactivity has been measured, particularly focusing on psychophysiological measures of emotional reactivity. The impacts of emotional reactivity during difficult therapeutic moments will be discussed, including how therapist responses to these difficult moments can impact both clients and therapists. I will then discuss how therapists can effectively manage negative interpersonal process using MI strategies, and I will outline the current research on therapist training and how this may be improved using DP. Following this review, the specific aims of the present study will be described in further detail.

Emotional Reactivity and Emotion Regulation

Emotional reactivity and emotion regulation play a critical role in both everyday experiences and in the development and maintenance of psychopathology, and therefore research in these areas has significantly increased in the past several years. Emotional reactivity, also referred to as emotional vulnerability, is the intensity, speed, and duration with which one experiences an emotion following an emotionally evocative stimuli (e.g., Davidson, 1998; Linehan, 1993; Strelau & Zawadzki, 1995; Zelkowitz & Cole, 2016). In other words, higher levels of emotional reactivity involve becoming easily, quickly, and highly aroused by emotionally evocative stimuli and having difficulty returning to baseline

arousal levels. For example, slight embarrassment might cause feelings of deep humiliation in a highly reactive individual, and this feeling takes a longer time to dissipate. The definition of reactivity encompasses response of both negative and positive emotions. However, emotional reactivity measures have the highest correlations with the tendency to experience negative emotions, and the term is mainly used to reference negative emotions in particular (Strelau & Zawadzki, 1995). Emotional reactivity is considered to be a dimension of temperament, as reactivity varies among individuals (Strelau & Zawadzki, 1995).

While the definition of emotional reactivity is largely consistent among researchers, emotion regulation has been defined various ways depending on theoretical background. Two of the most widely used definitions of emotion regulation include that of Gross (1998) and Gratz and Roemer (2004). Gross (1998) defines emotion regulation as the ability to exert influence on and alter one's emotions, and to tolerate intense emotions. This is based on the theoretical background that emotion regulation is a series of processes that individuals go through in order to engage in regulation, occurring at varying times in the emotion generating process (Gross & John, 2003). These processes include: 1) avoiding or altering the emotion generating stimulus, 2) moving attention towards or away from the stimulus, 3) altering or reframing how the situation is interpreted (cognitive reappraisal), and 4) inhibition of the emotion through emotional response modulation or suppression (Gross, 2014). Alternatively, Gratz and Roemer (2004) define emotion regulation based on competency, where emotion regulation involves 1) awareness and understanding of emotions, 2) acceptance of emotions, 3) the ability to control impulsive behaviours stemming from emotions and engage in behaviours consistent with one's goals, and 4) ability to use emotion regulation strategies appropriate for the context to modulate emotional responses. Despite these varying definitions, there is overarching agreement that emotion regulation involves one's ability to manage their emotional experience, either subconsciously or consciously, in order to cope

with or decrease intense emotions. Individual differences in emotion regulation strategies result in some individuals regulating emotions better than others (Gross & John, 2003), however emotion regulation strategies may also be practiced and improved upon (e.g., Sloan et al., 2017).

There are differing views of how related emotional reactivity and emotion regulation are. This is mainly due to the varying schools of thought on what emotions are at their essence. Some identify these as completely distinct concepts (e.g., basic emotion theory), and some identify them as virtually inseparable concepts (e.g., social construction emotion theory). To help clarify this debate, Zelkowitz and Cole (2016) examined the convergent and discriminant validity of four measures of emotion regulation, three measures of emotional reactivity, and one measure of coping due to its conceptual similarity to emotion regulation. Results demonstrated that the tendency to experience strong negative emotions (i.e., emotional reactivity) appeared indistinguishable from the failure to regulate negative emotions, reflecting a factor they called "out-of-control negative emotions". Thus, emotional reactivity and difficulty with emotion regulation appear to be intertwined concepts, particularly when assessed with self-report measures. A main difference in these two concepts is the extent to which they can be controlled. Reactivity is considered to be part of temperament and therefore automatic, whereas regulation can be both an individual difference (i.e., an automatic process) and skill that can be practiced (a controlled process; Braunstein et al., 2017). One can therefore cope with high emotional reactivity through building their skills in emotion regulation.

Practically, this theoretical understanding of reactivity and regulation is demonstrated in Dialectical Behavioural Therapy (DBT), the leading treatment for borderline personality disorder (APA, 2022). From a DBT perspective, emotional reactivity combined with difficulty with emotion regulation leads to emotion dysregulation. Accordingly, the greater

one's emotional reactivity, the greater the need for emotion regulation skills (Linehan, 1993). DBT therefore addresses the high emotional reactivity common in individuals with borderline personality disorder by teaching strategies for emotion regulation (Linehan, 1993). The present dissertation focuses on emotional reactivity as a measure of temperament, however, it also discusses ability to manage that reactivity, and therefore both of these overlapping and intertwined constructs will be discussed.

Implications of Emotional Reactivity

High emotional reactivity and difficulty regulating one's emotions has significant implications for mental health and personal wellness. Individuals with high emotional reactivity have more intense reactions to stress and are therefore more prone to experience negative emotional consequences of stressors (Rzeszutek et al., 2015). Intense emotions can also interfere with interpersonal relationships, and the tendency to react strongly to others can lead to feelings of anxiety and discomfort in social settings (Davis, 1987; Rzeszutek, et al., 2015). Difficulties with emotion regulation are also proposed to be an underlying mechanism contributing to various forms of psychopathology, and a recent systematic review demonstrated that improvements in emotion regulation following psychotherapy correspond with decreases in symptoms of anxiety, depression, substance use, eating pathology, and borderline personality disorder (Sloan et al., 2017).

While there is extensive research on how client emotional reactivity and regulation impacts functioning, and the importance of client emotion regulation on mental health, there is less research on how reactivity and regulation affects therapist functioning (Muran & Eubanks, 2020). Emotional reactivity is theorized to be particularly influential for those in the helping professions, such as psychotherapists, because they are repeatedly interacting with highly emotional material and clients (Rzeszutek et al., 2015). As in the general population, therapists vary in their abilities to manage strong emotions, and therefore the impact of this

emotional material on therapists likely varies (Muran & Eubanks, 2020). Importantly, a therapist's emotional reactivity may have an impact on the client and the therapy process. It is well known in the psychotherapy literature that therapist characteristics have an effect on treatment, with review papers estimating that therapist individual characteristics account for 5-10% of client variation in outcomes, depending on client severity (Baldwin & Imel, 2013; Dinger et al., 2008; Saxon & Barkham, 2012). Therapist temperament is one such characteristic which affects the treatment process, and this can include therapist individual differences in emotional reactivity. In evidence of this, research demonstrates that therapist emotional reactions to clients can influence therapy process and outcome. Westra and colleagues (2012) discovered that, when therapists had negative reactions to clients early in treatment, such as feeling drained, helpless, guilty, and frustrated, there was a trend towards higher levels of subsequent resistance in the therapeutic relationship. Conversely, positive reactions to clients early in treatment were significantly associated with lower levels of resistance later on in treatment. Greater therapist anger and anxiety is also predictive of reduced client engagement with treatment, and greater therapist anger and insecurity has differentiated treatment completers from non-completers (Hoffart & Friis, 2000; Milmoe et al., 1967). Further, Hayes and colleagues (2018) examined therapist tendencies to feel anxious and react personally to threatening material (countertransference) in the therapy session. They discovered that therapists who were better able to manage their own reactions had better client outcomes, and thus concluded that therapists who are aware of and who understand their emotional reactions to a client are better able to support their clients in reaching their treatment goals. Emotional reactivity may therefore be an important factor of therapist temperament that affects therapy process and outcome and should be investigated further.

Measuring Emotional Reactivity

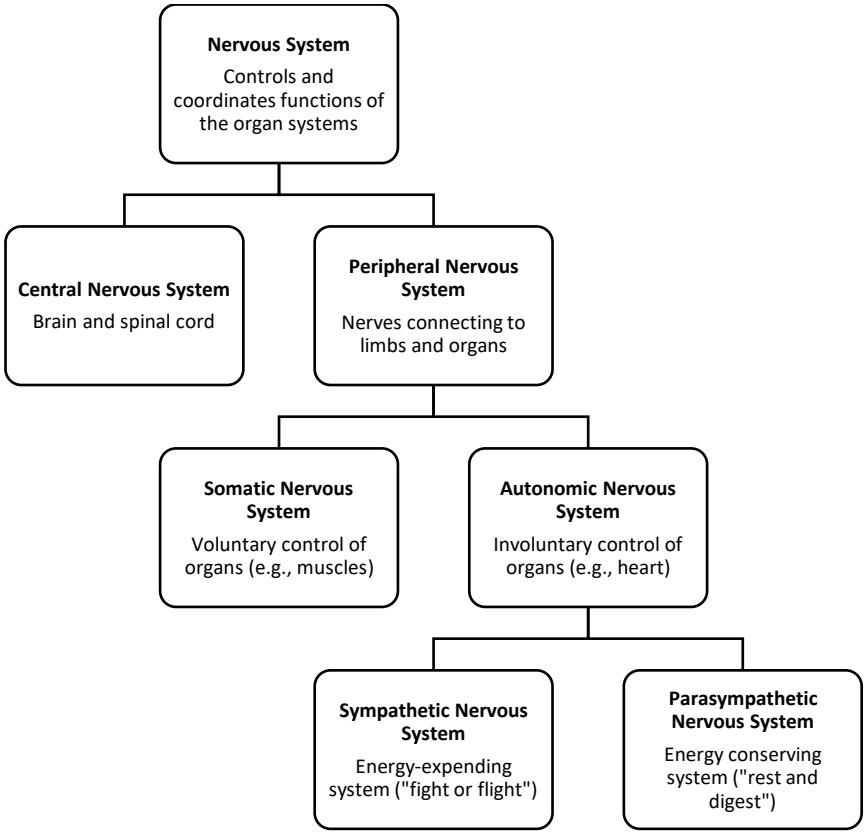
Emotional experience can manifest in several ways: subjective experience, physiological response, and behavioural response (Bonanno et al., 1995; O'Brokta et al., 2020; Newton & Contrada, 1992). Consequently, emotional reactivity and regulation can be measured through self-report, neurological, psychophysiological, and behavioural measures. Self-report measures have been most commonly used to measure emotional reactivity due to their ease of application (Robinson & Clore, 2002). However, individuals are often not accurately aware of the emotions they are experiencing, and self-report measures are also susceptible to social desirability bias (Mayne & Ambrose, 1999). Behavioural and physiological measures may therefore provide a more accurate and objective understanding of emotional reactivity. Behavioural measures involve observation and coding of behaviour that is indicative of an emotional reaction, such as facial expression, avoidance, and escalation behaviours (O'Brokta et al., 2020; Peijsel, 2018). Physiological measurement of emotional reactivity has been pursued through several different approaches, many of which include cardiac measures. One of these physiological measures of emotional reactivity is Heart Rate Variability (HRV). HRV is a measure of the variability in the length of time between heart beats, and it is used as a psychophysiological measure of physical and emotional flexibility in response to changing environmental demands (Beauchaine, 2001; Thayer et al., 2012). Thus, a healthier environmental response is demonstrated through spontaneous changes in heart rate (high variability), whereas a dysregulated response is demonstrated through a steady heart rate (low variability; Thayer & Sternberg, 2006). HRV and the relationship to the nervous system and emotional reactivity will be discussed further below.

The Physiology of Heart Rate Variability (HRV)

Cardiac functions such as heart rate are predominantly determined by the Autonomic Nervous System (ANS; Thayer et al., 2012), which has two main divisions: the sympathetic nervous system and the parasympathetic nervous system (see Figure 1 for an overview of the nervous system divisions). The sympathetic division typically controls bodily functions under stress, in other words, preparing the body for fight or flight. This includes reactions such as widening airways to improve breathing, dilating pupils, and slowing unnecessary processes in emergencies, such as digestion (Porges, 2001). In contrast, the parasympathetic division conserves and restores, performing changes such as slowing breathing, decreasing heart rate and blood pressure, and stimulating digestion (Porges, 2001).

Figure 1

Divisions of the Nervous System



The ANS is largely influenced by the vagus nerve, and therefore the Polyvagal Theory has been presented as a model of the regulation of the ANS (Porges, 2007). The name

"polyvagal" emphasizes the diverse features of the vagus nerve. There are two branches of the vagus nerve, the unmyelinated vagus and the more recently evolved myelinated vagus, each supporting different adaptive behavioural strategies. Most important is the myelinated vagus, and the influence of the myelinated vagus on the heart is termed vagal tone. When the environment is perceived as safe, vagal tone increases. Increased vagal tone represents parasympathetic influences, decreasing heart rate, dampening sympathetic arousal, producing a calmer state, and supporting spontaneous social engagement behaviours (Porges, 2007). When the environment is perceived as unsafe, vagal tone is suppressed. Suppression of vagal tone results in an increase of sympathetic arousal and increases resources for coping and defense, supporting fight or flight behaviours (Porges, 2007). The myelinated vagus nerve is therefore responsible for rapid instantaneous changes in heart rate, making variability in heart rate a measure of sympathetic and parasympathetic nervous system activity (Miller et al., 2013; Smith et al., 2020; Thayer et al, 2012). Thus, HRV is associated with the body's physiological responses to threat and safety (Thayer et al., 2012). Importantly, emotion regulation is also controlled by the ANS through sympathetic and parasympathetic influences (Thayer et al., 2012). As both emotion regulation and cardiac functions are controlled by the ANS, HRV can be used as a measure of emotional regulation and reactivity, and the capacity of an individual to adapt effectively to their environment (Appelhans & Luecken, 2006).

Respiratory Sinus Arrhythmia (RSA)

Heart rate variability can be examined at various frequencies, and different frequencies are associated with different mechanisms. Variations in heart rate at the highest frequency (High Frequency HRV; HF-HRV) are mainly under control of the myelinated vagus nerve. Variations at this frequency also occur at the same rate of respiratory inhalation and exhalation, and therefore HRV at high frequency corresponds with the natural respiration cycle (Beauchaine, 2001; Porges, 2007). HF-HRV has therefore been referred to as

Respiratory Sinus Arrhythmia (RSA), which has been considered the most accurate measurement of parasympathetic influence of cardiac variability via the vagus nerve (Porges, 2007; Thompson et al., 2008). HF-HRV and RSA are therefore used interchangeably (Grossman & Taylor, 2007), and in this paper RSA will be used to refer to this concept.

When discussing RSA, several different constructs may be examined, each with different implications for emotional reactivity and regulation. It has been suggested that inconsistencies in findings related to RSA in the research literature are the result of not specifying which construct of RSA is being examined (Smith et al., 2020). There are three main measures of RSA, including 1) resting RSA, 2) RSA reactivity, and 3) RSA recovery. Of interest to this study is RSA *reactivity*, which is the change in interval length between heart beats *in response to a specific challenge or event* (Smith et al., 2020). This includes both the valence of RSA change (increase vs. decrease) and the magnitude of HRV change (large vs. small).

To reiterate, RSA reactivity is the change in RSA in response to specific challenges or other events (Smith et al., 2020). This is a measure of vagal flexibility, or dynamic modulation of vagal control (Muhtadie et al., 2015). RSA reactivity is partly due to individual differences, and partly to situational factors. In other words, it accounts for both individual differences in the degree of reactivity, and for the objective difficulty of the situation (Smith et al., 2020). Changes in RSA in response to a task will therefore be a mix of situational response, common across all individuals, and individual differences in the degree of reactivity to that situation (Smith et al., 2020).

One aspect of RSA reactivity is valence; does RSA increase or decrease following an event? Events that cause an *increase in negative emotional arousal* such as threat, uncertainty, stress, and negative social interactions generally elicit *decreases in RSA*, as parasympathetic influences are being reduced (Smith et al., 2020). Decreases in RSA have

also been demonstrated in response to social-evaluative threat, interpersonal conflict, and attempts to influence an interaction partner (Allen & Friedman, 2016; Cundiff et al., 2016; Nealey et al., 2002; see Table 1). In contrast, positive interactions do not evoke an increase in RSA. Rather, events that cause a *decrease in negative arousal* are associated with *increases in RSA*, as parasympathetic influences are increased. Increases in RSA are associated with self-regulatory effort (cognitive or emotional), compassion-evoking stimuli, and supportive behaviours (Borelli et al., 2019; Smith et al., 2020; Stellar et al., 2015). For example, RSA values increase in relation to successful regulation of emotion during tasks such as watching an upsetting film (Butler et al., 2006), imaginary alcohol exposure in alcoholics (Ingjaldsson et al., 2003), and marital disagreements (Smith et al., 2011). Perhaps most salient to psychotherapy, caregivers displaying increases in RSA display more supportive behaviours, and are perceived by help-seekers as more responsive (Borelli et al., 2019). Based on these findings, therapists who are regulating their emotional response to clients, showing compassion and support, and being responsive to clients should show increases in RSA. Therapists who feel stressed and uncertain, feel at-odds with the client, and try to influence them towards their point of view should show decreases in RSA. However, as examination of RSA has typically been limited to the clients in a psychotherapy interaction, rather than the therapists, this hypothesis needs to be explored. Thus, RSA is a measure which provides a biological assessment of the conflated concepts of emotional reactivity and regulation and has implications for social sensitivity, supportive behaviours, and navigation of social conflict. It will be worthwhile for future research to explore how RSA changes in therapists throughout a psychotherapy session, and how this may be related to therapist performance.

Table 1

Overview of Effects Associated with RSA Reactivity in Response to a Task

RSA Increase	RSA Decrease
▪ Successful emotion regulation	▪ Threat & uncertainty
▪ Social affiliative behaviours	▪ Stress
▪ Responsivity to social partner	▪ Negative social interactions

The magnitude of RSA reactivity appears to indicate ability to adapt to changing situations, and most studies have investigated the magnitude of RSA decrease in response to stress-induction, uncertainty, or cognitive demands; for example, tasks such as negative marital interactions (Diamond et al., 2011) or challenging cognitive tasks (Muhtadie et al., 2015). Individuals who have larger decreases in RSA are theorized to have better emotional adjustment, as the large decrease indicates a flexibly responsive vagal system (Smith et al., 2020). Research demonstrates that larger decreases in RSA in response to threat are associated with less loneliness and greater social sensitivity, whereas smaller decreases are associated with depression (Amole et al., 2017; Schiweck et al., 2019). For example, Diamond and colleagues (2011) found that larger decreases in RSA during lab stressors predicted less negative affect during daily couple interactions, independent of resting levels of RSA. Thus, individual response to laboratory stressors appears to also relate to how one navigates conflict in social interactions.

Despite the above findings, there are conflicting ideas about RSA reactivity. Some studies indicate opposite effects, where larger reductions in RSA in response to stressors are associated with *less* adaptive functioning (Beauchaine et al., 2019; Cosley et al., 2010; Egizio et al, 2008). Cosley and colleagues (2010) showed that larger decreases in RSA during social-evaluative stressors are associated with lower trait compassion, and Egizio and colleagues found that larger decreases in response to cognitive stressors were associated with poorer social functioning. This has led to a hypothesis of a curvilinear relation between RSA

reactivity and functioning, where very small or very large reductions in RSA are maladaptive (Smith et al., 2020). Ciu and colleagues (2015) also suggest this may be due to the way reactivity is being measured; that is, using change scores between baseline and average task RSA, thus neglecting temporal changes in RSA over the course of the task. With these conflicting findings, further research should be done on RSA reactivity and changes in RSA over the course of a task should be explored to increase understanding of moment-to-moment changes in RSA. One way these moment-to-moment changes in RSA have been measured is through dynamic RSA.

Dynamic RSA

Historically, RSA has been measured using averages in RSA score over time, or by calculating difference scores between average baseline RSA and average task RSA. However, given that emotion regulation is an ongoing and dynamic process, it has been argued that emotion regulation and reactivity may better be captured using techniques which incorporate change over time, depicting dynamic changes in RSA (Brooker & Buss, 2010; Cole et al., 2004; Cui et al., 2015). Brooker and Buss (2010) therefore proposed the concept "dynamic RSA", where changes in RSA are modelled over the course of an emotional challenge. Thus, RSA could be examined in relation to changing demands of a task. To test dynamic RSA as a measure of emotion regulation, Brooker and Buss examined both dynamic RSA and the traditional RSA change score during a stranger approach task in toddlers. To calculate dynamic RSA, growth curve models with linear and quadratic time predicting RSA were performed, and individual linear and quadratic trend scores were extracted for each child. High-fear toddlers showed greater linear increases and more negative quadratic change, resulting in RSA rising at the beginning of the task, and then slowly declining. In contrast, non-high fear toddlers had a relatively constant level of RSA over time (Brooker & Buss, 2010). Greater negative quadratic change was also related to positive affect and boldness of

high-fear toddlers during the stranger approach task, whereas the traditional measure of RSA was unrelated to positive affect and boldness. It was concluded that considering the dynamic nature of RSA change can provide additional information for researchers beyond calculating a difference score between task and baseline, and this approach should be investigated further (Brooker & Buss, 2010).

Though not using the term "dynamic RSA", other researchers have used similar methods to investigate dynamic change in RSA over time. Amole and colleagues (2017) performed linear growth models of mother and daughter RSA during discussions of shared pleasant events and relationship conflicts in order to extract slope values of rate of change of RSA. Depressed dyads and dyads with no history of depression were compared. It was hypothesized that discussion of pleasant events would show an increase in RSA (positive slope) indicating social affiliation, and that discussion of conflict would show a decrease in RSA (negative slope) indicating threat/conflict. The slopes were hypothesized to be smaller in depressed dyads, as depressed individuals have been shown to have a blunted vagal response. Slopes were calculated using linear growth models. Results indicated that in mother-daughter dyads with a history of depression, there was minimal RSA change over time (i.e., small slopes) during both discussions. In contrast, never-depressed dyads had positive slopes during both discussions, indicating social engagement. It was concluded that a smaller slope of RSA is indicative of diminished social engagement and interpersonal difficulties in those who have a history of depression (Amole et al., 2017).

Cui and colleagues (2015) explored dynamic RSA during an anger discussion task in adolescents, labelling this the "time course approach". Similar to Brooker and Buss (2010), Cui and colleagues used multilevel modelling of both linear and quadratic effects of time on RSA, using the resulting coefficients to represent dynamic RSA. Results indicated that individuals who had better anger regulation and displayed more prosocial behaviours

demonstrated stronger RSA suppression and subsequent rebound; that is, RSA decreased and then increased over the course of the task. Comparing this to traditional methods of examining RSA reactivity, it was concluded that the time course approach yielded richer information and showed more relations to emotion regulation outcomes.

Given the above results, it appears that this new approach of examining changes in RSA over the course of a task can yield interesting information about reactivity and regulation, particularly in the context of dyadic discussions with a social partner. This may therefore be an ideal technique for exploring emotional reactivity and regulation in therapists during interactions with clients.

Challenging Clinical Moments: Negative Interpersonal Process

Therapist characteristics such as emotional reactivity arguably become especially influential when working with challenging clinical moments, as individual differences in therapists become more pronounced under stress (Rzeszutek et al., 2015; Saxon & Barkham, 2012). In particular, negative interpersonal process can be especially challenging for therapists and can trigger a strong emotional response (Coutinho et al., 2011). Negative interpersonal process refers to moments of disagreement, tension, or disconnect between client and therapist, and it includes concepts such as resistance and alliance ruptures (Hoffman & Weinberger, 2013). Resistance is defined as any behaviour that opposes, blocks, or diverts the therapist's direction, and the highest level of resistance includes hostility, as per the Client Resistance Code (Westra et al., 2009). When clients are resisting therapist direction, therapist characteristics have been demonstrated to be more salient in the interaction, particularly characteristics such as stubbornness, perfectionism, and the need to be admired (Coutinho et al., 2011). Importantly, resistance is considered an interpersonal process, and sustained resistance is considered a clinician skill error (Miller & Rollnick, 2013). Therefore, the fault does not lie with the client, but rather on a disconnect between the

client and therapist in that moment. Thus, the therapist is not successfully understanding the client's needs or exploring their concerns in that moment (Westra & Norouzian, 2018).

Similarly, alliance ruptures are a breakdown in collaboration and/or a deterioration in the bond between client and therapists (Bordin, 1979; Safran & Muran, 2000), and therefore are also an interpersonal process and a similar construct to resistance (Safran & Muran, 2000). As with resistance, therapist characteristics have also been demonstrated to become more pronounced during alliance ruptures. For example, therapist attachment style is particularly influential during a rupture, with less securely attached therapists demonstrating lower empathy towards clients during a rupture (Rubino et al., 2000). Resistance can indicate that there is a tension or breakdown in the therapeutic alliance, or a rupture can occur due to poorly managed ambivalence or client concerns about change (Westra & Norouzian, 2018). Both of these clinical scenarios therefore provide a context where therapist individual differences in reactivity may become more pronounced.

Client ambivalence to change is also a scenario that can cause stress in therapists, thereby highlighting their individual differences in levels of emotional reactivity and regulation. Ambivalence to change occurs when there is simultaneous desire and reluctance to change; thus, ambivalence has been conceptualized as low motivation and/or resistance to the change process (Button et al., 2015). Therapists identify struggling to provide treatment when clients show low motivation or ambivalence, with 67% of clinicians identifying low client motivation as a barrier to therapy in a 2010 survey by the American Psychological Association. When clients are ambivalent, they can be less receptive to the therapist's approach and/or interventions, and if therapists are not responsive to this ambivalence and keep attempting to push clients to change before they are ready, it can result in resistance (Button et al., 2015; Westra, 2012). Research also shows that therapists engage in negative behaviours (e.g., lack of empathy) when working with clients who are less motivated or

receptive to the therapist, and that this in turn interferes with client outcome (e.g., Strupp, 1980). Despite the negative effects of these behaviours, it is difficult for therapists to respond effectively to negative interpersonal process.

Therapist Responses to Negative Interpersonal Process

Managing one's emotions during difficult moments is not easy, even for therapists. It is very difficult for individuals to deal with interpersonal conflict when they are one of the participants (Binder & Strupp, 1997). As expression of emotion is a social cue, emotions in one partner in an interaction often activate the same emotion in others, an effect called "emotional contagion" (Hatfield et al., 1994). The more extreme the emotion is that is being expressed, the stronger the pull is to respond in kind (Muran & Eubanks, 2020). Therefore, when a client expresses discontentment or anger towards the therapist, therapists can be pulled into hostile behaviours towards the client in response (Castonguay et al., 2010). In a series of studies by Strupp (1980), when highly experienced therapists were confronted with challenging interpersonal scenarios in therapy, they tended to respond with hostility, coldness, and distancing behaviours. Relatedly, therapists generally have difficulty responding productively to ambivalence and resistance, and anger and hostility from clients are particularly difficult to work with in therapy (Boswell et al., 2013; Mayne & Ambrose, 1999). Strupp (1980) reported that in the series of studies mentioned above, there was not a single instance in this study when a client's hostility or negative behaviours were successfully confronted or effectively resolved by the psychotherapist.

Difficult moments in psychotherapy such as resistance, alliance ruptures, and ambivalence are also cited as those which can "de-skill" therapists (Boswell et al., 2013). When one is under stress, a narrowing of attention occurs, reducing focus on peripheral information and focusing attention to main tasks (Driskell et al., 1999). As a result, decision making becomes more rigid, with an overreliance on familiar responses, regardless of

previous success (or lack thereof; Lehner et al., 1997; Staw et al., 1981). Higher emotional arousal also leads to increased focus of attention on oneself, at the expense of the larger task or surroundings (Wegner & Giuliano, 1980; Carver & Scheier, 1978). Further, high emotional arousal is associated with dichotomous "either-or thinking", perseverative thought, avoidance behaviours, and attack behaviours (Linehan, 1993; Mathews & MacLeod, 2005; Veen & Artnz, 2000). When faced with difficult moments in therapy, therapists can therefore lose sight of the subtleties of the psychotherapy process and the importance of remaining present with their client, and become solely focused on reaching their session goal, or communicating their own viewpoints. They also may be pulled to withdraw from their client or argue back. Therefore, the greater goal of supporting their client and helping them instill change in their lives can become muddled. This is demonstrated in psychotherapy research, where higher levels of client anger and aggression are associated with lower therapist adherence and competence, or with therapists adhering to their therapeutic model in an inflexible way, unwilling or unable to incorporate their client's point of view. In turn, these negative therapist behaviours impact client outcomes (Castonguay et al., 1996; Coutinho et al., 2011; Rhodes et al., 1994; Rounsaville et al., 1988).

As these difficult moments are particularly sensitive times in the therapeutic process, if the therapist is unable to regulate their own emotions in these moments it can lead to conflict in the therapeutic relationship, damage to the therapeutic alliance, and reduced therapist competence (Boswell et al., 2013; Francis et al., 2005; Muran et al., 2009). When confronted by a client, the onus is on the therapist to remain calm and not react with defensiveness or counter-hostility so that they can remain therapeutic and help the client explore the reason for these emotions (Coutinho et al., 2011). Evidence for the importance of emotion regulation during these difficult moments was demonstrated in a recent study by DiBartolomeo (2023). In this study, 174 individuals with varying levels of psychotherapy

training engaged in the Resistance Vignette Task (RVT; Westra et al., 2021), where they had to generate responses to vignettes of resistant therapy clients. Participant emotion regulation was measured using the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). It was found that those who had low difficulties in emotion regulation scored highly on the RVT task, indicating they could respond well to resistance. Conversely, those who had high difficulties with emotion regulation scored poorly on the RVT. It was concluded that in order to generate effective responses to resistance, one must first be able to regulate their emotions in response to these moments. Thus, keeping calm in conflict is critical to managing difficult moments in therapy (DiBartolomeo, 2023).

Negative Process as Key Moments Impacting Outcome in Therapy

Research demonstrates that these difficult moments in therapy are some of the most important in the therapeutic interaction, and therefore it is essential that they be managed effectively (Aviram et al., 2016). Negative interpersonal process such as disagreement, resistance, and ruptures in the therapeutic alliance are common in therapy cases with poor outcome, and if therapists respond poorly to confrontation from their client, clients are also more likely to quit therapy (Coutinho et al., 2011; Muran et al., 2009). Resistance is often cited by therapists as a major obstacle to treatment (APA, 2010), and it is widely known to be a critical therapeutic issue that must be minimized to allow for successful treatment. For example, resistance even as early as session 1 of therapy has been shown to account for 36% of the variance in treatment outcome (Aviram & Westra, 2011; Westra & Norouzian, 2018). Furthermore, Aviram and colleagues (2016) demonstrated that therapist behaviour was more significantly impactful in the context of resistance, compared to randomly selected moments where resistance was not present.

Alliance ruptures also critically impact the therapy process and outcome. Several studies note an association between the presence of unresolved ruptures in the therapeutic

alliance and the occurrence of dropout (Coutinho et al., 2011; Samstag et al., 1998; Tryon & Kane, 1995). Conversely, a stronger therapeutic alliance is associated with a decrease in symptoms early in treatment, which then further improves the alliance, resulting in increased symptom improvement (Fluckiger et al, 2020). Alliance is also predictive of psychotherapy outcomes across assessors, alliance measures, treatment approaches, and countries (Fluckiger et al, 2019).

When resistance is not effectively managed by therapists, it persists and can sometimes increase to a higher level of resistance – hostility. There is a strong association between hostile client-therapist interactions and poor treatment outcome (for review see Binder & Strupp, 1997). For example, Hara and colleagues (2020) found that therapist hostility predicted client outcome at one-year post-treatment, despite hostility making up less than 1% of therapist utterances. In this study, for every additional utterance of therapist hostility in session 1, there was a 2.39 point (or .25 standard deviation) increase in the Penn-State Worry Questionnaire (PSWQ) at 1 year posttreatment, even when controlling for baseline PSWQ and amount of general client-therapist disagreement. Although hostility on behalf of the therapist is relatively rare, its impact is often underestimated. In the same study by Hara and colleagues (2020), 9 of 13 CBT therapists were found to exhibit at least one hostile behaviour during disagreement episodes, and often hostility occurred more than once (Hara et al., 2020).

Importantly, when these difficult interactions occur between client and therapist, they are often not isolated incidents. Therapists who are involved in disagreement or "rupture" episodes typically report that similar episodes have occurred with these same clients previously (Coutinho et al., 2011). The repetitiveness of such episodes demonstrates that these disagreements do not just go away—they persist and continue to impact the therapeutic relationship. Furthermore, research indicates that episodes of disagreement, when effectively

addressed, may lead to improved client outcomes. Rupture resolution is linked to treatment completion and reduced symptoms following treatment (Eubanks, Muran, & Safran, 2018). Ruptures in the alliance are both critical risk factors for failure, and opportunities for improved outcomes (Muran & Eubanks, 2020). Thus, it is essential for therapists to limit negative process and for these moments to be addressed and repaired as they occur (Coutinho et al., 2011).

Interestingly, moments that are often the most critical to client success are the same moments that therapists struggle with most. It is therefore essential that all therapists be trained in how to effectively respond to such experiences in psychotherapy. In fact, Muran and Eubanks (2020) identify emotion regulation as an essential therapist skill. As reactions to negative interpersonal scenarios would be compounded in therapists who are emotionally reactive due to their increased sensitivity to emotional stimuli, this training would likely be even more essential for therapists who are highly reactive.

Impact on Therapists

While the impacts of negative psychotherapy process on therapist skill is critical, the additional impact on therapist mental wellbeing should not be ignored. Negative psychotherapy process is emotionally distressing for many therapists, and there are calls for the field of psychotherapy to acknowledge the emotional and interpersonal challenges that come with being a therapist (Muran & Eubanks, 2020). After rupture events, therapists perceive their clients to leave the session feeling invalidated and rejected by the therapist (Coutinho et al., 2011). Therapists have difficulty dealing with clients' expression of anger towards them, and can feel frustrated, confused, guilty, angry, and hurt following disagreement episodes. Therapists also ruminate on the interaction afterwards and end up doubting their own competence (Hill et al., 1996). As emotional reactivity leads to increased frequency and magnitude of distress in social interactions, these processes arising in a

therapeutic relationship may be particularly difficult for therapists who are more reactive at baseline. Research demonstrates that emotional reactivity can cause significant difficulties and feelings of lasting distress for those in the helping professions (Rzeszutek, et al., 2015). Emotional reactivity in these occupations is related to increased absenteeism, decreased job satisfaction, and various mental health problems such as depression, anxiety, and substance use (Rzeszutek et al., 2015). In short, helping therapists manage their emotional reactivity should therefore not only positively impact clients, but therapists as well.

To summarize, therapist characteristics become highlighted in stressful therapeutic moments, such as during negative interpersonal process. When therapists experience a strong emotional response they can respond in a non-therapeutic manner, such as becoming defensive, withdrawn, or inflexible. Though these are some of the most challenging moments for therapists to work with, therapist response in these moments is essential, as these moments are uniquely predictive of client engagement and outcome. Given that these moments are so important and cause therapists so much difficulty, training therapists how to respond in such moments is an important goal. This may be particularly important for therapists who are generally more reactive, or who have more difficulty regulating their emotions. Unfortunately, current manualized treatments do not put much focus on interpersonal process, and as a result therapists can often feel ill-equipped to deal with negative interpersonal interactions (Boswell et al., 2013). It is important for negative process to be normalized in therapy, and to give therapists tools for dealing with these interactions rather than leaving them to question their own capabilities and to handle it on their own. Thus, therapists need further training to specifically address how to manage both difficult clinical scenarios, and their own reactivity. By doing so, therapists may have the tools to elicit improved psychotherapy treatment outcomes.

Managing Negative Interpersonal Process Using Motivational Interviewing (MI)

One way to effectively manage difficult clinical scenarios such as resistance is through the application of MI principles. MI, initially used in the field of substance use, is a therapeutic approach that specifically focuses on exploring ambivalence about change and minimizing resistance (Miller & Rollnick, 2013; Westra, 2012; Westra & Norouzian, 2018). Rather than being a set of techniques, MI is a therapeutic style, approaching therapy with a spirit of autonomy support, collaboration, and evocation (Rollnick & Miller, 1995). As preservation of client autonomy is emphasized, therapists do not try to persuade the client to change their perspective when operating from an MI stance. This is important for dealing with ruptures, as they commonly occur when a therapist tries to challenge the client with a new perspective (Coutinho et al., 2011). Training in MI principles helps therapists identify when a client is resisting and then teaches them to responsively change tactics in a way that preserves client autonomy (Coutinho et al., 2011). This involves responding with support, rather than direction, as providing support during moments of resistance causes resistance to decrease (Westra & DiBartolomeo, in press). Patterson and Forgatch (1985) demonstrated this phenomenon in a study whereby they had therapists alternate being directive and supportive in the same session. Results showed that resistance reliably increased in response to therapist direction and decreased in response to therapist support. This strategy aligns with client disclosures that after a rupture, clients expect the therapist to change strategies and become more flexible (Safran & Muran, 2000).

MI principles also teach therapists to “roll with resistance”, which requires the therapist to relax and empathize with clients in the face of resistance, encouraging them to talk and assert their feelings (Safran & Muran, 2000). MI views resistance as information to be explored, rather than an obstacle to be overcome. Approaching resistance from this perspective may decrease therapist tendency to be defensive, and in fact, recent research has

demonstrated that therapists providing MI integrated with Cognitive Behavioural Therapy (MI-CBT) exhibit more affiliative and fewer hostile behaviours during episodes of disagreement, compared to therapists trained in CBT alone (Hara, 2020). When trained in MI strategies, therapists may be better prepared for tackling moments of disagreement and therefore can approach them confidently, perhaps thereby preventing high arousal typically experienced by those therapists who are more emotionally reactive when confronted by a client. Thus, therapists would benefit from learning to implement MI principles during interpersonal conflict with clients, both to improve client outcome and to possibly reduce their own fear of interpersonal conflict.

Research has repeatedly demonstrated that the use of MI principles decreases resistance in therapy and increases likelihood of positive outcome (Hara, 2020; Westra, Constantino, & Antony, 2016; Westra & Norouzian, 2018). To take one example, Aviram and Westra (2011) examined observed resistance in clients who did or did not receive MI prior to CBT. Early resistance was significantly lower in those clients who had received MI, and this was a large effect. Reduced resistance also directly mediated the relationship between treatment group and symptom reduction. Further, in a meta-analysis examining the integration of MI into CBT for anxiety disorders, MI-CBT showed greater symptom reduction, compared to CBT alone, across studies (Marker & Norton, 2018).

MI is especially effective during difficult therapy moments. In the Hara (2020) study investigating hostility during disagreements in psychotherapy, two groups of therapists were studied: therapists practicing manualized CBT (CBT-alone), and therapists practicing a manualized CBT protocol integrated with motivational interviewing principles (MI-CBT). Results indicated that therapists belonging to the MI-CBT group exhibited significantly fewer hostile behaviours during disagreement episodes compared to CBT-alone therapists. Where 9/13 CBT-alone therapists had at least one instance of hostility, only 1/8 MI-CBT therapists

had an instance of hostility. In fact, CBT-alone therapists had 10.91 times the risk of displaying an additional instance of hostility during a given disagreement episode compared to MI-CBT therapists (Hara, 2020). Further, Aviram and collegues (2016) demonstrated that for individuals with generalized anxiety disorder, therapists who were more MI-like specifically during episodes of disagreement predicted lower client post-treatment worry. However, being MI-like at other randomly selected points in therapy was not predictive of post-treatment worry. Therefore, MI skills are particularly important in moments of tension between client in therapist, and learning to use MI in these specific moments seems critical in order to help therapists confidently approach difficult clinical scenarios, and to maximize client therapuetic outcome. This would fill an important gap in current manualized treatements, which have tended to neglect the imporance of interpersonal process in psychotherapy.

Training in Psychotherapy

Knowing how to respond in difficult therapy situations is different than being able to overcome one's initial reactivity and actually *implement* such strategies. Experts on negative psychotherapy process have emphasized that traditional training methods do not adequately prepare therapists to manage their personal reactions to difficult clients (Henry et al., 1990). Traditionally, continuing education in psychotherapy involves workshops which focus more on knowledge acquisition than skills training, despite a body of research demonstrating that didactic training is not as effective as practicing skills. In a review of continuing education meetings and medical workshops by Forsetlund and colleagues (2021), eighty-one randomized controlled trials were reviewed to examine the impacts of these meetings and workshops on professional practice and patient outcomes, with a goal of investigating what specific factors impact the efficacy of the training. They found that while didactic training can have small impacts on professional practice, training that is partially or largely interactive

is more effective (Forsetlund et al., 2021). In fact, in some cases didactic training shows no difference in skill development, compared to no training at all. For example, in a study about training on ethical decision making, trainees were presented either with a workshop on ethical decision making, written materials on ethical decision making, or no materials. The workshop included reading, discussion, case vignettes, and self-generation of ethical dilemmas from experience. All participants' ethical decision making was then tested using a vignette task. Results demonstrated that learning from written information was not significantly different from receiving no instruction at all. The researchers concluded that quality decision making cannot be elicited from written instructions alone; rather, more direct practice and discussion was important (Gawthrop & Uhlemann, 1992). Workshops which involve the opportunity to practice training have therefore been shown to be more effective (Davis et al., 1999).

Training research has further demonstrated that feedback during training is important for enhancing performance. In a randomized control trial by Miller and colleagues (2004), several methods of training MI were compared: a 2-day workshop, a workshop with feedback, a workshop with individual coaching, a workshop with feedback and coaching, and a self-training control. Trainees in all four workshops showed a large increase in MI proficiency following the workshop, however trainees who just received the workshop lost most of their gains at the 4-month follow-up, with MI proficiency being similar to the self-training control group. In contrast, for trainees who received coaching and/or feedback, their proficiency was maintained at 4 and 8-month follow up (Miller et al., 2004). In a meta-analysis of 15 research studies on MI training, de Roten and colleagues (2013) also found that providing additional feedback in MI training, by way of coaching or supervision, improves MI proficiency. Similarly, in another meta-analysis of 21 studies of MI training, results demonstrated that skills eroded over 6-month follow-up if post-workshop feedback or coaching was not implemented (Schwalbe et al., 2013). Studies concluded that therapists

learn best through individualized experiential activities that include feedback and/or coaching in order to maximize and maintain skills. In these studies, feedback and/or coaching was often provided during the follow-up period, which may account for the maintenance of gains. Information on whether workshop gains can be maintained when feedback is no longer being actively provided would be valuable information for improving therapist training.

Not only is general practice and experiential learning important, but learning has also shown to be most effective when one practices beyond their comfort zone. As indicated by Vygotsky's Zone of Proximal Development, the greatest gains in learning occur when one is practicing with the help of another, beyond what they could do independently (Wass & Golding, 2014). Furthermore, to perform best in difficult and high-pressure situations, one must receive training while under pressure as well. In a study examining different training methods for improving performance under pressure, Beilock and Carr (2001) trained novice golfers in golf putting in three different training conditions: regular low-pressure training, training in a distracting environment, and training in a high-pressure environment, where participants believed they were being viewed by golf teachers and coaches during their training. All groups then engaged in testing in a low-pressure and high-pressure environment. Participants in the low-pressure and distraction training groups performed poorly under pressure, but participants in the high-pressure training group performed better under pressure, leading researchers to conclude that training in a high-pressure environment can prevent performance from suffering under pressure. Similarly, Oudejans and Pijpers (2009) studied whether practicing perceptual-motor skills (e.g., free throws, dart throwing) under anxiety induction prevented skill deterioration later when exposed to an anxiety inducing situation. Results demonstrated that performance deteriorated under anxiety for those in the control condition who had engaged in regular practice. However, for those who had practiced under anxiety induction, their performance did not suffer under anxiety induction later. That is, their

performance under normal testing conditions and under anxiety inducing testing conditions was not significantly different. In addition, they found that anxiety did not decrease as a result of this practice, concluding that practicing under stress doesn't acclimatize one to anxiety, but makes them better able to perform while they are anxious (Oudejans & Pijpers, 2009). In all, psychological research indicates that engaging in practice under conditions which increase emotional arousal or stress are the best ways to ensure optimal performance when exposed to increased arousal or stress in non-practice scenarios. Therefore, practice under difficult and stressful conditions should reduce the negative impact of stress on future performance.

A Deliberate Practice Approach to Training

A DP approach to training is emerging in psychotherapy as a new model for skill development. DP encompasses both repeated practice and practicing beyond one's comfort zone and current capabilities, while engaging in self-monitoring and receiving expert feedback (Rousmaniere et al., 2017; Muran & Eubanks, 2020). As outlined by Ericsson and Pool (2016), a DP approach includes effortful practice with feedback from an expert coach who guides the individual towards ideal or expert performance. Importantly, to be effortful, practice should involve systematically exploring new methods and/or practicing areas that cause one difficulty (Ericsson et al., 1993). This is similar to training methods in other professions, such as music or sports.

This approach shows promise in the field of psychotherapy, with time spent in DP activities predicting skill improvement. Chow and colleagues (2015) examined the relationship between various therapist characteristics and client outcome, as the person of the therapist explained 5.1% of variance in client outcome in this sample. Amount of time spent in DP was a significant predictor of client outcome, whereas various other characteristics (e.g., age, years of experience, theoretical orientation) were not. Therapists who were most

effective also reported expending the most effort when reviewing therapy recordings, emphasizing the importance of effortful practice (Chow et al., 2015). Another study attempted to train empathic responding to psychology undergraduate students and therapists in training. DP training versus didactic training with exposure to good empathic responses was compared. Responses to test vignettes were rated as more empathic for those who engaged in DP in both psychology undergraduate students and therapists in training (Barata, 2020; Tomas, 2021). Finally, the parent trial to the present study compared DP training versus traditional workshop training for teaching community therapists to appropriately manage ambivalence and resistance (Westra et al., 2021). Though both groups reported equivalent increases in self-reported skills, the DP group demonstrated better observer-rated skill on all performance measures post-workshop (e.g., less resistance, higher empathy). Furthermore, at 4-month follow-up, DP trainees were rated as more empathic by ambivalent interviewees, and self-reported practicing their skills more often than the traditional workshop training group (Westra et al., 2021). Not only does DP predict improvement in skill, but effortful practice also allows for increased exposure to difficult situations, which can reduce feelings of distress and isolation when these incidents occur with clients (Rzeszutek et al., 2015). Thus, training in MI using a DP method may lead to increased competence in managing negative interpersonal process. This training method may be particularly helpful for those who are more reactive, as they will have repeated exposure and practice implementing MI strategies, despite their reactivity.

Literature Summary

Some individuals are more reactive to emotional events than others, and this is particularly relevant to therapists due to their frequent interaction with emotionally evocative material. Therapist reactivity can be particularly triggered during challenging clinical moments such as resistance or hostility, as therapists are often pulled to respond defensively,

withdraw, or counter-argue with clients. Such behaviours lead to decreased therapist skill, increased client resistance, and possible alliance ruptures, all of which can be detrimental to client outcome. Increased conflict in psychotherapy can also lead to personal distress in psychotherapists. It is important to give therapists tools for navigating negative interpersonal process, particularly for those therapists who are highly reactive at baseline. Thus, therapists need further training to specifically address negative process. MI is an effective strategy for managing negative process, and DP shows promise as a training approach that may result in greater maintenance of skill.

The Present Study

This dissertation seeks to address several gaps in the present literature. Though emotional reactivity and regulation have been examined in the general population and in clinical populations, there is less research on how these characteristics manifest in therapists. Also of interest is how therapist emotional arousal may impact therapy process and outcome. In addition, though negative interpersonal process can be detrimental to both therapists and clients, strategies for teaching therapists to manage negative interpersonal process have generally been neglected. DP is emerging as a promising method to improve the impacts of training, though using DP in a workshop to specifically teach MI principles has not been addressed. Finally, it is unknown how therapist biological reactivity, as measured by dynamic RSA, is impacted during a therapeutic task.

With these gaps in mind, the present study examined data from a recently completed study investigating the efficacy of a DP vs didactic workshop for training therapists to effectively manage ambivalence and resistance (Westra et al., 2021). Eighty-eight community therapists engaged in training to learn MI principles for managing difficult moments in therapy, such as ambivalence and resistance. Half of these therapists were randomly assigned

to receive a 2-day training workshop based on DP principles, and the other half received a traditional didactic 2-day workshop.

The first aim of the present study was to examine the effect of training on changes in therapist emotional reactivity to clients depicting resistance, as measured by a) self-reported arousal following a vignette task, and b) trainee dynamic RSA within in-vivo test interviews with ambivalent individuals. For aim 1a) it was hypothesized that, compared to pre-workshop, at post-workshop both groups would show a decrease in self-reported arousal, but this decrease would be greater for those who received DP training. Based on the Westra and colleagues (2021) parent trial which found that DP effects persisted over time, but traditional group gains did not, it was expected that the DP group would maintain their reduction in self-reported arousal, whereas self-reported arousal in the traditional group would show an increase from post-workshop to 4-month follow-up. For aim 1b) it was hypothesized that both workshop groups would show positive dynamic RSA at post-workshop, since positive dynamic RSA represents that trainees are actively regulating and providing compassion and support to their interaction partner. However, it was expected that this positive trend would be stronger in the DP group due to the opportunities to practice (e.g., Borelli et al., 2019; Stellar et al., 2015). As with self-reported arousal, it was expected that dynamic RSA would be maintained from post-workshop to follow-up in the DP group, but that dynamic RSA would decrease in the traditional training group, indicating an increase in arousal from post-workshop testing to follow-up testing. Overall, the DP group was expected to be better able to manage their reactivity to difficult therapy moments (as indicated by lower self-report arousal and higher dynamic RSA), as the training was expected to help protect DP therapists against stress and uncertainty when working with ambivalence.

The second aim of this study was to examine whether therapist trainee emotional reactivity to difficult scenarios would be related to actual performance in test interviews with

ambivalent individuals, as measured by trainee ability to minimize resistance in these interviews. It was also of interest to examine whether this would differ by workshop training group. For self-reported arousal, it was hypothesized that those with higher arousal would have greater levels of observed resistance in test interviews. For arousal measured by dynamic RSA, it was hypothesized that those with higher biological arousal (*lower* dynamic RSA) would show increased levels of observed resistance in test interviews, at both post-workshop and 4-month follow-up. In other words, higher arousal across participants was expected to hinder therapist performance, as high reactivity may interfere with therapist skill (Boswell et al., 2013). The impact of emotional reactivity on performance was expected to be greater in the traditional workshop group, due to these trainees having less practice engaging with ambivalence and resistance, allowing their reactivity to have a greater effect on their performance.

Method

Participants

The present study examined data from a recently completed trial investigating the efficacy of a DP workshop in training therapists to effectively manage ambivalence and resistance in psychotherapy using MI principles (Westra et al., 2021). Participants included the therapist trainees who participated in the workshop, as well as community volunteers who were ambivalent about a specific decision/change. These volunteers participated as interviewees for the testing of therapist trainees following the workshop.

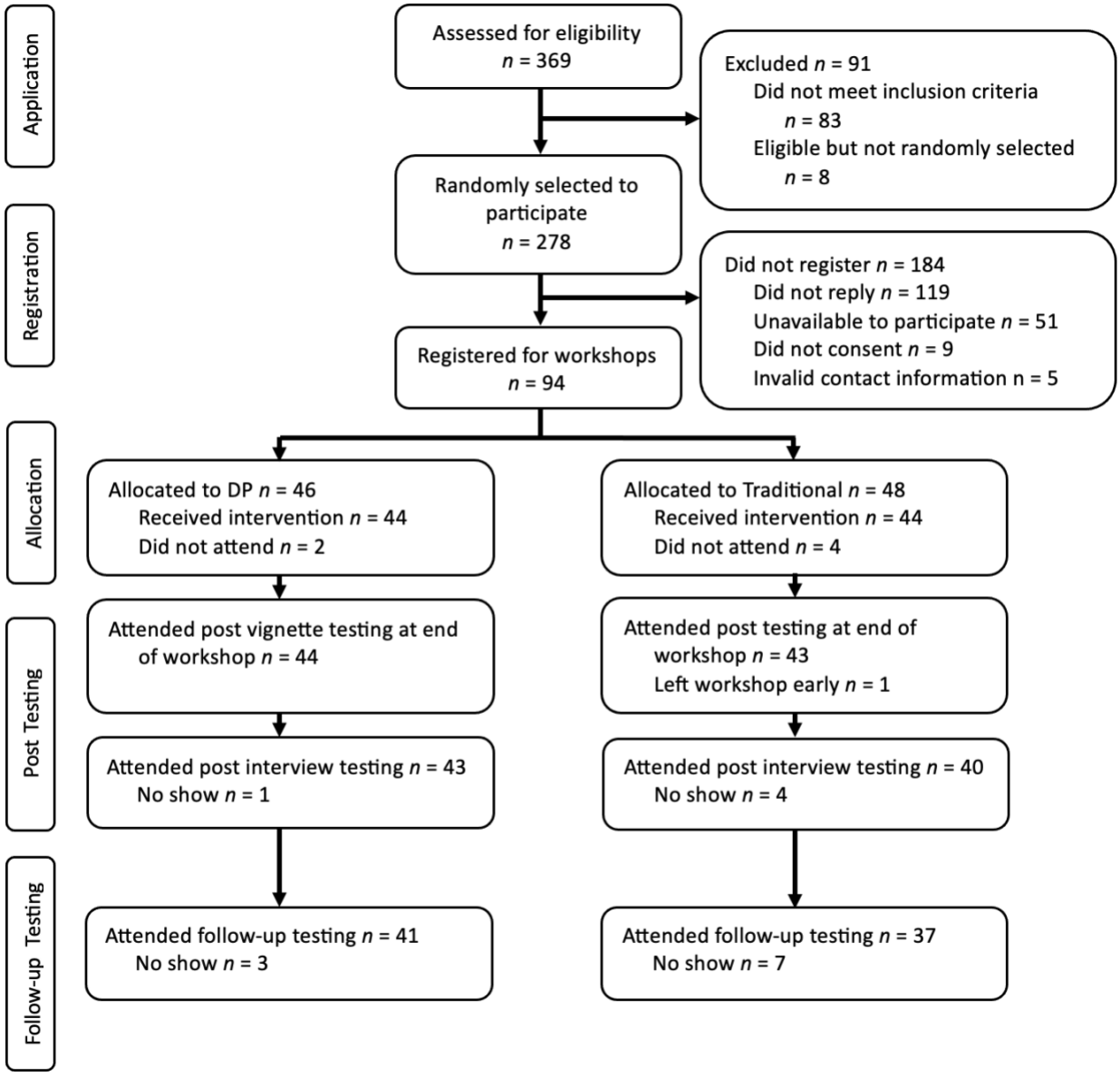
Therapist Trainees

Therapist trainees were recruited from the Greater Toronto Area through an advertisement for a free MI workshop. Applicants were excluded if they did not work with clients or if they had previous supervised experience in MI. Participants of any level of experience, discipline, or therapeutic orientation were welcome to participate. Of 286 eligible

applicants, 94 were registered to participate in the workshop based on availability (many applicants were no longer able to participate due to a labour dispute at York University where the study was to be conducted, causing a 5-month workshop postponement). Of the 94 who were available to participate, 44 attended the DP workshop, and 44 attended a traditional workshop for efficacy comparison, totalling 88 attendees (see Figure 2 for a summary of the therapist selection procedure). As incentive to complete all aspects of the study, participants received free participation in the workshop as well as travel reimbursement and a $75 honorarium for completing the 4-month follow-up assessment. Final numbers analyzed for the DP workshop were 43 at post-testing, and 41 at follow-up testing. Final numbers analyzed for the traditional workshop were 40 at post-testing, and 37 at follow-up testing. Demographic characteristics for therapist trainees by group are presented in Table 2.

Figure 2

Therapist Trainee Selection Procedure



Note. Many initial applicants could not be reached or were unavailable due to a labour dispute causing a 5-month workshop postponement.

Table 2

Demographic Characteristics for Therapist Trainees by Group

Variable	**Traditional** (*n* = 44)	**Deliberate Practice** (*n* = 44)
Age, *M (SD;* range*)*	34.80 (9.91); 24 – 64	32.85 (8.45); 23 – 61
Years of Experience, *M (SD;* range*)*	4.73 (5.00); 0 –18	3.70 (5.14); 0 – 22
Gender, *n* (%)		
Male	6 (13.60)	7 (15.90)
Female	38 (86.40)	37 (84.10)
Ethnicity, *n* (%)		
Indigenous	1 (2.30)	1 (2.30)
African-Caribbean/African	0 (.00)	3 (6.80)
White	27 (61.40)	28 (63.60)
Asian	12 (27.30)	9 (20.50)
Multiracial	2 (4.50)	1 (2.30)
Other	0 (.00)	1 (2.30)
Missing	2 (4.50)	1 (2.30)
Highest Level of Education, *n* (%)		
Bachelor's Degree or Diploma	13 (29.50)	15 (34.10)
Master's	21 (47.70)	24 (54.50)
Doctoral	10 (22.70)	5 (11.40)
Current Student, *n* (%)	13 (29.50)	17 (38.60)
Primary Theoretical Orientation, *n* (%)		
Client-centered	16 (36.40)	13 (29.50)
Cognitive-behavioural	17 (38.60)	16 (36.40)
Psychodynamic/Psychoanalytic	3 (6.80)	0 (.00)
Process-experiential	1 (2.30)	2 (4.50)
Integrative	5 (11.40)	13 (29.50)
Other	2 (4.50)	0 (.00)
Discipline, *n* (%)		
Psychology	21 (47.70)	19 (43.20)
Counselling/Psychotherapy	2 (4.50)	6 (13.60)
Social Work	11 (25.00)	8 (18.20)
Nursing	4 (9.10)	6 (13.60)
Occupational Therapy	6 (13.60)	3 (6.80)
Other	0 (.00)	2 (4.50)

Ambivalent Interviewees

To test therapist trainee skills following the workshop, volunteers from the local community were invited to discuss something they were "unsure" (ambivalent) about with an individual who was "trained to help people sort through conflicting feelings". Interviews were 20 minutes in length. Interviewees were pre-screened to ensure that they had an appropriate focus for the interview (i.e., something they were ambivalent about). They were excluded if they had a current significant mental health concern (e.g., trauma, personality disorder, possible psychosis) or history of self-harm or suicidal ideation, in order to ensure that the trainee assessment context was uniform and not diverted by crisis management. Interviewees were informed that this was not treatment, but a study to assess trainee interview skills. They received either a research credit for an undergraduate course or a $20 honorarium for their participation. Of the 380 volunteers who were screened for eligibility, 228 met eligibility criteria and were invited to participate in the study. Of the 161 who were scheduled for interviews based on availability, 153 were interviewed and 6 did not show up for testing. Topics discussed by the interviewees were ambivalence about academic/career choice, relationships, work, procrastination, relocating, and health behaviours (e.g., exercising, quitting smoking). Demographic characteristics for interviewees are presented in Table 3.

Table 3

Demographic Characteristics of Ambivalent Interviewees

Category	**Post-workshop Testing** (N = 79)	**Follow-up Testing** (N = 74)
Age, *M (SD;* range*)*	23.15 (7.44); 17-54	24.27 (8.31); 18-59
Gender, *n* (%)		
Male	18 (22.78)	14 (15.90)
Female	60 (75.95)	60 (84.10)
Other	1 (1.27)	

Ethnicity, *n* (%)		
Hispanic / Latin American	2 (2.53)	1 (1.35)
African-Caribbean/African	11 (13.92)	10 (13.51)
White	13 (16.46)	22 (29.73)
Asian	34 (43.04)	28 (37.84)
Middle Eastern/ West Asian	13 (16.46)	8 (10.81)
Multiracial	6 (7.59)	5 (6.76)
Highest Level of Education, *n* (%)		
High School Diploma	54 (68.35)	46 (62.16)
Bachelor's Degree or Diploma	20 (25.32)	23 (31.08)
Master's or Doctoral Degree	5 (6.33)	5 (6.76)
Current Student, *n* (%)	67 (84.81)	61 (82.43)
Change Topics, *n* (%)		
Academic / Career Choices	36 (45.56)	35 (47.30)
Relationships	13 (16.46)	16 (21.62)
Health Behaviours	9 (11.39)	11 (14.86)
Work	8 (10.13)	3 (4.05)
Procrastination	9 (11.39)	6 (8.11)
Relocating	4 (5.06)	3 (4.05)

Workshops

Therapists engaged in training to use MI principles to manage ambivalence and resistance in therapy. Trainees were randomly assigned by stratification to either receive a new training method based on DP principles, or to receive a traditional didactic workshop. Random assignment by stratification was performed to create a statistically equivalent number of participants from each discipline, gender, level of experience, and therapeutic orientation in each workshop. Both workshops lasted two days and were led by the same facilitator, who had been leading MI training workshops (i.e., the traditional workshop) for many years. This was done to prevent a trainer confound, as studies have shown that even manualized curriculums for psychotherapy training show different effects based on the trainer (Henry et al., 1993). Workshops focused on the specific skill of managing ambivalence and resistance, as opposed to broader MI skills. This included learning how to identify change

talk and counter-change talk, identify resistance, and how to use MI principles such as reflecting resistance and emphasizing autonomy.

Deliberate Practice Workshop

The DP workshop used DP principles, as described above, for use in a group format. The first half-day of the workshop involved didactic training of concepts and research, and the following day and a half were devoted to DP. This included effortful practice in identifying and responding to ambivalence and/or resistance through use of video vignettes, with all therapist trainees being encouraged to generate their own responses. Vignettes included depictions of clients with various presenting problems in various settings. Scenarios of ambivalence and resistance included non-compliance, ambivalence about change, opposition to therapy/change, disagreement with or challenging the therapist, negative feedback, criticism, and hostility. Specific MI-adherent strategies for managing resistance and ambivalence (e.g., amplified reflection, supporting autonomy; Moyers & Rollnick, 2002) were printed on a laminated sheet for easy reference when generating different responses to vignettes. Therapist trainees were asked to repeatedly practice their responses throughout the two-day workshop and were pushed to practice beyond their current capabilities by trying all possible forms of responding to ambivalence/resistance. Additionally, due to the difficulty of the scenarios and the sometimes-personal criticisms in the vignettes, therapist anxiety/reactivity was likely aroused and thus therapist trainees were working outside of their comfort zone. An MI expert (the workshop presenter) provided feedback by debriefing several responses for each vignette, as well as then providing examples of excellent and poor MI responses for trainees to repeatedly hone their understanding of MI-adherent responses. Therapist trainees continued to build upon this understanding through repeated practice in various forms over the two workshop days, including group exercises, written exercises, and role plays (Westra et al., 2021).

Traditional Workshop

The traditional workshop was an MI workshop that the same presenter had been delivering for over ten years. It involved the same didactic presentation of central concepts and research as the DP workshop including video demonstrations of good versus poor MI practice, discussion of key concepts, exercises to illustrate principles, and some limited practice opportunities such as role play and written exercises. Consistent with typical MI workshops, interactive exercises and video illustration comprised up to 40% of total workshop time (Westra et al., 2021). Exercises and practice opportunities differed from the DP workshop in that they included only minimal expert feedback and minimal opportunities for repetition (Westra et al., 2021)

Measures

Baseline MI Skill

To evaluate whether therapists had similar MI skills at baseline, all were administered the Motivational Interviewing Self-Skill Assessment (MISSA; Madson et al., 2013). This is an 18-item measure where participants rate their level of confidence in various skills (e.g., recognizing a client's stage of change) on a 5-point likert scale (0=low, 4=high). A shortened version containing 15 items was used in the present study based on how relevant the skills were to workshop content (See Appendix A). Scores can range from 0-60, with higher scores indicating more confidence in using MI. Madson and colleagues (2013) identified a high internal consistency (α = .94). Internal consistency in the present sample was good (α = .87).

Baseline DP Usage

To evaluate whether DP Usage at baseline was similar between workshop groups, the Retrospective Analysis of Psychotherapists' Involvement in Deliberate Practice (RAPID; Chow et al., 2015) was used. Participants were asked to estimate the number of hours they spent in various areas of practice throughout the month (e.g., clinical supervision, own tape

review, master tape review). Time spent engaging in practice was a significant predictor of outcomes in a large sample of 1632 clients with 17 therapists, indicating predictive validity (Chow et al., 2015). In the present study the RAPID had an adequate internal consistency (α = .75).

Self-reported Emotional Arousal to Resistance

As a major component of emotional reactivity is the amount or intensity of emotion following a stimulus, this study operationalized self-reported reactivity by examining self-reported arousal following an emotionally evocative task. Therapist trainees rated their reactions following brief video vignettes of clients presenting resistance. That is, they watched 10 brief video vignettes of clients expressing resistance to change (ambivalence) or resistance to the therapist/therapy, and then provided ratings of their own mood after each vignette. Reactions were assessed using the Reaction Questionnaire (see Appendix B) which was based on the arousal subscale of the Session Evaluation Questionnaire used in psychotherapy treatment outcome research (Stiles, 2002). The Reaction Questionnaire consists of 10 items in a 7-point bipolar adjective format (e.g., quiet-aroused). Respondents were prompted with the stem "Right now I feel:" and circled the number on the scale which best represented their current feelings. An average index score for arousal was calculated based on these ratings. Index scores can range from 1-7, with greater scores representing greater arousal. Internal consistency of this scale is high across a wide variety of conditions and settings (α = .81; Reynolds et al., 1996). Internal consistency in the present study was calculated at α = .93 at pre-workshop, α = .94 at post-workshop, and α = .92 at 4-month follow-up.

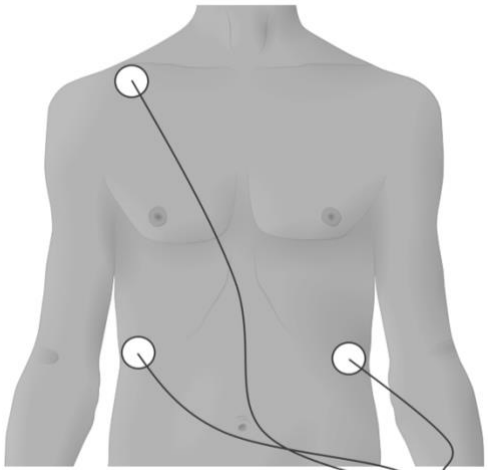
Dynamic Respiratory Sinus Arrhythmia

Data Collection. Dynamic Respiratory Sinus Arrhythmia (dynamic RSA) was examined to measure therapist trainee biological reactivity during the interviews with

ambivalent individuals. Respiratory Sinus Arrhythmia (RSA) was derived in accordance with the recommendations of the Society for Psychophysiological Research committee on heart rate variability (Berntson et al., 1997). Electrocardiogram (ECG) signal was measured using the MindWare Mobile Cardiac Impedance Unit and collected at a 500 Hz sampling frequency (Kwon et al., 2018). Three adhesive electrodes were applied to therapist trainees in the "Lead II" configuration (Figure 3; Damico, 2016), commonly used when collecting RSA (electrode on bottom left rib; electrode on right clavicle; and ground electrode on the bottom right rib). Respiration rate was measured using a respiration belt, fastened just under the chest to measure expansion and contraction of the lungs.

Figure 3: Placement of ECG Electrodes

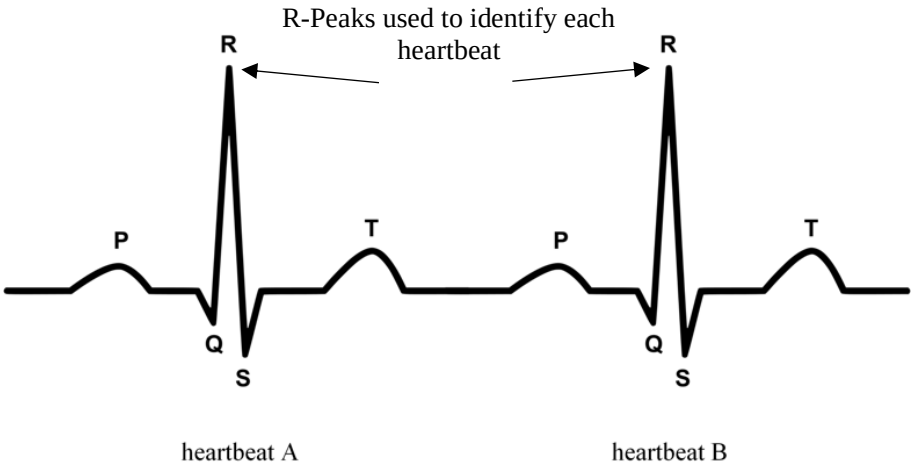
Placement of ECG Electrodes



RSA data was then imported into the MindWare HRV Analysis Program, Version 3.1.5C (Gahanna, OH). This program contains a "peak detection algorithm" (MindWare Technologies LTD, 2013) that identifies each heartbeat by identifying all R-Peaks in the ECG signal (see Figure 4; Yan et al., 2019). This algorithm highlights any unexpected locations for an R-Peak to identify possible artifacts (i.e., abnormalities) in the data (Berntson et al, 1990).

Figure 4

The Structure of a Normal ECG Heartbeat



Data Editing. Each interview was broken down and analyzed in 60 second segments. All ECG recordings were then visually inspected for the presence of any artifacts highlighted by the peak detection algorithm, and the data was edited to account for these artifacts. In some instances, ECG recordings can be interfered with by other close electronics, excessive movement from the participant, or poor electrode contact with the body, and therefore R-Peaks are not visible in the data due to a "noisy" signal (Morgan, 2017). In such cases where portions of data were not readable, these portions of data within a segment were deleted. All analyzed data contained at least 30 seconds of continuous R-peaks, as required for an accurate measure of RSA (Morgan, 2016). Arrhythmic or irregular heartbeats were corrected with "midbeats", where the two adjacent beats are used to interpolate where a regular beat would be located. This ensures data is a measurement of autonomic nervous system activity, and not confounded by measurement of any heart condition or beat irregularities (Morgan, 2016). Mid-beats were employed such that no segments had more than 5% of R-peaks being mid-beats, as this may reduce variability in the data and provide an inaccurate measure of RSA (Quintana et al., 2016).

Data Processing. Following data editing, the data was processed using the MindWare HRV Analysis Program. Processing includes being tapered with a Hamming window and

submitted to a Fast Fourier Transformation, allowing heart rate to be examined in separate frequency bands. Heart rate variability and respiration were examined in the high-frequency component of the power spectrum (between .12 and .4 Hz), as variations in heart rate at the highest frequency correspond to inhalation and exhalation, thus most accurately representing RSA (Grossman & Taylor, 2007). These processes resulted in an RSA value for each minute of the therapist's interview, allowing changes in RSA to be modeled over the course of the interview, indicating how rapidly the therapist trainee is adjusting to the changing emotional environment in-session (dynamic RSA). This method of examining RSA allows temporal variation to be incorporated into the understanding of RSA, therefore showing how one is regulating throughout a task, rather than using a difference score between baseline RSA and RSA averaged over an interview or task. Dynamic RSA has been related to task difficulty, valence, and individual emotional functioning (Amole et al., 2017; Brooker & Buss, 2010).

Adapted Client Resistance Code

Therapist trainee performance was operationalized as ability to minimize resistance, and therefore was measured using an adapted version (Westra et al., 2009; see Appendix C) of the Client Resistance Code (CRC; Chamberlain et al., 1984). Resistance is any behaviour that opposes, blocks, diverts, or impedes the direction set by the therapist. The original CRC has 11 resistance categories (e.g.., challenging, disagreeing, not responding), but these categories are collapsed in the adapted version to create one general resistance rating capturing the presence or absence of resistance. This adaptation allows one to capture the overall phenomena of resistance and aids in achieving reliability among coders. The adapted CRC has been used successfully in many studies, such that it is related to correlates of resistance, and is predictive of process and outcome variables (e.g., Westra, 2011; Westra et al., 2012; Sijercic et al., 2016). Interviews were divided into 30-second time bins, and each bin was rated on a scale from zero to three: 0 = no resistance, 1 = minimal resistance, 2 =

clear resistance, 3 = hostile resistance. As previous research has indicated that only clear (code of 2) and hostile (code of 3) resistance are predictive of outcomes, only these two categories were used in calculating overall resistance (Aviram, Westra, & Eastwood, 2011). Overall resistance in a session was calculated as the number of time bins containing clear or hostile resistance, divided by the total number of time bins. Possible resistance scores therefore could range from 0 to 1, with 0 indicating no resistance in a session, and 1 indicating resistance in every 30-second segment of a session. The original CRC has good construct and predictive validity, good face and content validity, and excellent reliability (Bischoff & Tracey, 1995; Chamberlain et al., 1984; Patterson & Forgatch, 1985). The adapted CRC has demonstrated good construct and predictive validity, and good interrater reliability (Aviram & Westra, 2011; Aviram et al., 2016; Westra, 2011; Zickgraf et al., 2016).

Coders included five clinical psychology doctoral students and one licenced psychologist. Coders independently rated practice sessions, participated in shadow coding with expert coders, and met regularly to review codes and discuss discrepancies until interrater reliability was achieved. Coders were blind to workshop condition and coded study data in pairs. Interrater reliability was calculated on 20% of the interviews, with weighted kappa coefficients for each pair of coders ranging from .70 to .88, indicating good to excellent agreement.

Procedure

Informed written consent was obtained for all participants. Therapist trainees were randomly assigned by stratification to one of the two workshops, either DP or Traditional. This writer did the random assignment and was blind to which workshop was DP or Traditional (this was revealed only after the study and coding were complete and data analysis was commenced). Therapist trainees were told that the two workshops were the same and that the study was investigating learning preferences in order to avoid any expectancy

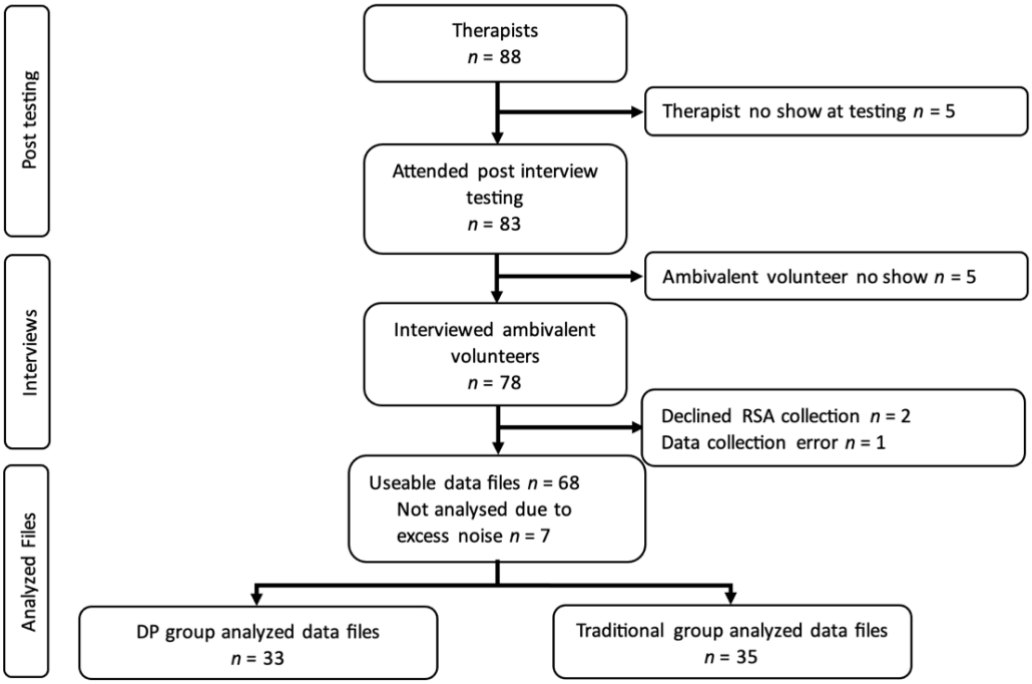
confounds. All trainees completed a demographic questionnaire and the vignette task prior to the workshop. Workshops took place two weeks apart in the same room, and all therapist trainees completed two full days of training. Therapist trainees completed the vignette task again at the end of the second workshop day to assess change in performance from pre- to post-workshop, and again at 4-month follow-up. Therapists also were asked to complete a training satisfaction questionnaire to assess whether there was a difference in satisfaction and engagement between workshop groups. All researchers involved in data coding and analysis were blind to workshop condition to prevent confirmation bias.

Therapist trainees scheduled testing times within the two weeks following the workshop, in which they each engaged in a 20-minute interview with an ambivalent individual from the community. Trainee RSA was recorded for the duration of each interview using the MindWare Mobile Cardiac Impedance Unit. RSA was measured during interviews with real volunteers rather than during standardized simulator interviews in order to maximize external validity and to allow for the examination of dynamic RSA in relation to the amount of resistance in a session. Interviews were also video and audio recorded so they could be coded for resistance. The vignette task, interviews, and some RSA recording was also completed at 4-month follow-up to examine skill retention. Due to limited equipment availability, only a subset of participants were equipped with the MindWare Mobile Cardiac Impedance Unit at follow-up (See Figure 5 for a summary of interview and RSA data collection), and therefore 4-month follow-up RSA data is considered exploratory and an area for future research due to decreased sample size and therefore decreased statistical power. Those who were equipped with the MindWare unit at follow-up were chosen at random to minimize the impact of missing data on study findings. The impact of the reduced data collection at follow-up was also minimized by using hierarchical linear modelling in order to

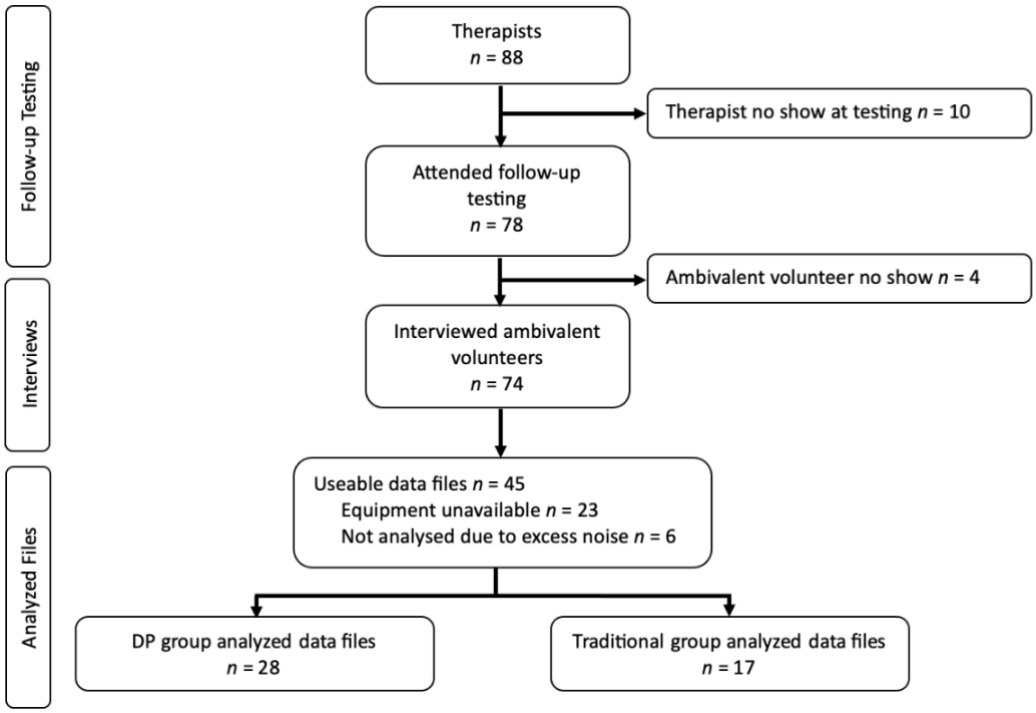
make use of all available data points. At follow-up, participants were fully debriefed on the true purpose of the study.

Figure 5

a) Interview and RSA Data Collection: Post-workshop Testing



b) Interview and RSA Data Collection: Follow-up Testing



Results

Preliminary Analyses

Therapist trainee demographics by workshop group are presented in Table 2 above. To determine whether workshop groups differed significantly on demographic variables, t-tests were performed on continuous variables (age, years of experience), and chi square tests or fisher's exact tests were performed on categorical variables (gender, ethnicity, highest level of education, student status, theoretical orientation, and discipline). There were no significant differences in demographics by workshop group, as should be expected due to random assignment by stratification. The means and standard deviations for all measures are presented in Table 4 and are also broken down by group. T-tests were performed on therapist trainee MISSA and RAPID scores, to examine differences in therapist MI skill or DP practice at baseline between workshop groups. No significant differences were observed (MISSA: p = .29; RAPID: p = .26). Respiration rates by group were also examined to determine whether they lay within the high-frequency band that reflects vagal tone. Standards of HRV measurement indicate breath cycles should be between 9 and 24 beats per minute (Malik, 1996). Only one measurement for one participant at follow-up did not fall within this range, measuring 8.60 breath cycles. T-tests were also performed on respiration rate between groups at both post and follow-up. Respiration did not differ significantly between groups (post-workshop: p = .21; follow-up: p = .48).

Observed resistance was highly skewed (skew > 1) and interfered with model convergence. Resistance was therefore transformed with a square root transformation which minimized skewness (skew < .5) and more closely resembled a normal distribution.

Table 4

Descriptive Statistics by Group

Measure	Total Sample	DP	Traditional
MISSA, *M (SD)*	34.78 (8.06)	35.70 (7.77)	33.86 (8.15)
RAPID, *M (SD)*	67.62 (55.68)	74.24 (61.36)	60.63 (46.99)
Arousal Self-report, *M* (*SD*)			
Baseline	4.02 (.55)	4.02 (.62)	4.02 (.48)
Post-workshop	3.83 (.58)	3.75 (.65)	3.91 (.49)
4-month follow-up	4.00 (.50)	4.02 (.49)	3.99 (.52)
Resistance, *M (SD); range*			
Post-workshop	.15 (.16); 0 – .58	.13 (.17); 0 - .58	.17 (.16); 0 - .57
4-month follow-up	.19 (.18); 0 – .98	.14 (.13); 0 - .49	.25 (.20); 0 - .98
RSA, *M (SD)*			
Post-workshop	5.55 (1.34)	5.54 (1.37)	5.56 (1.31)
4-month follow-up	5.92 (1.14)	5.97 (1.17)	5.84 (1.08)
Linear RSA, *M (SD)*			
Post-workshop	5.96 (5.21)	6.64 (4.89)	5.30 (5.49)
4-month follow-up	1.84 (3.41)	1.55 (3.79)	2.31 (2.73)
Quadratic RSA, *M (SD)*			
Post-workshop	-1.40 (1.60)	-1.83 (1.58)	-.98 (1.54)
4-month follow-up	-.53 (1.41)	-.41 (1.56)	-.72 (1.12)
Respiration Rate, *M (SD)*			
Post-workshop	12.45 (2.09)	12.81 (2.13)	12.15 (2.04)
4-month follow-up	12.66 (2.90)	12.56 (3.02)	13.44 (1.65)

Note. Dynamic RSA is separated into linear and quadratic components to model change over time, described further as outlined in statistical analyses below. MISSA = Motivational Interviewing Self-Skill Assessment, RAPID = Retrospective Analysis of Psychotherapists' Involvement in Deliberate Practice, RSA = Respiratory Sinus Arrhythmia.

Intercorrelations of Study Variables

Correlations between the various measures evaluated in the present study are presented in Table 5. Self-reported arousal was significantly positively correlated at all time points. The higher therapist trainee self-reported arousal was before the workshop, the higher

it was at both post-workshop and follow-up. Self-reported arousal was not correlated with linear or quadratic components of dynamic RSA at any time point, suggesting that these are non-overlapping measures of arousal and therefore may be measuring separate constructs.

Baseline self-reported arousal was significantly negatively correlated with resistance during interviews post-workshop. The higher arousal therapist trainees reported in response to vignettes before the workshop, the less resistance they had in interviews immediately after the workshop. Baseline self-reported arousal was unrelated to resistance at 4-month follow-up. Self-reported arousal at post-workshop and follow-up were unrelated to resistance at either time point. Resistance at post-workshop was positively correlated with resistance at follow-up, such that greater resistance at post-workshop was related to greater resistance at follow-up.

The linear component of dynamic RSA was nearly perfectly negatively correlated with quadratic component of dynamic RSA at follow-up, and both components of dynamic RSA were not at all correlated with arousal at follow-up. These extreme correlations likely result from the decreased sample size at follow-up and the use of orthogonal representations of time, described in the description of statistical analyses below. Follow-up results using components of dynamic RSA should be interpreted with caution.

Table 5

Intercorrelations of Study Variables.

	1b	1c	2a	2b	3a	3b	4a	4b
1a Bsl Arousal	**.71**	**.68**	**-.24**	-.08	.19	-.02	-.15	.02
1b Arousal post	---	**.66**	-.14	.13	.08	-.04	-.13	.04
1c Arousal f/u		---	-.13	-.07	.17	<-.01	-.17	<-.01
2a Resistance post			---	**.30**	-.10	.16	.16	-.17
2b Resistance f/u				---	-.02	.18	.15	-.18
3a Linear RSA post					---	.15	.22	-.15
3b Linear RSA f/u						---	-.18	**-.99**
4a Quadratic RSA post							---	.18
4b Quadratic RSA f/u								---

Notes. Dynamic RSA is separated into linear and quadratic components to model change over time, described further as outlined in statistical analyses below. 1a = Baseline self-reported arousal, 1b = Self-reported arousal at post-workshop, 1c = self-reported arousal at 4-month follow-up, 2a = resistance at post-workshop, 2b = resistance at 4-month follow-up, 3a = dynamic Respiratory Sinus Arrhythmia at post-workshop, 3b = dynamic Respiratory Sinus Arrhythmia at 4-month follow-up. Bolded values indicate a significant correlation (p <.05).

Randomness of Missing Data

As described above, those who received MindWare units for RSA data at follow-up were randomly selected to reduce the impact of the missing data. Analyses were also performed to determine if those who did have RSA data collected at follow-up were significantly different than those who did not have RSA data collected at follow-up. Therapist trainees did not have RSA data for various reasons (e.g., not attending testing, equipment unavailability, excess noise in data), and these trainees were collapsed into one group of those with missing data. Differences in demographic variables and study variables were examined.

These two groups did not differ in age, years of experience, gender, ethnicity, education, whether they were currently students, or theoretical orientation. Fisher's exact tests did indicate that these groups significantly differed by discipline (p = .002). Discipline of those with and without RSA data at follow-up are presented in Table 6. Those trainees with data were more likely to be in counselling, whereas those without data were more likely to be in social work.

Trainees with and without dynamic RSA data at 4-month follow-up did not differ in self-reported arousal at baseline, or self-reported arousal, resistance, or dynamic RSA at post-workshop. At follow-up, these groups did not differ in self-reported arousal, but did show a significant difference in the transformed resistance variable, with trainees who did not have RSA collected having significantly greater resistance (data collected: M = .34, data not collected: M = .44, p = .04). Data relating resistance and RSA at follow-up should therefore be interpreted with this difference in mind.

Table 6

Differences in Discipline Between Those With and Without RSA Data at Follow-up

	RSA data collected (n = 45)	RSA data not collected (n = 43)
Psychology	20	20
Counselling/ Psychotherapy	8	0
Social Work	4	15
Nursing	7	3
Occupational Therapy	5	4
Other	1	1

Aim 1: Effect of Training Workshop on Therapist Trainee Arousal

Statistical Analysis

Multilevel modelling was used to assess the effect of the training workshops on arousal over time, using nesting with random intercepts to account for non-independence of observations within the data. This type of model is ideal for analyzing longitudinal data, as participants with missing data across time are still included in the analyses and all available data can be used (Gibbons et al., 2010). In addition, change is estimated for each participant, rather than looking at average trends for the group. As such, all observations were able to be used, despite missing data at 4-month follow-up due to therapist trainee attrition and equipment unavailability. Separate models were run for each sub-aim: 1a) self-reported arousal over time in response to the vignette task, and 1b) dynamic RSA measured during therapist interviews with ambivalent volunteers. The Intraclass Correlation Coefficient (ICC) was calculated for the nesting variables in each model to determine the variability accounted for by the nesting variable, and if non-independence of individual scores should be accounted for in the model.

For self-report, the proportion of variance in self-reported arousal that was explained by individual therapists was calculated. A two-level linear model predicting self-reported arousal was run to account for this non-independence in the data. Level 1 predictors were two dummy variables to represent the three time points, and level 2 predictors were therapist and workshop group. Model intercepts therefore varied by individual therapist trainees, so the individual effect of each trainee was accounted for in the change scores over time. Dummy variables were recoded as needed to identify the time point of interest. The models were estimated using restricted maximum likelihood (REML) and t-tests used Satterwaite's method.

To examine dynamic RSA, a similar procedure to Brooker and Buss (2010) was used. Separate models were run for post-workshop and 4-month follow-up. For each timepoint,

two-level growth curve models were performed. Linear and quadratic time (i.e., minute of interview and minute of interview^2) were examined as predictors of RSA, and slopes were allowed to vary by each participant, thereby allowing the degree of linear and quadratic change in RSA to vary by participant. Given that the raw polynomials (time and time^2) are highly correlated and thus introduce collinearity problems in the model, the *poly* function in Rstudio was used to examine orthogonal polynomials of time and time^2. This allows examination of linear and quadratic trends in the data while preventing collinearity problems. In these models the level 1 predictors were the orthogonal polynomials of time and time^2 (i.e., minute of interview and minute of interview^2), and the level 2 variables were therapist and workshop group. In other words, RSA scores at each minute of interview were nested within therapist trainee, so RSA change was separately modeled for each trainee.

Aim 1a: Therapist Self-reported Arousal in Response to the Vignette Task Over Time

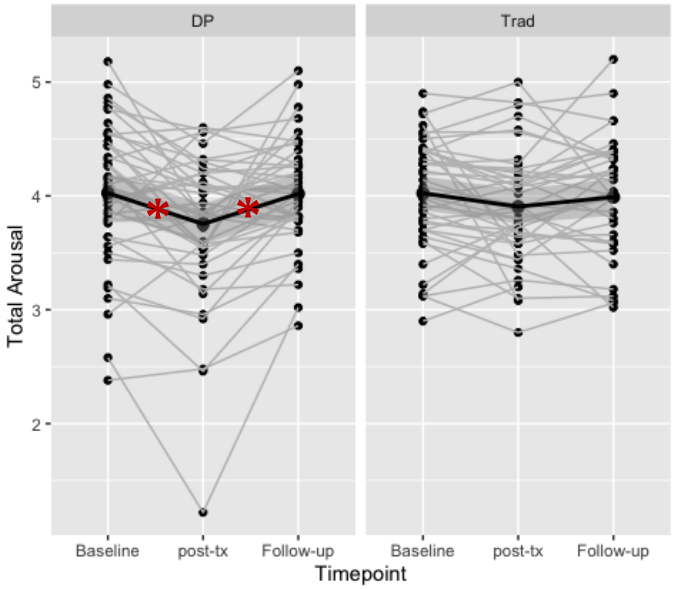
The intraclass correlation coefficient for the effect of therapists on arousal was ICC = .64, indicating that 64% of the variability in arousal is due to the nesting of arousal scores within therapist. In other words, 64% of the variance in arousal is explained by differences in therapists. It is therefore essential for analyses describing changes in arousal to account for the non-independence of individual arousal scores. Therapist arousal ratings to the resistance vignettes were regressed on workshop, two dummy variables representing time, and an interaction between time and workshop, with individual arousal scores nested within therapist.

Prior to the workshop, therapists in each workshop group rated their average arousal to the resistance vignettes as 4.02 out of a maximum of 7 (β = 4.02; 95% CI: 3.86, 4.18), with no significant group differences (β = .0016; 95% CI: -0.23, .22; p = .99). In the DP workshop there was a significant decrease in arousal scores of .27 points from baseline to post-workshop (β = -.27; 95% CI: -.40, -.14; p < .001), but then a significant increase of .26 points

from post-workshop to 4-month follow-up (β = .26; 95% CI: .12, .39; p < .001) to return to baseline levels. That is, the difference between arousal scores to vignettes in the DP workshop from baseline to 4-month follow-up was not significant (β = -.01; 95% CI: -.14, .12; p = .87). In the traditional workshop, arousal levels to vignettes were stable. There was a trend toward a decrease in arousal from baseline to post-workshop, but this was not significant (β = -.12; 95% CI: -.25, .01; p = .08), and there was no significant change in arousal from baseline to follow up (β = -.06; 95% CI: -.20, .07; p = .36). The interaction between workshop group and time was significant and indicated that the effect from post-workshop to 4-month follow-up was .21 points greater for therapists in the DP workshop, compared to the traditional workshop (β = .21; 95% CI: .02, .40; p = .04). A visual representation of the trajectory of arousal is presented in Figure 6.

Figure 6

Therapist Self-Reported Arousal Over Time by Workshop Group



Note. DP = deliberate practice workshop. Trad = traditional workshop. Each grey line represents one therapist and depicts their individual trajectory.

* represents a significant difference.

Aim 1b: Within-interview Dynamic RSA by Workshop Group

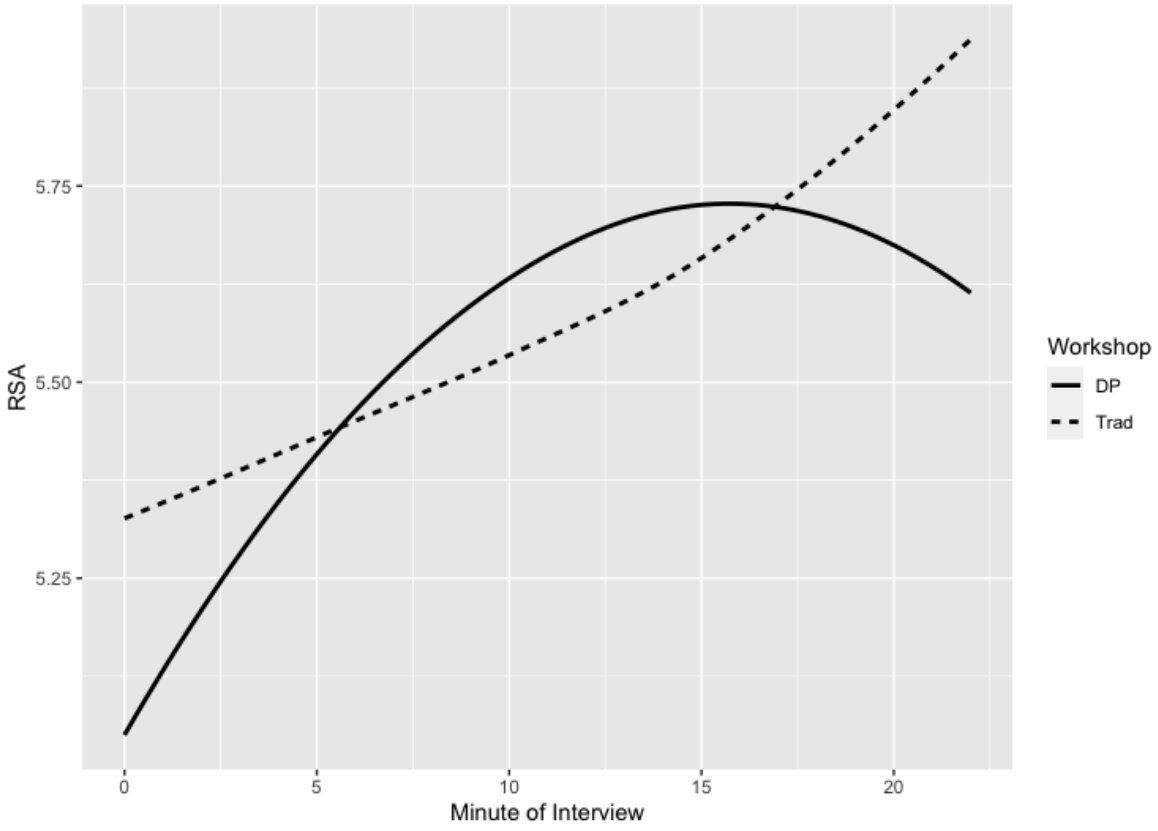
The intraclass correlation coefficient of therapist on RSA was ICC = .64, indicating that 64% of the variability in individual RSA scores is due to the individual therapist. The ICC for the effect of timepoint on RSA was ICC = .03, indicating that 3% of the variability in RSA scores is accounted for by the interview timepoint (post-workshop vs. follow-up). Therapist RSA values were regressed on orthogonal polynomials of linear and quadratic minute of interview, workshop group, and an interaction between linear and quadratic minute of interview and workshop group. Individual RSA scores were nested within therapist, and slopes were allowed to vary by trainee. Separate models were run for post-workshop and follow-up.

Post-workshop. Across all participants, linear time was a significant predictor of RSA (β = 5.95; 95% CI: 3.81, 8.11; p < .001), indicating that overall RSA increased over time, regardless of workshop group. Across all participants there was a quadratic trend nearing significance (β = -1.40; 95% CI: -2.96, .17; p = .08). When workshop group was added into the model, the overall effect of workshop group on RSA was not significant (β = .01; 95% CI: -.55, .57; p = .97), and the interaction between linear time and workshop group was not significant (β = -2.39; 95% CI: -6.65, 1.88; p = .28). However, there was a significant interaction between quadratic time and workshop group (β = 4.03; 95% CI: = 1.06, 7.00; p = .01) in predicting RSA. This indicated that trainee RSA had similar linear trends regardless of workshop group, however the DP group showed a stronger quadratic trend. More specifically, the traditional group showed a significant increase in RSA over the course of the interview (β = 4.74; 95% CI: 1.74, 7.74; p = .003), and no significant quadratic trend (β = .062; 95% CI: -1.48, 2.72; p = .56). The DP group also showed a significant increase in RSA over the course of the interview (β = 7.12; 95% CI: 4.09, 10.16; p < .001), and a significant negative quadratic trend (β = -3.41; 95% CI: -5.50, -1.31; p = .002),

indicating the strength of the linear trend decreased over time. For a visual representation of dynamic RSA by workshop group at post-workshop, see Figure 7.

Figure 7

Dynamic RSA in Interviews with Ambivalent Volunteers at Post-Workshop



Note. RSA = Respiratory Sinus Arrhythmia. DP = deliberate practice workshop. Trad = traditional workshop.

Four-month Follow-up. Across all participants, linear time was a significant predictor of RSA (β = 1.84; 95% CI: .08, 3.60; p = .047), indicating that overall RSA increases over time, regardless of workshop group. Across all participants there was no significant quadratic trend (β = -.53; 95% CI: -1.84, .78; p = .43). When workshop group was added into the model, the model did not converge due to singularity, indicating the model was overly complex for the data. In the event of non-convergence due to singularity, it is suggested that terms should be removed to allow a non-singular fit (Barr et al., 2013). As

such, the random slopes model was replaced with a random intercepts model to simplify the model. This model converged, however there was no significant effect of workshop group, or significant interactions (all ps > .25).

Aim 2: Therapist Trainee Arousal as a Predictor of Performance by Workshop Group

Statistical Analysis

For self-reported arousal, multilevel modelling was used to assess the effect of self-reported arousal on therapist performance, as measured by the amount of resistance present in therapist trainee interviews with ambivalent community volunteers. As such, all observations were able to be used and all participants included in the analyses, despite missing data at post-workshop and 4-month follow-up (see Figure 5 for summary of data collection). The proportion of variance explained by individual therapist was calculated using the intraclass correlation coefficient (ICC). Individual scores at each time point were nested within therapist, so the individual effect of each therapist was accounted for (i.e., intercepts were allowed to vary by participant). Given that resistance was only measured at post-workshop and follow-up, dummy variables were not required as there were only two time points. Models were estimated using restricted maximum likelihood (REML), and t-tests used Satterwaite's method.

For dynamic RSA, the effect of dynamic RSA on therapist performance, as measured by the amount of resistance in therapist trainee interviews with volunteers, was explored. Coefficients for linear and quadratic trajectories were extracted from the random slopes model above, in order to quantify linear and quadratic components of dynamic RSA for each therapist trainee. Linear and quadratic components of RSA were significantly correlated (r = -.21, p = .021), so they were not entered as predictors in the same model to prevent multicollinearity. Separate regression models were therefore run to investigate linear and

quadratic components of dynamic RSA predicting resistance, at both post-workshop and 4-month follow-up.

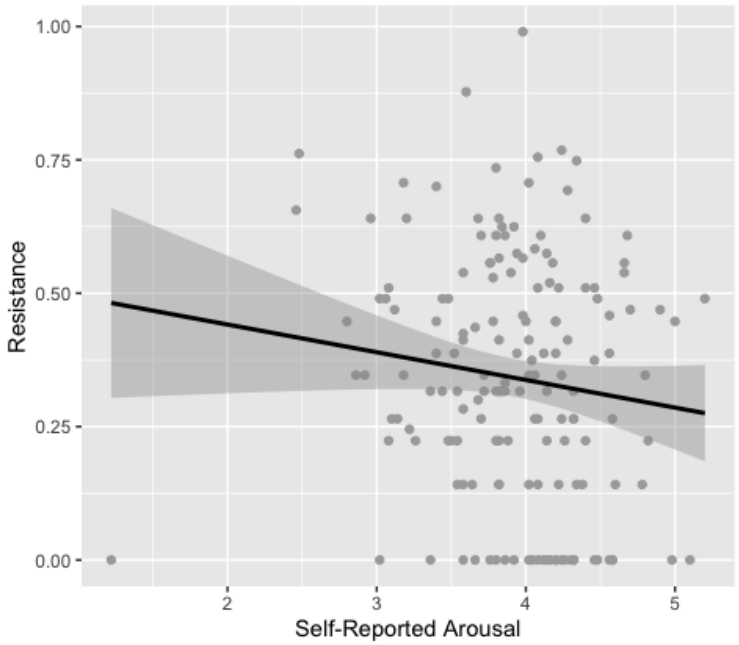
Therapist Self-reported Arousal and Performance

The intraclass correlation coefficient for the effect of therapists on resistance scores was ICC = .29, indicating that 29% of the variability in resistance scores was due to the individual therapist. It is therefore essential for analyses describing changes in resistance to account for the non-independence of individual scores at different time points. Resistance scores were regressed on self-reported arousal, workshop group, and time point, with a random effect of therapist to account for the longitudinal nature of the data.

Therapist self-reported arousal was a significant predictor of resistance, indicating that therapists who reported experiencing higher arousal to vignettes were observed to have lower resistance from volunteers in the interviews (β = -.08; 95% CI: -.14, -.01; p = .02). A visual representation of the relationship between self-reported arousal and resistance is presented in Figure 6. There was also a significant effect of timepoint on resistance scores, such that resistance scores increased by .10 points from post-workshop to follow-up, regardless of workshop group (β = .10; 95% CI: .04, .16; p = .001). There was a significant effect of workshop on resistance score, such that resistance scores were .10 points higher in the traditional workshop than the DP workshop, regardless of timepoint (β = .10; 95% CI: .02, .17; p = .02). An interaction term of self-reported arousal and workshop group was added to the model to examine whether the effect of self-reported arousal on resistance varies by workshop group. This interaction was not significant (β = .08; 95% CI: -.05, .21; p = .25).

Figure 8

Relationship Between Self-Reported Arousal and Resistance Across Time Points



Note. Each grey dot represents one observation where both self-reported arousal and resistance values were available.

Dynamic RSA and Performance

Dynamic RSA as a Predictor of Resistance at Post-workshop. Resistance at post-workshop was regressed separately on linear and quadratic components of dynamic RSA at post-workshop. Neither linear (β = -.002; 95% CI: -.01, .007; p = .62) nor quadratic (β = .01; 95% CI: -.02, .2; p = .44) dynamic RSA was predictive of resistance at post-workshop. Workshop group was a significant predictor of resistance (β = .11; 95% CI: .01, .21; p = .03). There was no interaction between workshop group and linear (β = .004; 95% CI: -.15, .02; p = .67) nor quadratic (β = -.01; 95% CI: -.08, .05; p = .66) components of dynamic RSA.

Dynamic RSA as a Predictor of Resistance at Follow-up. Resistance at follow-up was regressed separately on linear and quadratic components of dynamic RSA at follow-up. Neither linear (β = .01; 95% CI: -.01, .03; p = .32) nor quadratic (β = -.02; 95% CI: -.07, .02; p = .32) dynamic RSA was predictive of resistance at follow-up. Workshop group was a

significant predictor of resistance (β = .19; 95% CI: .05, .33; p = .01). There was no interaction between workshop group and linear (β = -.006; 95% CI: -.05, .04; p = .79) nor quadratic (β = .015; 95% CI: -.10, .13; p = .80) components of dynamic RSA.

Post-Hoc Analyses

An additional analysis was performed to examine whether the linear trend of RSA significantly differed from post-workshop to follow-up. A random intercepts model was performed, with timepoint as a predictor of linear trend, while nesting individual participant scores within timepoint. Timepoint was a significant predictor of linear trend (β = 4.20; 95% CI: 2.50, 5.86; p < .001), such that the linear trend was greater at post-workshop compared to follow-up.

Discussion

Despite the well-studied impacts of negative process in therapy on therapist performance and client outcome, as well as calls for better training in handling negative psychotherapy process, little research has examined factors which may help or hinder therapists when managing negative process in therapy. The present study examined individual differences in therapist emotional reactivity to these difficult therapeutic moments, and whether DP training in managing these moments would prove differentially beneficial. Two main research questions were explored. The first research question investigated whether therapist a) self-reported and b) biological reactivity to difficult moments was impacted by training type. In other words, whether traditional versus DP training had different effects on therapist reactivity. For self-reported arousal, results demonstrated that DP training decreased therapist arousal to difficult therapeutic moments, whereas traditional training did not. However, decreases in arousal for therapists in the DP group were not maintained four months after the workshop. When examining biological reactivity, it was found that RSA increased over the course of therapist interviews with ambivalent volunteers regardless of

training group, indicating that therapists were regulating their emotions, being responsive to their social partner, and were engaging in social affiliative behaviours. This increase was greater at post-workshop than at follow-up, indicating there was more regulatory effort and affiliative behaviours at post-workshop, and as distance from the training workshops increased, regulation and social affiliative behaviours were decreased. There was some evidence of differing effects of training on dynamic RSA at post-workshop, with the therapist trainees in the traditional workshop group showing a linear dynamic RSA trajectory, and the DP trainees showing a quadratic trajectory. There was not sufficient data at 4-month follow-up to examine dynamic RSA between workshop groups.

The second research question explored the relationship between emotional reactivity and therapist performance in therapeutic interviews, where performance was measured by amount of resistance in the interviews. Results demonstrated that greater self-reported reactivity was related to decreased client resistance, however no relationship was observed between biological reactivity and resistance. These findings and their implications are further explicated below.

The Impact of Deliberate Practice Training on Self-reported Arousal

DP workshop training, but not the traditional workshop training, resulted in a decrease in self-reported arousal to challenging clinical moments such as ambivalence, resistance, and hostility. This suggests that DP training for how to manage ambivalence and resistance was more effective in reducing therapist subjective emotional reactivity to such situations. There are a few possibilities explaining why DP training may have shown an impact on therapist reported arousal. As DP training allowed for many opportunities to practice and refine skills, DP trainee confidence in effectively generating responses to such clients may have increased, thereby decreasing their arousal when confronted with these statements. In support of this, another study using this dataset discovered that confidence significantly increased following

the workshop in both training groups, however the increase in confidence of the DP group was significantly greater (Poulin et al., 2021). This aligns with research demonstrating that arousal decreases when self-efficacy and confidence increase. For example, Williams and colleagues (1997) surveyed 171 junior doctors to examine the relationship between their confidence and psychological distress over a six-month period. Results demonstrated that those junior doctors with lower confidence scores were reporting significantly higher psychological distress, compared to those with higher confidence scores. Thus, improved confidence due to deliberate, repeated practice could be one factor contributing to reduced arousal in DP trainees at post-treatment.

Continuously engaging in practice with various resistance scenarios may also result in habituation to these scenarios. This is similar to exposure therapy for anxiety-inducing situations. Through repeated exposure to these situations, arousal to these situations is successively reduced (Kaplan & Tolin, 2011). Further, repeated exposures allow for increasing skills and mastery in a specific situation, thereby reducing arousal on subsequent exposures (Bandura, 1977). By engaging in deliberate repeated practice, therapist trainees may have habituated to challenging comments from clients, thereby finding them less disconcerting or disorienting when those moments do occur. Additionally, having practiced the skills to respond to these situations repeatedly, therapist trainees may have had effective responses more readily available when these moments arise, reducing the potential arousal that may occur when feeling uncertain about an effective response.

Third, a large part of MI training involves learning to accurately empathize with clients, especially when these clients are feeling ambivalent or resistant (Miller & Moyers, 2006). One reason therapists become aroused in response to difficult scenarios is due to the feeling of being personally criticized by a client, or due to feeling that they are not effectively helping their client (Coutinho et al, 2011). MI emphasizes that therapists must “put

themselves in their clients' shoes" to express their understanding of how the client feels and why they may be resisting change. In doing so, therapists can reframe the resistance as important information about a client's reservations, rather than a personal attack on the therapist (Westra & Norouzian, 2018). Though this reframe was discussed in both the DP and traditional training workshops, through continuous practice DP therapists had increased opportunities to actively "put themselves in the client's shoes" in order to empathize with the client and provide empathic responses. This results in more opportunities for learning that resistance is not something to be feared, but rather important information to be explored. Thus, DP therapists may have decreased arousal due to their increased opportunities to empathize with clients who may be ambivalent or resistant.

This aligns with emotion research demonstrating that an effective way to regulate emotions is through reframing one's view of the situation (Gross, 2014). By empathizing with clients during difficult moments, trainees view of these situations may be being altered. Rather than seeing these clients as difficult, therapists may be more primed to see the situation from the client's point of view. For example, understanding the client's frustration that their symptoms have not reduced, or thinking about how difficult these strategies may be to consistently implement. Again, Poulin and colleagues (2021) found that, in this same dataset, positive feelings toward ambivalent and resistant clients were increased following the workshop in the DP group, but not in the traditional group. Therefore, through the repeated DP of practicing "putting themselves in their clients' shoes", therapists are viewing their clients differently which may be a reason for the decrease in arousal. In further support of this, research has demonstrated that DP training of empathic interventions can result in improved empathy in comparison to traditional training in therapist trainees (Tomas, 2021). It is therefore possible that arousal may be decreased partially due to increased empathy for these clients, reframing therapist view of the scenario and thereby decreasing arousal.

While DP training resulted in reduced arousal following the workshop, at four-month follow-up reported arousal was shown to increase, such that it was similar to pre-workshop levels and comparable to the traditional training group. Therefore, DP training in managing difficult clinical scenarios did not result in lasting reduction in reported arousal to these scenarios in this study. This was contrary to our hypothesis based on the parent trial results, indicating lasting training effects for the DP group (Westra et al., 2021). However, changing one's emotional reaction may be different from changing one's skills. It may be theorized that once therapists stopped being deliberately and repeatedly exposed to ambivalence and resistance, they lost their emotional tolerance to these types of therapeutic scenarios. Revisiting the possible reasons for reduced arousal explored above, once one is no longer engaged in repeated exposure and practice to these difficult scenarios, their confidence in managing these scenarios may decrease, their habituation may decrease, and their changed view of resistance may be forgotten. While trainees may have been exposed to ambivalence and resistance in their own clinical practice, DP emphasizes the importance of the practice being deliberate, outside of one's typical work (Rousmaniere et al., 2017). Exposure likely would not have been as deliberate or as frequent as in the workshop, where the days were dedicated to viewing and practicing such scenarios. This finding emphasizes the importance of deliberate *repeated* practice in DP, and highlights this may be particularly important in managing one's emotional responses.

To summarize the interpretation of the findings, self-reported arousal decreased in the DP group but not the traditional group, as therapists may have habituated, felt increased confidence and mastery, and increased empathy for clients in challenging clinical scenarios. Self-reported arousal returned to baseline levels four months later, indicating reductions in arousal due to DP did not have a lasting effect, and emphasizing the importance of deliberate

repeated exposure and practice for potentially more lasting positive effects on arousal reduction.

Therapist Dynamic RSA During Interviews with Ambivalent Volunteers

Consistent with the hypothesis, dynamic RSA increased across both workshops and timepoints. Considering the research on RSA valence, this is an encouraging result. As previously discussed, increases in RSA are associated with self-regulatory effort, compassion-evoking stimuli, more supportive behaviours, and are perceived by help-seekers as more responsive (Borelli et al., 2019; Smith et al., 2020; Stellar et al., 2015). The increases in RSA demonstrated by these therapist trainees therefore suggest that they were being effortful in being therapeutic and trying to support the interviewee. Very few therapists in this study showed a linear decrease in RSA, which is associated with a threat/stress response and/or negative social interaction (Allen & Friedman, 2016; Cundiff et al., 2016; Nealey et al., 2002). In fact, upon examination of individual linear trajectories, 84% of therapists showed a positive trajectory. Thus, the large majority of therapists were having a positive therapeutic, rather than a stress response, in these interviews.

Also consistent with hypotheses, post-workshop dynamic RSA was greater than at follow-up. Greater magnitude of RSA is indicative of greater regulatory effort and a more adaptive response, suggesting that therapists were engaging in more active regulation at post-workshop and/or had an increased compassion response compared to follow-up. Potential reasons for this decrease in regulation from post-workshop to follow-up mirrors the increase in self-reported arousal in the DP group at 4-month follow-up, described above (decreased confidence / self-efficacy, loss of habituation, and loss of reframe that had possibly resulted in greater empathy). In addition, emotion regulation in the face of resistance is a difficult task, and this was highlighted in both training workshops. It may be that regulating one's emotions during a therapy session is something therapists must be made aware of and must

consciously work at. Four months after the workshop, therapists may have reverted to their past "way of being" in a therapy session, thus forgetting they should be consciously regulating in response to negative interpersonal process. Due to small sample size at follow-up, a model with workshop as a predictor did not converge, and therefore differences between training at follow-up could not be assessed.

Differences in Dynamic RSA By Workshop

Contrary to the hypothesis, the increase in dynamic RSA over the course of the interviews was not greater for the DP group. Rather, DP and traditional therapists had no difference in the strength of the linear increase at post-workshop. However, when looking at the combined linear and quadratic trends, the DP and traditional groups did show different RSA trajectories during interviews with ambivalent interviewees, indicating that their emotional responses to these interviews were somewhat different. At post-workshop, while the traditional group showed a steady linear change over the course of the interview, for the DP group there was a quadratic change in RSA, such that RSA increased rapidly at the beginning of the interview, began to level out, and then decreased towards the end of the interview. This effect was not mirrored at follow-up, although the full model could not be run due to limited sample size. Thus, the post-workshop results will be of main focus in this discussion.

As this is a relatively new way to measure RSA, the interpretation of this pattern is not well established, aside from demonstrating that these two groups are showing differences in emotional reactivity to these interviews. This finding suggests that DP training resulted in differing effects on therapist biological arousal, compared to the traditional training. The specific difference in pattern will be interpreted in the context of RSA theory and past studies using this methodology. First, returning to RSA theory, RSA represents the degree of flexibility in response to changing demands (Thayer et al., 2012). In order to effectively adapt

to threat, the body must quickly change sympathetic and parasympathetic influences in response to changing demands, and therefore the greater the variability in heart rate, the more adaptive the response. In the DP group we see an increase in variability over time, followed by a decrease, possibly indicating that the therapist is having more flexibility in response to the situation. That is, there is more variability throughout the interview in dynamic RSA, possibly indicating a more adaptive emotional response to negative interpersonal process. An increase and subsequent decrease in RSA throughout the interview might also indicate that there is faster RSA recovery. RSA recovery is the degree of return to resting levels of RSA shortly after exposure to specific tasks or challenges (Smith et al., 2020). More rapid and complete recovery to baseline is associated with better health, adaptive functioning, and wellbeing (Smith et al., 2020). Therefore, this decrease may be indicating quicker emotional recovery from the arousal experienced during the interview.

Returning to the specific studies on dynamic RSA explored in the introduction to this dissertation, Brooker and Buss (2010) also identified quadratic change when investigating toddler response to a stranger approach task. It was discovered that greater negative quadratic change was related to greater positive affect and greater boldness/approach behaviours in high-fear toddlers. Relating this to the present study, DP trainees, but not traditional workshop trainees, showed a negative quadratic change. DP therapists therefore may be expressing more positive affect or exhibiting more boldness in these interviews, despite the arousal they are experiencing. Cui and colleagues (2015) also identified quadratic change in adolescents during an angry event discussion task. In this case, there was a pattern of initial RSA decreases followed by RSA increases, which was related to better regulation of anger and sadness and more prosocial behaviour. Though the quadratic change was in the opposite direction in this study, this may be indicating an increase in RSA due to stress, and the subsequent decrease may be indicative of the improved regulation (i.e., quicker return to

baseline). Though this link is more tenuous, the quadratic pattern in the present study could also be indicative of improved regulation (i.e., through faster RSA recovery, described above).

To summarize, as examining the trajectory of RSA throughout a task is a newer way to examine RSA, the reason for these workshop group differences can only be theorized in this study. However, these findings show potential promise for a DP approach to training in order to reduce emotional reactivity to negative psychotherapy process, as DP did impact therapist emotional reactivity differently than traditional training, as evidenced by the differences in dynamic RSA. The specific impacts of DP should be explored further to determine how this difference in dynamic RSA relates to therapist functioning, skill, and/or subjective experience in the moment.

Self-reported Arousal Predicting Performance

Self-reported arousal in response to the vignettes predicted resistance levels in real life interviews with ambivalent individuals. Contrary to our hypothesis, the higher the arousal from the vignette task, the *less* resistance observed in real interviews. Furthermore, workshop group did not impact the relationship between arousal and resistance. Regardless of workshop group, therapists with higher self-reported arousal had lower resistance in their interviews.

One potential explanation for this counter-intuitive finding may be that those therapists who report being more aroused by resistant statements may be using an avoidance or side-stepping strategy. High arousal can be associated with both avoidance and attack behaviours (Linehan, 1993; Strupp, 1980). Rather than becoming hostile/attacking in response to resistance, as seen in other studies (e.g., Binder & Strupp, 1997; Hara, 2020), therapists may be skirting or avoiding resistance out of fear or distress. They may experience more distress in response to resistance, and therefore avoid or are ‘on the lookout’ for getting caught in negative interpersonal process. Avoidance is a well-established response to high

negative arousal, though it is usually a maladaptive response (Citron et al., 2016). Research has examined how therapists may engage in withdrawal or confrontation themselves (Eubanks et al., 2019). For example, when aroused in a session with a client, a therapist may engage in various behaviours to attempt to avoid resistance or conflict. This may include becoming passive or engaging in intellectualized discussion rather than focusing on the clients or their own experience (Muran & Eubanks, 2020). In fact, in a qualitative study examining variables that impact therapist intervention in response to alliance ruptures, some therapists identified that the tendency to "run away from difficult topics" influenced their response to these ruptures (Coutinho et al., 2011). Further, reactivity conceptualized as therapist countertransference has been suggested to result in therapists avoiding and withdrawing from material that may seem threatening to the therapists, such as criticisms from the client (Muran & Eubanks, 2020). By avoiding the resistance these therapists may be reducing it, as they are not being overly directive or pushing their point of view, behaviours which are known to increase resistance (Coutinho et al., 2011; Patterson and Forgatch, 1985). This aligns with some emotion regulation processes outlined by Gross (2014), including avoiding or altering the emotion-generating stimulus, or moving attention away from the stimulus.

Conversely, "rolling with resistance", one principle which was taught to trainees in this study, emphasizes the importance of approaching and exploring the resistance. This may be compared to the process of altering or reframing how one is interpreting the situation, i.e., by viewing resistance as important information to be explored, which is another emotion regulation process described by Gross (2014). This must be done in spite of one's fear of resistance. Therefore, good therapists may approach resistance in clients, in order to effectively resolve ambivalence in the interviewees. In this study this could result in the overall trend of those with lower arousal approaching resistance to resolve it, and those with

higher arousal avoiding or side-stepping resistance, resulting in less of it. In fact, research has demonstrated that if emotional intensity is very high, there are less experiential and physiological benefits of reframing one's interpretation of the situation, which may be why an avoidance strategy is used when arousal is higher. Considering these therapists were aware the workshop was about effectively managing resistance, and they knew they were being recorded during these interviews, there would also likely be a pull to avoid resistance if they were highly aroused.

Another possible explanation of this finding is that therapists who experience higher arousal in response to resistance may be using this as an alert to change tactics. Those who are more emotionally reactive to resistance may be using their reactivity as a key indicator that something is "off" in the therapeutic relationship, increasing their ability to effectively change their approach to reduce subsequent resistance. The possibility of using the therapists' own emotional reaction as an important marker in therapy has previously been suggested by researchers of negative process. For example, following a qualitative study on therapist experience of alliance ruptures, Coutinho and colleagues (2011) posited that encouraging therapists to attend to their experience of the therapeutic interaction may help guide their interventions during alliance ruptures. Thus, arousal in response to resistance may serve as a strategy to help therapists reduce resistance. It may also be that those who are better able to identify their arousal through self-report are more attuned to their emotions, and therefore can manage them better. Research shows that identifying one's emotions through labelling decreases the intensity of the emotion (Lieberman et al., 2011). Thus, if these therapists are identifying their emotions in the moment, they may be beginning the regulation process and therefore may be less likely to be pulled into ineffective responding. In support of this, Fitzpatrick and colleagues (2019) found that labelling one's emotions increases the efficacy of subsequent intentional efforts to regulate emotions. Further, research on mindfulness

demonstrates that being mindful of observing and describing one's emotions can reduce performance anxiety. For example, in a study examining the impacts of mindfulness training in college students, those who received the training showed significant reductions in test anxiety and general anxiety (Lothes et al., 2021). Therefore, those who identified high arousal to the vignette task may be those who are better able to observe and therefore manage their emotions in response to real-life stressors.

To summarize, higher self-reported arousal was related to less resistance in this study, contrary to hypothesis. It is possible that those with higher arousal may have reduced resistance due to engaging in avoidance of contentious topics, thereby resulting in reduced conflict. However, it also may be that those with higher arousal are using their emotional response to alert them that there is a conflict in the relationship, allowing them to change their approach. By being aware of their arousal in the interviews, therapists may also be demonstrating skill at observing and describing their emotions, techniques which can actually reduce emotional arousal. This interesting finding should be explored further to help elucidate the reasoning for the inverse relationship between arousal and resistance.

Dynamic RSA Predicting Performance

No relationship was discovered between either linear or quadratic RSA and resistance. This suggests that the biological emotional reactivity of therapists, at least as assessed in this study, did not have a significant impact on their ability to manage resistance in a session. This may be due to the fact that different therapists have differing abilities to manage their biological reactivity. In other words, more biological reactivity does not necessarily mean that therapists have better or worse ability to manage resistance within a session. While high dynamic RSA may indicate regulation and compassion, these inner experiences may not translate to outward skill. On the opposite end, though some may be experiencing more distress in these interviews, this may lead to more avoidance of resistance, or it could lead to

poorly managed resistance, resulting in increased resistance. This finding may be encouraging for therapists, since having either a little or a lot of reactivity does not necessarily predict your skill level in managing difficult clinical situations; rather, how you manage or respond to this reactivity may be the key. Instead, therapist dynamic RSA may be related to other variables important for therapeutic process that were not examined in the present study (e.g., burnout, job satisfaction, client symptom reduction, etc.) The relationship between therapist dynamic RSA and other therapeutic variables should be explored in future research to help identify how changes in dynamic RSA impacts therapists and their work with their clients. It is important to note that the lack of a finding between dynamic RSA and performance must be interpreted cautiously. As discussed above, quantity of resistance may not have been an effective measure of performance in this study, as therapists may be responding ineffectively by avoiding resistance due to their arousal.

Another possible reason no significant relationship was found between dynamic RSA and resistance may be the fact that dynamic RSA aggregates the moment-to-moment changes into a general trajectory over the course of the interview. By looking at RSA change over time in the interview as a whole, we are still diluting any moment-to-moment changes in RSA that are occurring as a result of therapist arousal at different points within the session, which may in fact be predictive of therapist performance. As previously discussed, therapist behaviours at specific moments in the therapy process (e.g., in the context of resistance) are highly impactful on client outcome (e.g., Aviram et al., 2016). Thus, it may be more relevant to look at RSA in the specific moments following resistant statements. Furthermore, the relationship between arousal and resistance is a complex one, in that therapist arousal can cause therapists to make errors resulting in greater resistance, *and* resistance can lead to increased therapist arousal. Due to this cyclical relationship, it is possible that using therapist RSA to predict resistance over a session is an oversimplification of the relationship. Future

studies should examine resistance and RSA in tandem at specific moments within a session, to see whether there are changes immediately before resistance (i.e., therapist arousal causing resistance), and/or after resistance (i.e., resistance causing therapist arousal).

Finally, this study was exploratory in that it measured dynamic RSA in a real interaction, which is a relatively new way of examining RSA. Perhaps using another measure of RSA (e.g., average RSA in a standardized interview versus a baseline task), may be a more powerful method of comparing therapist trainees and relating RSA to performance, despite sacrificing some external validity. Overall, given the role therapists play in negative psychotherapy process, RSA in therapists should be explored further to reveal how this can impact therapists and psychotherapy.

Subjective and Biological Reactivity are Different Constructs

In this study, subjective reactivity (self-reported arousal to difficult scenarios) and biological reactivity (dynamic RSA) were not correlated and found different effects with respect to change over time and relationship to resistance. At first this may seem counterintuitive; however, these two measures of reactivity are likely representing different constructs. Discrepancies between self-reported emotional response and objective measures are not uncommon (Izard, 1977, 1990; Lang et al., 1983). Emotions can be subjectively experienced while not resulting in overt behavioural expression (Schwartz et al., 1976). Furthermore, behavioural expression and physiological expression of emotion can occur while the emotions are not being experienced in subjective awareness (e.g., are suppressed or dissociated; Gross, 1998; Izard 1977; Leventhal, 1984). Therefore, one's interpretation of their own subjective arousal can be different than their physiological response.

In fact, the relationship between one's subjective arousal and physiological arousal may itself be an individual difference variable worthy of exploration. There is evidence that the relationship between self-reported emotional response and behavioural or physiological

response may differ among individuals. When comparing self-reported negative affect and behavioural and/or physiological response, three styles have emerged. Those who experience higher cardiac response and higher anxiety in their facial movements but report low negative affect are theorized to use an avoidant style of coping with negative affect, and therefore are categorized as "repressors" (Asendorpf & Scherer, 1983; Newton & Contrada, 1992). Those who experienced higher self-reported negative affect than cardiac response are categorized as "high-anxious", and those who showed low response in either domain are considered "low-anxious" (Newton & Contrada, 1992; Gudjonsson, 1981; Jamner & Schwartz, 1986). This may explain the lack of correlation between these two measures of reactivity in the present study, and why there are differences in findings between these two measures. It may also be implicated in why self-reported arousal, but not physiological reactivity, was predictive of performance as measured by resistance. As mentioned above, perhaps it is not one's reactivity that is impacting their response to challenging clinical scenarios, but their perception of this reactivity and their ability to manage it. Thus, the impact of therapist self-reported arousal on outcome in psychotherapy should be explored further.

Clinical and Training Implications

Utility of Deliberate Practice in Psychotherapy Training

These findings emphasize the utility of DP as a training method, as engaging in DP of skills enhanced the impact of psychotherapy training on learners, whereby their self-reported reactivity to negative interpersonal process was reduced. The finding that DP training can reduce therapist self-reported arousal to challenging clinical scenarios is an important finding for therapists, as this has potential implications for therapist job satisfaction and reducing burnout. Repeatedly experiencing high levels of arousal throughout one's workday would likely leave therapists feeling exhausted at the end of the day, with less emotional energy to see other clients. By engaging in DP to scenarios that cause higher arousal, therapists could

become more comfortable in engaging with these clients and therefore have increased job satisfaction. This highlights the importance for therapists to be continuously aware of their emotions throughout sessions with their clients, and to engage in continuous emotion regulation skills.

Findings also highlight the importance of continuing to engage in DP in order to maintain this reduction in arousal. As self-reported arousal was found to increase to baseline levels at follow-up, DP to responding to these scenarios must be repeatedly practiced and built over time, or arousal may increase again, potentially leading to burnout. Though most therapists in the study were relatively young and newly trained, many were likely still delivering psychotherapy over the follow-up period. Therefore, completing one's regular therapeutic duties does not keep arousal lowered; one must continue to engage in DP. DP is not a "one and done" skill; rather, keeping up with regular practice, particularly with difficult scenarios beyond one's comfort zone, can allow therapists to maintain these skills. In support of this, analysis of training trajectories in this same study examined what differentiated those who maintained their skills in managing resistance following the workshop, and those whose skills declined. It was found that those who maintained their skills spent three times as much time reviewing therapy tapes in a typical month, and in particular spent time reviewing tapes of master therapists (Poulin et al., 2019). Thus, those who continued to engage in DP between the workshop and 4-month follow-up were more likely to maintain the skills they had learned. Practically, DP may be integrated into weekly rounds, case conference, or consultation groups to keep clinicians working to overcome their emotional responses to these difficult scenarios, and to get repeated feedback from other clinicians on their team.

Training Accessibility and Efficacy

While the reviewed research to date on training in psychotherapy and DP has demonstrated the importance of continued and individualized coaching and/or feedback, this

reduces the efficiency and accessibility of training, particularly when providing training in MI. Training in MI is a lengthy process, with suggested timelines of 12-16 hours of workshop training, at least 3-4 postworkshop contacts, and a minimum of 5 hours of individualized coaching from an expert MI trainer (de Roten et al., 2013; Schwalbe et al, 2014), with past research providing coaching and feedback for up to 8 months (Miller et al., 2004).

This study shows promising results for delivering DP training in a group format. It was demonstrated that even in a group format, DP training can reduce therapist arousal to difficult clinical scenarios. Further, the difference in pattern of dynamic RSA in the DP group compared to the traditional group shows that DP training impacted not only therapist self-reported or subjective arousal, but also their biological arousal to ambivalent individuals (though the implications of this difference in pattern must be explored further). Taken along with findings from the parent study that this DP workshop also led to increased skill in managing these difficult scenarios (i.e., reduced resistance, increased empathy) and study by Poulin and colleagues (2019) that positive feelings towards clients and therapist confidence increased, it can be stated that DP training in a group format was shown to be effective at decreasing therapist negative reactivity to resistance / ambivalence, and increasing therapist skill in managing these clinical phenomena.

Possibilities for Further Reducing Arousal and Improving Regulation

While the present study demonstrated a difference in self-reported arousal in the workshop groups as a result of DP training in MI, and some difference indicated in biological reactivity, other ways to reduce therapist distress and arousal in response to negative process should be explored. Muran and Eubanks (2020) argue that it is important for therapists not only to work on the skills for responding to negative process, but also to develop their emotion regulation skills, such as learning to identify and label their emotions (Muran & Eubanks, 2020). In support of this assertion, greater therapist ability to manage emotion

predicts client-rated improvement, drop-out rates, and client assessment compliance, suggesting that an improvement in the skill of emotion regulation may improve client outcome (Kaplowitz et al., 2011). If therapists learn to both regulate their emotions and respond effectively, they may be able to manage their reactivity more effectively in the moment so that it does not impact their performance. When equipped with these skills, they may be able to take advantage of their initial reactivity, using it as an important cue to indicate potential conflict with the client. For example, although a therapist might feel high arousal in response to a complaint from a client, they may use this arousal to notice they need to change their approach, and they may also modulate this reaction so that it does not lead to an impulsive response that may not be helpful to the client. This follows from the observation by Linehan that if you are emotionally reactive, but have good emotion regulation skills, you will not often become dysregulated (Linehan, 1993). Future studies may therefore examine whether including emotion regulation strategies into training for management of ambivalence and resistance improves therapist emotional outcomes, as well as improves therapist performance. A number of possibilities emerge for helping therapists with the task of reducing emotional reactivity and/or improving emotion regulation skills, including DBT skills, mindfulness training, and alliance focused training.

DBT is a therapy created specifically to help with managing high levels of emotional reactivity, which is a main symptom / trait experienced by individuals with borderline personality disorder (APA, 2022). DBT involves skills training in four areas to target this emotional reactivity: 1) Distress Tolerance, 2) Emotion Regulation, 3) Mindfulness, and 4) Interpersonal Effectiveness. While the training in this study may be compared to improving emotion regulation (through exposure, increased self-efficacy, and cognitive reframing) and interpersonal effectiveness (responding appropriately to resistance), training for managing

these scenarios could be further improved by incorporating specific DBT skills into therapist training.

Mindfulness has also been theorized as a helpful practice for psychotherapists to engage in. Davis and Hayes (2011) reviewed the literature on psychotherapists and mindfulness, and reported that mindfulness can increase therapist empathy, self-compassion, counselling skills, emotional intelligence, attention, and self-regulation. It can also reduce therapist stress and anxiety. Thus, by engaging in mindfulness practice, this may help therapists identify, accept, and experience their reactivity without judgement, and to overcome the need to react without considering the therapeutic impact of their response. They may therefore be better able to stay present in the moment with clients who are expressing opposition to the therapist or therapy. In fact, in DBT, where therapists are frequently interacting with dysregulated clients, it is strongly recommended therapists engage in their own mindfulness practice. The goal of this practice is to help manage the therapist's reactions to clients who are frequently dysregulated, with an emphasis on remaining non-judgemental, empathic, and mindful of the limits of oneself and others (Lau & McMain, 2005). Mindfulness can also help train therapists to better focus their attention, i.e., to the person in the room with them and their experience, rather than one's own emotional arousal, and can increase compassion for themselves while reducing stress (Kingsbury, 2009). The addition of mindfulness into psychotherapy training may therefore be highly beneficial for therapists and their clients.

Muran and colleagues (2018) have also created a specific training program around the idea that therapist emotion regulation is critical to repairing ruptures in the alliance (Muran & Eubanks, 2020). Alliance-focused training (AFT) focuses on increasing therapist skill at negotiating problems in the alliance (e.g., negative interpersonal process; resistance), and does so through developing three therapist skills: self-awareness, affect regulation, and

interpersonal sensitivity (Eubanks-Carter et al., 2015). Self-awareness involves being attuned to one's own experience, so this can be used to determine whether there are any strains in the alliance; affect regulation involves overcoming one's urge to argue avoid or respond with hostility when an alliance rupture occurs; and interpersonal sensitivity involves being able to effectively highlight the current alliance rupture to the client (Eubanks-Carter et al., 2015). Thus, to improve alliance with clients and thereby improve client outcome, knowing what to say in these moments is not enough; being aware of and regulating one's emotions are also essential. The above-mentioned strategies are therefore ways that may be added to therapist training in order to further reduce distress and arousal in response to negative personal process. Paired with DP in responding to challenging clinical moments, this may further maximize the outcomes of both the clients and therapists.

Limitations and Future Directions

Several limitations to the present study should be acknowledged. First and most significant is the small sample size for RSA data at 4-month follow-up. Although every effort was made to minimize the impact of this missing data, this is a significant limitation that impeded power and therefore the ability to examine the relationship between dynamic RSA and other variables at 4-month follow-up. A random slopes model was not able to be used to examine between group differences in dynamic RSA at 4-month follow-up, and there was less data to relate to the therapist performance measure. Future studies should examine long-term effect of training on dynamic RSA in a larger sample of therapists. It would be interesting to see whether the differing pattern of dynamic RSA in the traditional versus the DP workshop persists several months after training.

Second, though dynamic RSA showed a positive trend in both training groups at both post-workshop and 4-month follow-up, as there was no interview task at baseline, it is unclear whether this is due to the training or was a pre-existing pattern. It could be theorized

that, regardless of the training workshop, therapists should show evidence of supportive behaviours and compassion due to the requirements of the task and/or their profession. Future research should examine dynamic RSA both pre-training and post-training to examine whether training resulted in a difference in response from therapy trainees. If a difference is identified, this would be further evidence that training in managing negative psychotherapy process is important for therapists and their clients. Collecting RSA at rest at baseline testing would also provide interesting information to examine how baseline vagal tone may relate to therapist dynamic RSA and performance

There are also strengths and limitations to the measure of RSA that was used in this study. Dynamic RSA was chosen as a measure to examine how RSA changes over the course of the interview in order to obtain more fulsome data of what is occurring moment-to-moment in the therapy session. This method has shown interesting results in the few studies which have approached RSA using this methodology (Brooker & Buss, 2010; Cole et al., 2004; Cui et al., 2015). However, this methodology may not have been fine-tuned enough to identify specific emotional reactions therapists are experiencing at key moments. Therapists experience a range of emotions throughout a session, most likely including both compassion and stress. By calculating a trajectory over the course of a 20-minute interview, one is collapsing this range of emotion, and therefore still not getting a detailed view of moment-to-moment changes. Though this demonstrated a differing effect of training, it does not capture the emotional experience of therapists as much as it would to look at response in key moments, such as following a particularly emotionally evocative statement from the interviewee. As discussed in the study by Aviram and colleagues, therapist response in key moments is most predictive of outcome, and perhaps gaining a better understanding of emotional reactivity in these specific moments is key. Furthermore, as this is a newer way to examine emotional reactivity using RSA, there is a smaller body of literature which may be

used to interpret the effects that were observed. Dynamic RSA is an exciting new measure, but the meaning of different trajectories needs to be further elucidated in the literature.

Using real ambivalent individuals also carries both strengths and weaknesses. As described in the methodology, RSA was measured during real interviews in order to maximize external validity, and to allow for relationships to be drawn between dynamic RSA and the amount of resistance in the interviews. However, depending on the ambivalent interviewee each therapist saw, there was possibly a broad range of interview difficulty, and therefore a range of how arousing these interviews were. For example, while one interviewee might have a clear direction on which option of their ambivalence is the one they wish to approach, others may be extremely stuck. It would naturally follow that some interviews would not be as difficult and arousing for the therapist, whereas others would be more emotionally evocative. Further, though sustained resistance is considered a therapist skill error from an MI perspective, initial expressions of resistance may be more due to the client, their interpersonal style, and the stage of change they are at. While a therapist may be excellent at managing resistance, if an interviewee themselves is feeling highly dysregulated and is prone to interpreting neutral statements as biased on behalf of the therapist, resistance will undoubtedly come up regardless of the therapist's skill. Attempts were made to minimize this by excluding ambivalent interviewees who currently had a significant mental health concern. Though it was an intentional choice to use real individuals and not standardized interviews in order to maximize external validity, this can nevertheless be a limitation.

Another potential limitation in this study is the age and experience of the therapists. Age of therapists averaged around the early thirties, and experience averaged to less than five years. These therapists may be experiencing higher reactivity due to being newer to the therapeutic context, or conversely, experiencing lower reactivity as they have become accustomed to having their performance recorded and evaluated during their clinical training.

Therefore, these results may not be generalizable to older and more experienced therapists. However, other studies using this data set found that therapist age and years of experience were not related to therapist performance (e.g., DiBartolomeo, 2023), and other DP studies have demonstrated that therapist age and years of experience are not predictive of client outcome (e.g., Chow et al., 2015).

Finally, when examining the relationship between dynamic RSA and therapist performance, the timepoint for predictor and outcome may be conflated. Given that the predictor was the growth of RSA over time, this value was theoretically the same in the first minute and last minute of interview, because it was an examination of overall trajectory. Therefore, this rate of change could be used as a predictor of resistance occurring later in session. However, this is complicated by the fact that there was a decrease in dynamic RSA towards the end of interviews. This means that some segments of the outcome variable (resistance in interview) may have occurred before the predictor variable (dynamic RSA). Thus, resistance could be both a result of this change, and a predictor of this change. As mentioned above, there is a cyclical nature to resistance and arousal, whereby resistance can increase arousal, which leads to poor management and therefore increased resistance. A more fine-tuned approach of examining the relationship between RSA and resistance would help elucidate how these two factors are related.

Along with the future directions already outlined throughout this discussion, an additional area of research to explore would be psychophysiological recovery in therapists following challenging clinical moments. This study showed an interesting pattern of dynamic RSA in the DP workshop, where there was an increase then decrease in RSA. It was hypothesized in this discussion that a possible reason for this pattern may be due to faster RSA recovery. RSA recovery could be an impactful area of exploration. For example, do some therapists recover from these challenging moments faster than others, and can this be

impacted by training? Does faster recovery lead to improved performance, or less prevalent burnout in psychotherapists? This line of research could help identify whether it would be effective to take short breaks between clients. For example, some therapists may find it beneficial to have 15-minute windows between clients so they have more time to regulate between clients. This could have important implications for therapist performance and mental health. Future directions may also examine other measures of emotional reactivity, such as sympathetic or behavioural measures such as skin conductance and electromyography. Gaining a better understanding of these measures during challenging clinical moments would provide a more fulsome picture of what therapists are experiencing during these moments.

Concluding Comments

The aim of this study was to examine how therapist emotional reactivity is impacted by a DP workshop for managing challenging clinical moments, and to explore whether emotional reactivity relates to therapist performance. Findings support the efficacy of a DP workshop in reducing therapist subjective arousal to difficult clinical scenarios. DP training allows for many opportunities to practice and refine skills, which may contribute to increased therapist confidence and empathy during difficult moments. However, DP should be continually implemented in order to help manage therapist reactivity. Further, there is some early support for different RSA trajectories based on type of training, whereby DP training may lead to a more adaptive biological emotional response to clients at post-workshop. Trajectories at follow-up could not be assessed due to limited sample size, and this is an important direction for future research. Overall, these findings show potential promise for a DP approach to training in order to reduce emotional reactivity to negative psychotherapy process, as DP showed a differing impact than traditional training on both self-reported and biological reactivity / arousal.

Findings relating reactivity and training to performance suggest that greater therapist self-reported arousal may be related to *lower* resistance, a relationship which was not impacted by training type. This is an unexpected finding which should be explored further. Increased arousal may be alerting therapists to negative process so they can make adaptive changes, or it may be leading therapists to avoid contentious topics. The ability to identify and express one's own arousal levels may also be linked to increased attunement and improvement management of such arousal. There was no relationship found between biological reactivity and resistance, which could suggest that therapist biological reactivity is unrelated to therapist ability to manage resistance in-session. Rather, how one perceives or responds to their own reactivity may be more predictive, and this is another important area for future research.

The findings of the present study meaningfully contribute to the research on psychotherapy training, both demonstrating that DP is a potentially effective approach in reducing therapist reactivity to difficult moments, and demonstrating that DP can effectively be delivered in a group format. It highlights the importance of deliberate, repeated practice, while also showing that this type of practice can be accessible to large groups of therapists. This research opens doors to exciting new areas to explore in psychotherapy training, therapist efficacy, and therapist mental health. As research moves from a focus solely on the client, to also examining the person and experience of the therapist, researchers can gain an improved understanding of a large and important piece of the therapeutic puzzle.

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Appendix A

MI Skills Self-Assessment

We are interested in how confident you are in your ability to perform the key elements of Motivational Interviewing before training and after training. Circle the number that represents your level of confidence in performing each activity, from low (0) to high (4).		Confidence Low				High
1	Working in a collaborative/partnership manner that respects the clients expertise and perspective	0	1	2	3	4
2	Support the clients right & capacity for self direction	0	1	2	3	4
3	Recognize the clients stage of change	0	1	2	3	4
4	Tailor my approach to match the client's stage of change	0	1	2	3	4
5	Use reflective listening techniques more frequently than questions	0	1	2	3	4
6	Work with clients to resolve ambivalence about behavior change	0	1	2	3	4
7	Explore with clients the "good" and "not so good things" about behavior change	0	1	2	3	4
8	Explore with clients the discrepancy between their current behavior & their future goals	0	1	2	3	4
9	Help client weigh the "pros" and "cons" of their behavior & the "pros" and "cons", of behavior change	0	1	2	3	4
10	Recognize ways clients express resistance to behavior change	0	1	2	3	4
11	Recognize resistance as a signal to change my approach with client	0	1	2	3	4
12	Support clients self-efficacy by believing change is possible	0	1	2	3	4
13	Offer affirmations for the client's behaviors or strengths	0	1	2	3	4
14	Use a double-sided reflection to convey their current dilemma	0	1	2	3	4
15	Recognize when the client is using "change talk" and "counter-change" talk	0	1	2	3	4

Appendix B

Reaction Questionnaire

Imagining that this were *your client,* circle the appropriate number to show how you feel in relation to this person.

In working with this client, I would feel:

happy	1	2	3	4	5	6	7	sad
angry	1	2	3	4	5	6	7	pleased
moving	1	2	3	4	5	6	7	still
uncertain	1	2	3	4	5	6	7	definite
calm	1	2	3	4	5	6	7	excited
confident	1	2	3	4	5	6	7	afraid
friendly	1	2	3	4	5	6	7	unfriendly
slow	1	2	3	4	5	6	7	fast
energetic	1	2	3	4	5	6	7	peaceful
quiet	1	2	3	4	5	6	7	aroused

Rate how confident would you feel in working with this client?

Not at all Confident 1 2 3 4 5 6 7 Very Confident

Appendix C

Adapted Client Resistance Code

Definition of resistance is "going against, opposing, blocking, or impeding the direction set by the therapist".

This is a process coding system. Content is secondary. Rely on what is being communicated beyond the words (i.e., ask yourself: "What is the intention of this client behavior?" irrespective of the words used).

Client statements of counter-change, lack of progress, hopelessness, or concerns with the therapy/therapist DO NOT automatically get coded as resistance. Whether resistance is inferred from clients' statements depends on the context in which reservations are expressed (i.e., **"**Is the intent to go against the therapy/therapist, or not?")

Develop an interpersonal paraphrase. "What is the client saying to the therapist on an interpersonal level?"

Ask yourself: "Where is the therapist going? The client`s response can then be assessed for whether or not it complies with this direction.

Types of interpersonal resistance:

- Disagree, Confront, Challenge, Doubt – Responses indicate dissatisfaction or skepticism about the therapy/therapist, disagreements with the therapist, or client's failure to comply with a session directive/homework. Must be clear from interpersonal context that the client's *intention is to oppose/disagree/challenge the direction set by the therapist*

- Own Agenda, Sidetracking, Interrupting – Responses indicate the client wants to discuss an issue different from the direction set by the therapist, persists in discussing tangential issues, or interrupting in order to oppose/block therapist

- Ignoring, Not Responding, Not Answering – Instances in which the client ignores the therapist by not responding/going in a different direction; withholding information by not responding, giving evasive, non-direct responses to a therapist's direct question; Short, highly abbreviated responses that are clearly non-cooperative

- Questions about the Therapist/Treatment – Questions that stem from underlying skepticism and are meant to doubt/challenge the therapist/therapy; questions about treatment procedures. *Tone and intent must be clearly resistant* (i.e., questions for the purpose of clarifying/getting information are not resistance)

Quality of interpersonal resistance (assigning codes to time bins):

- **0 – Absence of resistance.** Client is going along with therapist's direction (Default code is always 0)

- **1 – Minimal, Qualified resistance.** Client is NOT going along with therapist's direction and/or is being skeptical, BUT the context is generally one of cooperation (i.e., sending a mixed interpersonal message of opposition along with a simultaneous intent to cooperate with the therapist); Qualified, tentative, apologetic-like statements/behaviours with a gentle tone; Ambivalent ("yes... but") responses (when the "Yes" part is not a throw-away response)

- **2 – Clear, Unequivocal resistance.** Client does not qualify their response, but straightforwardly states their disagreements, doubts, or challenges/questions the therapist. Can occur in process (e.g., sidetrack, ignore, talk over therapist) and/or in content (i.e., responses that are clearly doubtful or are intended to oppose therapist's direction); nonverbal responses (i.e., vocal tone, behavioural gestures) that clearly send the message "I don't agree"; Interruptions that are meant to communicate resistance (i.e., ignoring, blocking the therapist)

- **3 – Hostile, combative resistance.** Client's tone is clearly hostile, combative, or discrediting of the therapist; responses often directly address the therapist personally (e.g., criticizing, questioning therapist's competence); overly firm/emphatic responses; nonverbal behaviours that clearly indicate dismissal/dissatisfaction with the therapist

Codes are NOT mutually exclusive. You may assign *more than one code for each time bin* (Code 0 is an exception).
However, *each code may only be assigned once within the same time bin.*

Carryover (i.e., instances in which the client's resistance continues into the next time bin) continue to be coded at their initial form/quality of resistance, UNLESS the client did/said something that changes the quality of resistance.

Coding system is designed to **capture *quality* of resistance (as defined by 0-3 scale) as opposed to *type* of resistance** (e.g., Ignore vs. Disagree). However, type of resistance is important when providing rationale for your code.

*Adapted with permission from the Westra et al. (2009) unpublished coding manual for the Adapted Client Resistance Code.