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THE ROLE OF THE CLINICIAN'S SUBJECTIVE EXPERIENCE IN THE INTERACTION WITH THE PATIENT: A PILOT STUDY ON NEUROBIOLOGICAL CORRELATES

MED/25

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ABSTRACT

Background. The Assessment of Clinician's Subjective Experience (ACSE) is a questionnaire designed to assess the clinician's subjective experience during patient interactions. Although previous studies have supported its reliability and clinical validity, its neurobiological underpinnings remain unexplored. **Methods**. Two clinicians and ten patients were recruited in a three-phase study: (1) a first clinical interview, (2) ACSE administration, and (3) listening to the first clinical interview recording. Electroencephalography (EEG) data were recorded from clinicians during both the first clinical interview and the ACSE administration. EEG data were analyzed using relative power spectral density, node strength, and global efficiency derived from imaginary coherence. **Results.** Clinicians were psychiatrists, while patients were diagnosed with depressive and anxiety disorders. ACSE scores were highest for Difficulty in Attunement and Engagement dimensions, aligning with prior findings. EEG analyses revealed distinct frequency- and region-specific patterns associated with each ACSE dimension: the dimension of Disconfirmation elicited the most heterogeneous neural responses across all EEG metrics and both clinicians. Connectivity analyses highlighted divergent network profiles: the female clinician showed higher variability in global efficiency, while the male clinician exhibited more stable patterns. Finally, correlational analyses identified specific associations between ACSE dimensions and EEG features. **Conclusion.** These preliminary findings provide the first neurobiological evidence linking the clinician's subjective experience with measurable brain activity. They suggest that subjective dimensions in clinical encounters may be partially encoded in distinct EEG patterns, laying the groundwork for future research on the neurobiology of intersubjectivity processes.

INTRODUCTION

Subjective experience in clinician-patient relationship

The phenomenological tradition in psychiatry has long recognized the central role of the clinician's lived perception of the patient in the diagnostic process. Classical psychopathologists such as Karl Jaspers (1913) established *Verstehen* (understanding) and *Einfühlung* (empathic attunement) as methodological cornerstones for accessing the patient's subjective experience, arguing that a purely objective or externalising approach fails to grasp the qualitative richness of psychiatric phenomena. Similarly, Eugène Minkowski (1927) and Ludwig Binswanger (1942) advanced an anthropological and existential approach, emphasizing the clinician's capacity to intuitively apprehend alterations in temporality, spatiality, and selfhood as they emerge in the clinical encounter. Finally, Kurt Schneider (1959) and H. C. Rümke (1942) both underscored the diagnostic value of the clinician's experiential impressions, with Rümke specifically introducing the notion of the *Praecox Gefühl*, understood as an immediate and pre-reflective sense of contact disturbance in schizophrenia.

More recent phenomenological psychiatry has systematically examined how the clinician's perceptions and emotional responses constitute not only a therapeutic but also a diagnostic instrument. Contemporary authors such as Parnas and Sass (2001), Stanghellini and Broome (2014), and Fuchs (2010) have argued that the clinician's embodied and affective engagement with the patient provides access to disturbances in self-experience, intersubjectivity, and existential orientation, which may otherwise remain inaccessible through standard symptom checklists. This perspective reframes diagnosis as a dialogical and intersubjective process in which the clinician's own perceptual, emotional, and cognitive responses are integral to identifying the structural features of psychiatric disorders, particularly those involving disruptions of the self, such as schizophrenia-spectrum conditions. In this sense, the phenomenological method preserves its diagnostic relevance by

foregrounding the relational field as both the medium and the source of psychopathological understanding.

The Assessment of Clinician's Subjective Experience (ACSE) questionnaire

In the last decade, there has been a renewed interest in investigating the phenomenological processes that shape clinical encounters (Fonzi et al., 2021). Phenomenological psychiatry, in particular, has long underscored the central role of the clinician's subjective experience, especially in terms of empathic attunement to the patient's lived world, in structuring the clinical encounter. Given the substantial influence of these experiential aspects on diagnostic reasoning, therapeutic alliance, and treatment outcomes, there has been a growing need for standardised, empirically grounded tools capable of capturing and quantifying the clinician's intersubjective experience with the patient. Such instruments aim to provide an objective framework for describing and measuring relational dynamics that are, by nature, deeply personal and context-dependent, thereby bridging the gap between qualitative clinical insight and systematic empirical evaluation.

Within this context, the Assessment of Clinician's Subjective Experience (ACSE) was developed as a structured instrument to systematically evaluate the clinician's experiential and affective states during the clinical encounter (Pallagrosi et al., 2014). By operationalising dimensions rooted in phenomenological psychopathology, the ACSE enables the quantification of relational phenomena that have traditionally been assessed only qualitatively. This approach allows for the systematic investigation of how clinicians perceive, process, and respond to their interactions with patients, offering a bridge between subjective clinical impressions and measurable behavioural correlates.

The ACSE is a self-administered questionnaire composed of 46 items. Each item has a score from 0 to 4 and aims to investigate one of the five dimensions characterising the clinician's subjective experience: Tension, Difficulty in Attunement, Engagement, Disconfirmation and Impotence. More in detail, the dimension of Tension is described as physical tension and clumsiness, reduced spontaneity, and

feelings of worry, nervousness, and alarm during the first clinical interview. The dimension of Difficulty in Attunement is the difficulty in establishing emotional contact, in being empathetic, in understanding the patient's experience and in communicating with the patient. On the other hand, the dimension of Engagement is described as the degree of involvement of the clinician with the patient, through the experience of feelings of boredom, indifference, detachment, lack of attention and, on the contrary, desire to take care of the patient and feelings of deep involvement in the patient, relationship with the clinician, emotional closeness and tenderness during the first clinical interview. The dimension of Disconfirmation is the inability to establish an authentic relationship with the patient and the feeling of being manipulated, rejected, criticized or devalued by the patient. Finally, the dimension of Impotence describes feelings of helplessness, frustration, desolation, loneliness and a sense of emptiness during the first clinical interview.

The administration of the ACSE is carried out by the clinician immediately after the first clinical interview with the patient.

The results of studies which employed the ACSE have suggested that the subjective experience of the clinician during the interaction with the patient can be measured reliably and has clinical and diagnostic value.

In a study by Pallagrosi et al. (2016), the developers of the ACSE underlined how the scores of the questionnaire changed according to the severity of psychiatric symptoms. Specifically, it was found that psychotic disorders such as schizophrenia determined higher scores in the dimension of Difficulty in Attunement, while cluster B personality disorders increased scores in the dimension of Disconfirmation. Interestingly, Pallagrosi et al. (2016) reported that mood disorders, particularly major depressive disorder, as well as anxiety disorders reduced the level of Tension, Difficulty in Attunement and Disconfirmation dimensions, described by lower ACSE scores. A similar pattern was observed for cluster B personality disorders which reduced scores on the dimension of Engagement. This evidence has demonstrated how the clinician’s subjective experience is strongly influenced by the

patient's clinical condition, assuming a variety of nuances in line with the nature of the psychiatric disorder.

Notably, within the spectrum of psychotic disorders, schizophrenia has been identified as the condition most strongly influencing ACSE scores. In a recent study, Fonzi et al. (2025) examined a large sample of patients diagnosed with major psychotic disorders, including schizophrenia, schizoaffective disorder, delusional disorder, and psychotic mood disorder. The results showed that during interactions with patients affected by schizophrenia or schizoaffective disorder, clinicians reported significantly higher scores on the dimension of Impotence compared with interactions involving patients with psychotic mood disorders. Moreover, clinicians engaging with patients diagnosed with schizophrenia reported higher scores on the dimension of Difficulty in Attunement than those observed in interactions with individuals with delusional disorder or psychotic mood disorder. According to the authors, these findings suggest that within the spectrum of psychotic disorders, the dimension of Difficulty in Attunement emerges as a distinctive marker of the clinician-patient interaction, particularly in schizophrenia. This evidence further indicates that the clinician's subjective experience, as captured by the ACSE, is modulated by diagnostic category, with schizophrenia shaping a specific experiential profile that differentiates it from other psychotic conditions.

Building on this, the relationship between ACSE scores and psychiatric disorder can be further explored through their correlations based on symptom severity. Picardi et al. (2017) correlated the 24-item Brief Psychiatric Rating Scale (BPRS) scores with the subjective experience dimensions assessed by the ACSE. To do this, the authors reorganised the items of BPRS in five macro-categories: (i) affect, related to feelings of anxiety, depression, suicide and guilty; (ii) positive symptoms, inherent in suspiciousness, hallucinations, unusual thoughts, sense of grandiosity; (iii) negative symptoms, inherent in blunt affectivity, emotional detachment, motor slowness; (iv) activation, related to high mood, excitement, distractibility, motor speed; (v) disorganization, related to lack of recognition of the Self, disorientation, conceptual disorganization, mannerism, need to behave. Picardi et al. (2017) found that BPRS

scores related to the affect category for depressive and anxiety symptoms positively correlated with the dimension of Engagement, while positive symptoms positively correlated with Tension, Difficulty in Attunement and Disconfirmation dimensions. Moreover, a positive correlation was found between the negative symptoms category and all ACSE dimensions, excluding the dimension of Engagement which negatively correlated with the negative symptoms BPRS category. Finally, both activation and disorganization positively correlated with Tension, Difficulty in Attunement, Disconfirmation and Impotence dimensions. Another interesting result reported by Picardi et al. (2017) emerged from a regression analysis, which demonstrated that the symptom severity and patterns of the psychiatric disorder described by the BPRS can predict the clinician's subjective experience described by the ACSE. In psychotic disorders, scores on the BPRS categories of activation, positive symptoms, and negative symptoms predicted scores on the ACSE dimension of Tension. Furthermore, always in psychoses, scores on positive symptoms and negative symptoms predicted scores on the ACSE dimension of Difficulty in Attunement. Conversely, scores on the BPRS categories of positive symptoms and affect determined scores on the ACSE dimension of Engagement. Furthermore, Picardi et al. (2017) highlighted that the most valid predictor of scores of the ACSE dimension of Disconfirmation was the scores on the BPRS category of activation, to the detriment of that of negative symptoms which was a less valid predictor. Finally, scores on the BPRS category of negative symptoms were the best predictor for scores on the ACSE dimension of Impotence.

Interestingly, the characterization of symptom severity and patterns of the psychiatric disorder is also connected to the development of types of collaboration between the clinician and the patient during their interaction, as well as to the development of therapeutic interventions more effective at the clinical diagnosis. As reported by Tanzilli et al. (2019), by correlating the scores of the ACSE with those of the Therapist Response Questionnaire (TRQ) the authors investigated how countertransference effects applied in the Short-Term Psychodynamic Psychotherapy (STPP) can determine the level of the collaboration between the

clinician and the patient. Notably, the scores of the TRQ underlying a strong and negative countertransference correlated coherently with ACSE dimensions and were associated with a poor therapeutic alliance. Conversely, the best diagnostic results obtained with STPP not only determined a good collaboration between the clinician and the patient, but also negatively correlated with higher scores on the dimension of Difficulty in Attunement at the beginning of the clinical encounter and with a greater response from the clinician for the TRQ dimensions of helplessness, frustration and disengagement during the therapy.

Therefore, these studies (Pallagrosi et al., 2016; Picardi et al., 2017; Tanzilli et al., 2019) have demonstrated that the ACSE has a remarkable internal validity in being able not only to characterize the symptom severity of a psychiatric disorder, but also to predict the change in the clinician's subjective experience and to design targeted interventions for the patient.

Beside robust internal variability, ACSE also showed an excellent level of the external validity, in particular in its application to patient populations with different socio-demographic characteristics. Recruiting Italian and non-Italian European patients, Fonzi et al. (2020) did not assess any statistical significance difference in the ACSE scores obtained by clinicians in comparison between patients' nationalities. Similar results were found in interactions with adolescent patients, where clinicians' ACSE scores demonstrated high internal consistency (Picardi et al., 2021), coherent with earlier results observed in adult populations (Pallagrosi et al., 2014).

Finally, the subjective experience of the clinician described by the ACSE during the interaction with the patient can change according to the clinician's biological gender. A recent study of Dazzi et al. (2021) investigated score changes in the ACSE dimensions in male and female clinicians. The emerging evidence underlined that women obtained higher scores on the Difficulty in Attunement, Engagement, and Impotence dimensions, while men on the Tension and Disconfirmation dimensions.

Electroencephalography (EEG)

The validation and administration of the ACSE have thus far been conducted exclusively from a clinical perspective, without consideration of the neurobiological correlates that may underlie the clinician's subjective experience. In this regard, a growing body of literature has proposed electroencephalography (EEG) as a potential paradigm for investigating these neurobiological underpinnings (Czeszumski et al., 2020).

EEG is a functional recording technique that maps electrical activity generated by the brain (Berger, 1929). By measuring the evolution of electrical signals through electrodes placed on the scalp, EEG provides high temporal resolution, making it an effective tool for tracking real-time neural oscillations (Kirschstein & Köhling, 2009). Neural signals recorded through EEG are represented as oscillatory waveforms characterised by their frequency (cycles per second) and amplitude (voltage magnitude, calculated in Hertz -Hz-).

Six primary types of brain waves describe electrical activity (**Figure 1**):

- delta waves (< 4 Hz): high-amplitude waves associated with deep sleep phases;
- theta waves (4-7 Hz): linked to inhibition of elicited responses and cognitive control processes;
- alpha waves (8-12 Hz): associated with a relaxed brain state and often observed when the eyes are closed;
- beta waves (13-30 Hz): low-amplitude waves indicative of normal waking activity and active cognition;
- gamma waves (> 32 Hz): involved in cross-modal sensory processing and cognitive integration;
- mu waves (8-12 Hz): related to resting-state motor neurons and sensorimotor activity.

Figure 1. The main EEG waves describing the brain's activity (from Abhang, 2016).

EEG waves arise from large populations of neurons firing synchronously. To record them, at least two electrodes are required: one active and one reference (indifferent). The potential difference between these electrodes is measured independently of their specific status (active-active or active-indifferent). Thus, EEG captures variations in synchronous neuronal activity that can be detected at a distance from the scalp (Baillet et al., 2001).

The neural activity recorded by EEG is primarily generated by the summation of postsynaptic potentials rather than single action potentials. The weak electrical power and higher physical dispersion of action potentials make them ineffective for

detection at the scalp level. Instead, EEG waves predominantly reflect the extracellular currents generated by summated postsynaptic potentials from activated pyramidal cells. These potentials contribute more significantly to EEG recordings because they are slower and have a more effective summation than action potentials (Brienza & Mecarelli, 2019). Additionally, the structural properties of pyramidal neurons facilitate the propagation and detection of postsynaptic potentials: their parallel alignment and perpendicular dendritic orientation to cortical surfaces enhance signal coherence. In contrast, non-pyramidal and glial cells, lacking a specific orientation, contribute minimally to EEG signals, as their neural activity is more diffusely distributed (Olejniczak, 2006) (**Figure 2**).

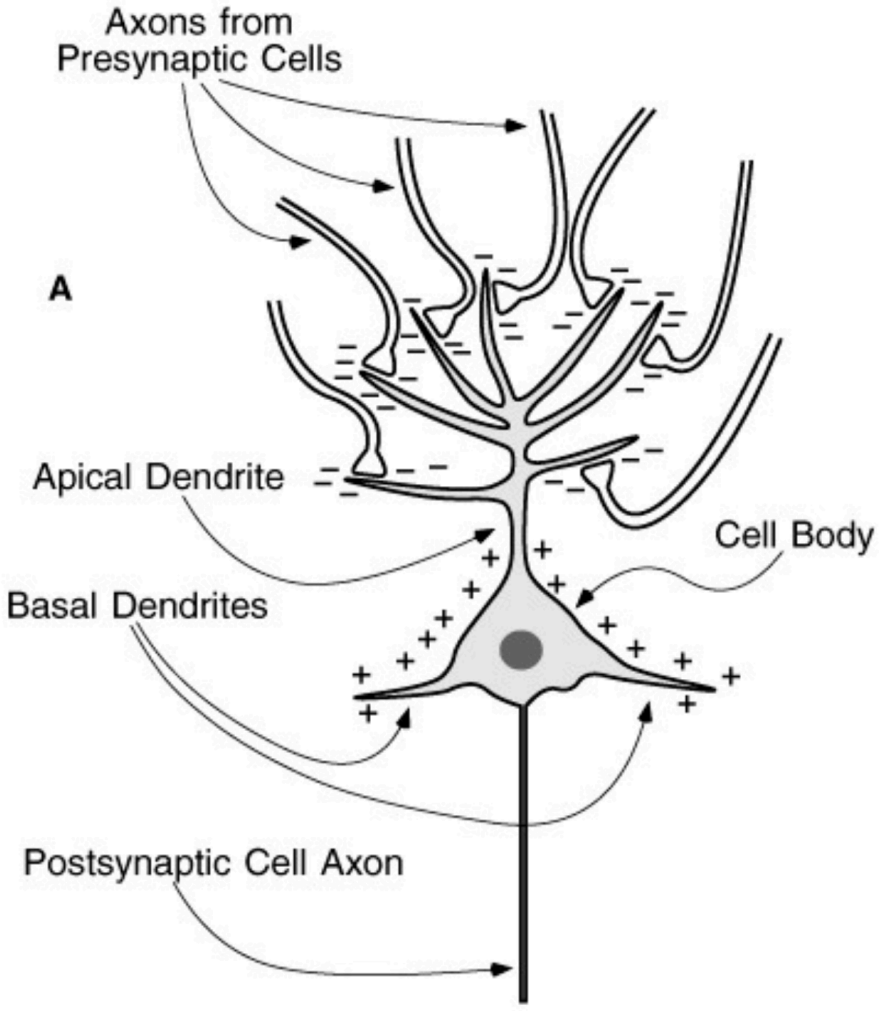

Figure 2. The neuroanatomy of pyramid cells. These cells collect action potentials from presynaptic cells and generate a postsynaptic summed potential (from Dickter & Kieffbaer, 2016).

Compared to other functional neuroimaging techniques, such as functional magnetic resonance imaging, EEG offers a direct and real-time measure of electrical brain activity (Nunez & Srinivasan, 2006), with a temporal resolution in the millisecond range (Luck, 2014). Furthermore, EEG is a non-invasive and relatively cost-effective technique applicable to diverse populations with minimal contraindications (Teplan, 2002). However, one of its primary limitations is its relatively low spatial resolution. Due to the diffusion of electrical signals through the scalp and skull, pinpointing the precise neural source of EEG activity is challenging (Michel & Murray, 2012). While the forward solution enables predictions about

scalp voltage distributions from known neural sources, the inverse solution (inferring sources from recorded scalp activity) is ill-posed, meaning multiple neural sources can underlie the same EEG pattern. Consequently, EEG does not provide definitive insights into whether a specific neural activity is necessary for a given cognitive process (Grech et al., 2008). Nevertheless, EEG serves as an invaluable online measure of cognitive processing between stimulus and response, allowing researchers to pinpoint the specific processing stage affected by experimental manipulations and assess stimulus processing in the absence of overt behavioral responses (Mazza et al., 2007).

In cognitive neuroscience, EEG is primarily used to investigate three types of brain activity: spontaneous, evoked, and induced.

Spontaneous activity refers to the brain's intrinsic electrical activity, occurring independently of specific sensory inputs or external stimuli (Buzsáki, 2006). This activity reflects the ongoing activation of neuronal networks and is characterized by rhythmic oscillations across multiple frequency bands. These oscillations are regulated by synchronization mechanisms, which may either be driven by an internal pacemaker (Buzsáki & Draguhn, 2004) or emerge from collective neuronal interactions (Engel et al., 2001).

On the other hand, evoked activity, also referred to as event-related potentials (ERPs), represents EEG components that occur in response to a specific sensory stimulus or cognitive event (Van Voorhis & Hillyard, 1977). ERPs are time- and phase-locked to the event of interest and consist of multiple frequency components, typically below 20 Hz. Each ERP deflection, known as a component, is defined based on its polarity (positive or negative relative to baseline), latency, and scalp distribution (Woodman, 2010).

Finally, induced activity encompasses brain responses that are modulated by a stimulus or cognitive process but lack a strict phase-locked relationship with stimulus onset (Tallon-Baudry et al., 1996). Unlike evoked activity, which is time-locked and appears in averaged ERPs, induced activity manifests as changes in the power of specific frequency bands with some degree of latency or phase jittering

(Makeig et al., 2002). To analyze induced activity, researchers use time-frequency decomposition methods, which allow for the examination of the presence, timing, and amplitude (or power) of oscillatory activity within a given frequency range (Cohen, 2014).

EEG applications in studying intersubjective dimensions

In recent years, the use of EEG to explore interactions between clinician and patient has gained considerable attention (Schore, 2021). This methodological development aligns with a broader recognition of the mutual influence exerted by emotional, cognitive, and physiological states between individuals engaged in interpersonal exchanges (Gallese, 2003). Within the clinical context, such dynamics are particularly salient, as the clinician's subjective experience not only informs their perception and interpretation of the patient's symptoms but may also influence diagnostic formulation and therapeutic outcomes. EEG offers a valuable neurobiological framework for investigating these relational processes, enabling the capture of real-time neural oscillatory activity during clinical encounters and thereby contributing to a deeper understanding of the neurophysiological underpinnings of therapeutic interaction.

One of the key methods for studying the subjective dimension through EEG is hyperscanning, which involves the simultaneous recording of brain activity from two interacting individuals (Czeszumski et al., 2020). Hyperscanning has revealed patterns of inter-brain synchrony, suggesting that neural coupling occurs during interactions between clinician and patient. Such synchronization has been observed in centroparietal regions associated with empathy, affective attunement, and social cognition (Dumas et al., 2010).

Brain synchronisation activity can often characterise the unconscious emotional reactions that patients and clinicians develop toward one another. EEG studies have shown that clinicians' neural responses to patients can reveal implicit biases and affective reactions that may shape the therapeutic process (Marci & Orr, 2006). For instance, altered frontal asymmetry in clinicians while interacting with patients may

indicate emotional engagement or avoidance tendencies, impacting treatment efficacy (Davidson et al., 1992). EEG research has also linked emotional reactions to specific neural signatures. Studies suggest that increased activation in the anterior cingulate cortex and insula may reflect heightened emotional resonance, while excessive engagement of the amygdala may indicate distress or discomfort in response to patient expressions (Schilbach et al., 2013). These findings highlight the role of EEG in detecting unconscious emotional responses that influence clinical interactions.

The mutual influence of subjective experiences between clinician and patient, plays a crucial role in clinical treatment, influencing essential relational aspects such as the therapeutic alliance and empathy. Studies utilizing EEG coherence analysis have demonstrated that greater synchrony between patient and clinician brain activity is associated with stronger therapeutic alliances (Koole & Tschacher, 2016). Such findings underscore the neurobiological underpinnings of interpersonal attunement in clinical encounters. Moreover, EEG biomarkers such as frontal alpha asymmetry have been used to assess emotional alignment in clinical encounters (Coan et al., 2006). Higher left frontal activity has been associated with positive affect and engagement, suggesting that EEG could serve as a biomarker for effective therapeutic relationships. These findings reinforce the importance of nonverbal, neurobiological components in fostering trust and collaboration in therapy. On the other hand, EEG studies have explored the neural mechanisms underlying empathy by examining mirror neuron system activation, as well as theta and gamma oscillations associated with emotional resonance (Singer & Lamm, 2009). Research has demonstrated that clinicians with higher levels of empathic concern exhibit greater EEG synchronization with patients during interactions (Decety & Jackson, 2004). Furthermore, modulations in mu rhythms have been linked to the clinician's ability to engage with the patient's distress without becoming overwhelmed (Pineda, 2005).

Although EEG has emerged as a valuable tool for investigating the interactions between clinician and patient by capturing their neural synchrony, emotional

engagement, and empathic resonance, interpreting data in the context of complex clinical interactions remains a challenge. The dynamic and multifaceted nature of human interactions involves a continuous exchange of verbal and nonverbal cues, emotional states, and cognitive processes, making it difficult to isolate specific neural mechanisms underlying subjective experiences.

STUDY AIMS AND CONTRIBUTIONS

Understanding how neural activity reflects subjective interactions in the clinician-patient relationship is a crucial objective for translational medicine. The ability to investigate the neurobiological underpinnings of the clinician's subjective experience could provide valuable insights into the mechanisms of empathy, attunement, and emotional resonance in clinical interactions, ultimately enhancing diagnostic accuracy and therapeutic efficacy.

For the first time, this pilot study aims to explore the neurobiological correlates that characterize the clinician's subjective experience during the interaction with the patient. To achieve this, EEG will be combined with the ACSE questionnaire. This multimodal approach will allow for a comparison between the clinician's brain activity during the first clinical interview and the subsequent administration of the ACSE questionnaire, offering a novel perspective on how neural responses relate to subjective cognitive and emotional experiences in a clinical encounter.

The study will involve the recruitment of two clinicians and ten patients, ensuring a preliminary yet meaningful dataset to examine emotional engagement and cognitive processing during real-world clinical interactions. By integrating neurobiological and subjective measures, this research aims to bridge the gap between clinical phenomenology and its underlying neurobiological mechanisms, paving the way for future studies on the role of the clinician's subjective experience in mental health care.

MATERIALS AND METHODS

Participants

Two clinicians and 10 patients were recruited at S.C. Psichiatria of Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico. Each clinician was assigned to 5 patients. Inclusion criteria for the clinicians were: (i) Italian mother tongue; and (ii) absence of complications for EEG, including epileptic seizures, neurological lesions and devices within the brain. Exclusion criteria for the clinicians were the opposite of the inclusion ones: (i) mother tongue different from Italian; and (ii) presence of complications for EEG, including epileptic seizures, neurological lesions and devices within the brain. Regarding the patients, no specific inclusion/exclusion criteria were set. The clinical diagnosis was assessed by International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10). If a patient was diagnosed with a substance abuse/dependence disorder, they were excluded from the study due to known neurological alterations that could impact the clinician's subjective experience detected through the ACSE (Pallagrosi et al., 2022).

Participants provided both their written consent in accordance with the latest Declaration of Helsinki (World Medical Association, 2024) and privacy release for recording the first clinical interview.

Experimental setting

The experimental setting consisted of three phases: the first clinical interview, the ACSE administration to clinicians, and the listening to the first clinical interview recording by clinicians. Below, the three phases are described in detail.

First clinical interview

Participation in the study was proposed by telephone to each patient interested in making a first clinical interview, emphasizing their secondary role and participation compared to the clinician, who by protocol was listed as the study's investigation

population. On the day of the first clinical interview, each patient was asked to arrive approximately 30 minutes before the scheduled appointment time with the clinician. During this time, before entering the room and meeting the clinician, thus starting the first clinical interview, an investigator and a specialty psychiatrist in charge of recruitment informed the patient in more detail about the study and the research purposes. In order to allow them to sustain the first clinical interview in the most natural way possible, the patient was not only described in detail about the EEG and its acquisition methods, but was also shown some images and/or photographs of its practical use (e.g.: person with EEG helmet) that anticipated the meeting with the clinician. Then, the informed consent and privacy release were signed.

In the meantime, in the first clinical interview room, the clinician signed the informed consent and privacy release. Afterwards, an experimenter in charge of the EEG prepared the clinician and the EEG equipment by calibrating the machine and verifying that there were no anomalies in the data acquisition.

Once the procedures with both the patient and the clinician were completed, the EEG recording was started simultaneously with the audio recording, after which the experimenters left the room, letting the patient in and thus starting the first clinical interview. Inside the room, in addition to the clinician and the patient, there was only a specialty psychiatrist, the same one who was in charge of recruitment and had the first contact with the patient before the first clinical interview. The speciality psychiatrist did not interact in any way with the patient and assisted the clinician in taking notes regarding the diagnosis and subsequent medical treatment. The first clinical interview was audio-recorded by a mobile phone activated in airplane mode in order to reduce to zero the possible interference due to telephone calls or various messaging. The average time spent on the first interview with the patient was approximately 60 minutes.

Figure 3 shows a simulation of the first clinical interview with the participation of a specialty psychiatrist as patient.

Figure 3. The simulation of the first clinical interview. The patient is impersonated by a specialty psychiatrist.

ACSE administration

Once the first clinical interview was over, the patient left the room and two experimenters took his place. Before starting to fill out the ACSE, the audio recording of the interview was interrupted. The clinician was asked to fill out the Italian version of ACSE on the computer through Google Form and at the same time the EEG acquisition continued to be acquired. The items in the questionnaire appeared individually and in the order reported on the canonical paper version (Pallagrosi et al., 2014). The clinician was allowed to proceed autonomously to the next item after being informed that, since the task was not timed, they had everything needed to answer each item, provided they did not revisit previously answered ones. This specification communicated verbally to the clinician was also crucial for the acquisition of the time markers with the EEG. In fact, during the compilation of the ACSE, the two experimenters divided the tasks. One of them took care of marking the time markers with the EEG, while the other did it via the stopwatch on the mobile phone. The set time step was the moment in which the clinician changed the page on Google Form, that was, displayed the new item until the final screen appeared (included as a deadline for recording the last time period). Completing the ACSE took approximately 30 minutes.

Figure 4 shows a simulation of ACSE administration.

Figure 4. The simulation of ACSE administration.

Listening to the first clinical interview recording

Once the ACSE administration had been completed, the EEG was dismantled, and the clinician was asked to listen to the audio recorded during the first clinical interview and note the exact time at which the ACSE dimensions had emerged during the first clinical interview with the patient. To do this, the clinician filled out a paper form in which the definitions of the five ACSE dimensions were reported with the precise start and end minutes with respect to the audio listened to. To facilitate the task and make it as natural as possible, the description of the dimensions also included some examples of the items that the clinician had read while filling out the ACSE. In order to avoid compromising professional secrecy, the clinician listened to the first clinical interview through special isolation devices, such as mobile phone headphones, so that sensitive information was not shared with external people, including experimenters. This last phase of the experiment required approximately 20 minutes.

Figure 5 shows the simulation of the listening to the first clinical interview recording by the clinician.

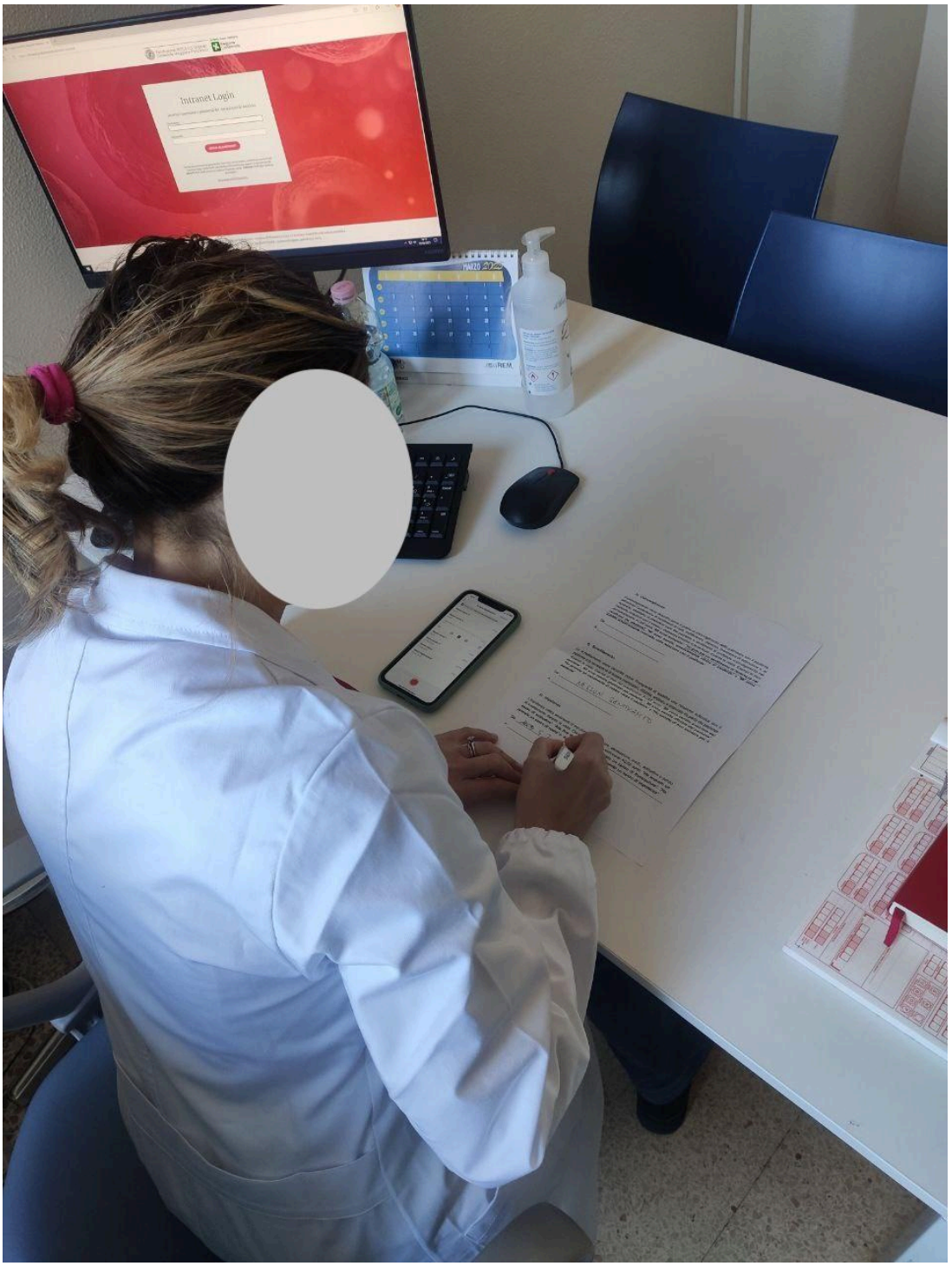

Figure 5. The simulation of the listening to the first clinical interview recording.

Design of the experimental setting

The design of the experimental setting was the result of a series of tests carried out in the months preceding the real acquisitions and aimed at addressing some problems that would characterize the experiment.

The first aspect implemented was the location where the study would take place: the clinician's room, where the first clinical interview with the patient would be held. The analysis of the space facilitated the correct position of the EEG, which was located behind the clinician, opposite to the patient and entrance of the room (see **Figure 2**). Moreover, this position allowed the clinician to assume a natural body posture during the first clinical interview and avoid unnatural movements and motor complications due to physical pain during the EEG acquisitions. Finally, the position of the EEG did not create problems for patients who could enter the room and sit in front of the clinician, facilitating the beginning of the first clinical interview.

The timing of the experimental phases was another crucial aspect which was assessed. The clinician was asked to participate in simulations of the experiment where the ASCE administration and the synchronous acquisitions for the EEG time markers were tested. Specifically, the ACSE administration methods were chosen after having subjected the clinician to a fictitious and reduced version of the questionnaire, trying to maintain a genuine surprise effect and avoiding pre-experiment habituation. During these tests, it was clear that the paper version of the ACSE would impact the EEG signal, causing the clinician to focus on multiple items at once and creating excessive motion when moving around the paper. For this reason, an online version of the ACSE was created with Google Form and presented one item at a time. The use of a mouse pad reduced movements considerably. Similarly, acquisitions for the EEG time markers were simultaneous in order to reduce human errors made by one experimenter.

Finally, another noteworthy aspect was the data storage. A procedure of anonymization of the participants (both clinicians and patients) was carried out in order to not allow a unique identification through sensitive data. The EEG recordings were saved on the acquisition device and on an external hard disk.

Similarly, audio recordings were downloaded from the mobile phone used for the experiment to a laboratory computer and then duplicated on an external hard disk. The original files on the mobile phone were deleted to avoid spreading sensible information outside the experimental setting. Finally, the socio-demographic variables and the ACSE responses, instead, were saved in a cloud system and downloaded to a local device (laboratory computer). The choice to duplicate data on different devices was made to avoid losing files in case the device breaks or becomes inaccessible.

EEG pipeline

Acquisition

EEG acquisitions were performed with a Neuro BE PLUS LTM Galileo NT Line 4.50 system (EB Neuro S.p.A.) CE marked (CE0051EB) machine. The acquisition system had 61 channels distributed according to the 10-20 system. The sampling frequency was 1000 Hz and the reference electrode (VREF) was placed frontally. The impedance for each electrode was kept below 10 kiloohm (kΩ). Before starting each first clinical interview, the EEG was visualized to ensure the quality of the EEG data. One baseline acquisition per clinician was recorded with both eyes open and closed for 60 to 90 seconds each.

Preprocessing

EEG preprocessing was conducted using EEGLAB (v2025.0.0), an open-source toolbox running in MATLAB® 2024b (The Mathworks, Inc., Natick, Massachusetts, USA) (Delorme & Makeig, 2004). Band-pass (0.1-120 Hz) and notch (50 Hz) filters were first applied to the data, followed by a downsampling to 250 Hz. EEG data collected during the first clinical interview were segmented according to time markers provided by the clinician during the listening to the first clinical interview and concatenated within each ACSE dimension. Moreover, a 60-second artifact-free segment recorded at the beginning of each interview, before the first time marker,

was retained and used as a baseline for analysis related to the first clinical interview. Infomax Independent Component Analysis (ICA) was performed on BrainVision Analyzer 2.0 (BrainProducts, Gilching, Germany) software to remove artifacts of biological origin, primarily ocular and muscular movements, as well as non-physiological artifacts, such as those caused by poor electrode contact. Artifactual ICs were identified by visually inspecting their topography, time series and frequency content. Once detected, the EEG signal was reconstructed using the artifact-free ICs.

The EEG data recorded during the ACSE administration were segmented based on the timing of item presentation on the computer monitor. Whereas, the open eyes EEG baseline, each single-interview baseline, and the EEG data segmented according to the dimensions during the first clinical interview, were divided into 2-second epochs. Epochs were defined based on the number of items included in each ACSE dimension: Tension (11 items), Difficulty in Attunement (10 items), Engagement (8 items), Disconfirmation (9 items), and Impotence (8 items). For each epoch, relative power spectral density (rPSD) and functional connectivity were computed across the main frequency bands (delta, theta, alpha, beta, gamma low, and gamma high).

Feature extraction

The Fast Fourier Transform (FFT) was applied to each EEG epoch to compute the rPSD. The power within the delta (0.1-4 Hz), theta (4-8 Hz), alpha (8-12 Hz), beta (12-32 Hz), gamma low (32-70 Hz), and gamma high (70-120 Hz) frequency bands was estimated using trapezoidal numerical integration over the respective frequency ranges. To calculate the rPSD, each frequency band power was normalized by the total power integrated from 0.1 Hz to the Nyquist frequency. Finally, for each patient, condition, and frequency band, rPSD values were averaged across all epochs. To measure the rPSD changes induced by the protocol, such as task conditions, compared to baseline, the normalized rPSD measures were computed as follows:

$$rPSD_{change} = \frac{(rPSD_{task} - rPSD_{baseline})}{rPSD_{basline}} * 100$$

The rPSD measures of the first clinical interview were normalized with respect to the single-interview baseline, whereas the eyes open baseline was considered for the ACSE items. In summary, rPSD change measures with respect to baseline were calculated for each clinician-patient pair, ACSE dimension, and frequency band for the first clinical interview, whereas for each clinician-patient pair, ACSE item, and frequency band for each ACSE questionnaire.

Functional connectivity between EEG channels was assessed using the imaginary part of coherency (iCOH), a frequency-dimension metric that minimizes the influence of volume conduction by considering only the imaginary component of the cross-spectrum (Nolte et al., 2004). All analyses were performed using the FieldTrip toolbox (Oostenveld et al., 2011).

Preprocessed EEG data were subjected to a Fourier transformation using a multitaper method with a Hanning window and a frequency range of 1-120 Hz. The resulting complex-valued spectral representations were used to compute the iCOH. The power within each frequency band was estimated using trapezoidal numerical integration over the respective frequency ranges and normalized by the total iCOH power, as done for the rPSD calculation.

The Brain Connectivity Toolbox (Rubinov et al., 2009), which runs in Matlab, was used to normalize the adjacency matrices, setting self-connections to zero, and extracting two metrics of interest for each dataset and frequency band: the node strengths and the global efficiency. The node strength, which is defined as the sum of weights of all edges connected to a node, quantifies the importance or centrality of channels in the network, whereas the global efficiency measures the efficiency of information exchange across the network by quantifying the average inverse shortest path length between node pairs. Higher global efficiency indicates more direct and efficient inter-node communication.

Following the analyses performed for rPSD, the change of the connectivity metrics was calculated for task conditions with respect to the baseline conditions. To recap, percentage changes in connectivity measures from baseline were computed per clinician-patient pair, ACSE dimension, and frequency band for the first clinical interview. Moreover, for each subsequent ACSE questionnaire, these connectivity changes were calculated per clinician-patient pair, ACSE item, and frequency band.

Statistical analysis

Socio-demographic and ACSE

Descriptive statistics of mean and standard deviation were calculated for age of all participants (clinicians and patients) and ACSE scores, which were rated on a 5-point Likert scale (0-4) and gathered into 5 factorially derived scales for each dimension (Pallagrosi et al., 2014).

EEG

Separate statistical analyses were computed for the EEG first clinical interview data and the EEG ACSE questionnaire data.

First clinical interview

The median values of each EEG metric (rPSD, node strength, and global efficiency) were calculated within each clinician for each ACSE dimension and frequency band. To evaluate significant differences between the first clinical interview and the baseline, a one-sample Wilcoxon test was applied to each EEG metric with a statistically significant threshold $p < 0.05$.

ACSE questionnaire

A General Linear Model (GLM) analysis was conducted for each EEG metric, clinician, frequency band, and dimension to evaluate the correlation between neurobiological measures and the ACSE scores, at the net of ACSE items and patient factors. The following model was used:

$$EEG\ metric \sim 1\ +\ ACSE\ score\ +\ patient\ +\ ACSE\ item$$

The patient and ACSE item factors were inserted into the model as categorical variables. The beta coefficients of significant metrics ($p < 0.05$) were considered and visualized. Significant beta values were finally normalized for each clinician and frequency band.

RESULTS

One of the two clinicians interviewed six patients instead of five, due to technical issues of EEG recording during one of the first clinical interviews. However, the corrupted data of the eleventh patient were excluded, not considered in the study analysis, and the number of patients between the two clinicians was rebalanced.

Socio-demographic data

Table 1 reports the socio-demographic data of clinicians and patients.

Briefly, clinicians were two psychiatrists: a 37-year-old man and a 42-year-old woman (mean age: 39.5 ± 2.5 years). The male clinician had a cognitive-behavioral theoretical background, while the female clinician had no other clinical specialization.

Patients were 4 men and 6 women with a mean age of 53.7 ± 18.4 years. Among them, 7 were diagnosed with mixed anxiety and depressive disorder; and 3 were diagnosed with unspecified anxiety disorder.

	Clinicians (N=2)	**Patients (N=10)**
Sex (M:F)	1:1	4:6
Age (mean ± SD)	39.5 ± 2.5	53.7 ± 18.4
Theoretical background (N)	Cognitive-behavioral (1) No other specialization (1)	-
Psychiatric disorders (N)	-	Mixed anxiety and depressive disorder (7) Unspecified anxiety disorder (3)

Table 1. Socio-demographic data of clinicians and patients. F: Females; M: Males; N: Numerosity; SD: Standard Deviation.

ACSE results

Results of the ACSE questionnaire were divided in scores from ACSE administration and ACSE dimensions emerged during the first clinical interview reported by the clinician after listening to the audio-record.

ACSE administration

In **Table 2** ACSE scores are reported for all participants.

ACSE dimension	Patients (N=10)
Tension	1.60 ± 1.62
Difficulty in Attunement	8.50 ± 5.12
Engagement	19.20 ± 5.17
Disconfirmation	1.50 ± 2.77
Impotence	2.70 ± 3.13

Table 2. Scores of the ACSE questionnaire (reported as mean ± standard deviation). ACSE: Assessment of Clinician's Subjective Experience questionnaire; N: Numerosity.

The highest scores were recorded for Difficulty in Attunement (8.50 ± 5.12; range 1-16) and Engagement (19.20 ± 5.17; range 8-27) dimensions, while the lowest were related to Tension (1.60 ± 1.62; range 0-5) and Disconfirmation (1.50 ± 2.77; range 0-9) dimensions. Finally, the dimension of Impotence was 2.70 ± 3.13 (**Figure 6**).

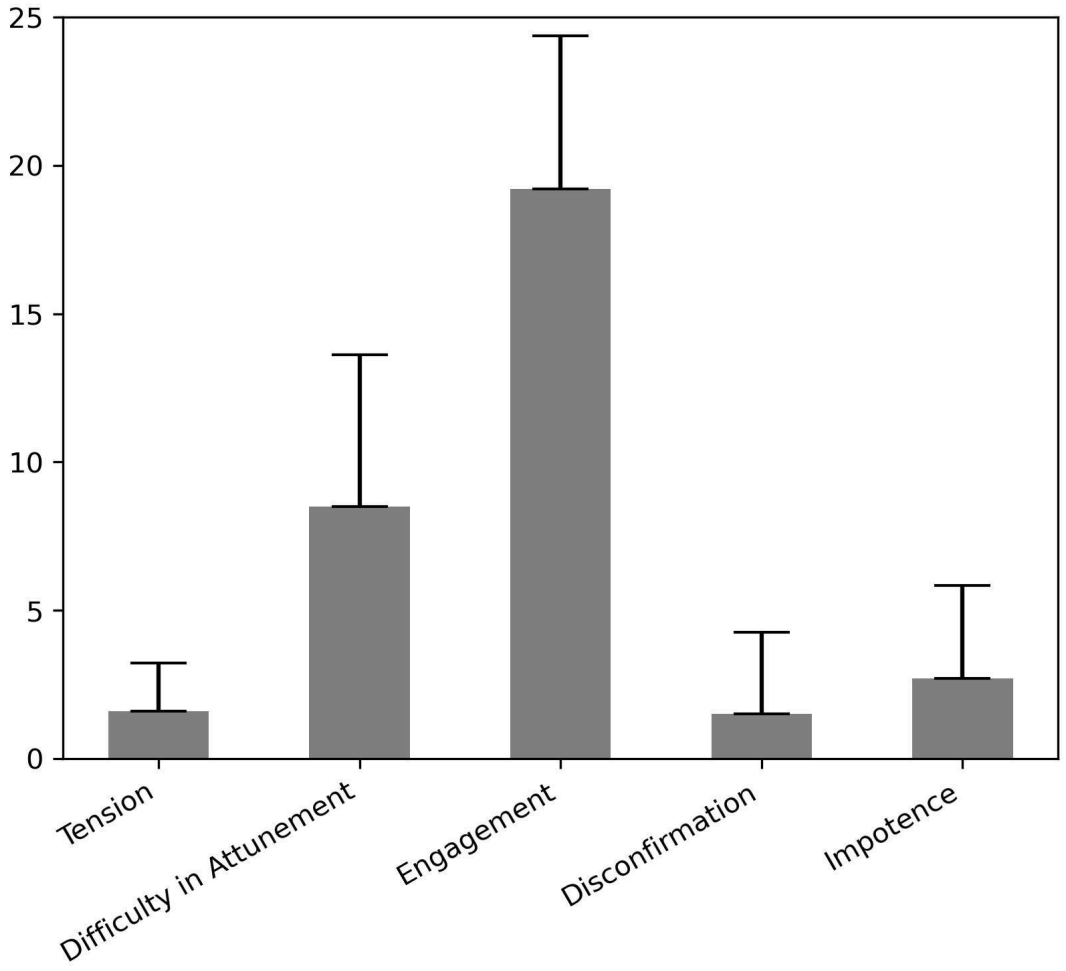

Figure 6. Scores of the ACSE questionnaire (mean and standard deviation). ACSE dimensions were reported on the x-axis, scores of the questionnaire on the y-axis.

Table 3 reported ACSE scores divided for each clinician.

ACSE dimension	Patients (N=10)	
	V01	**V02**
Tension	2.20 ± 1.72	1.00 ± 1.26
Difficulty in Attunement	11.00 ± 4.05	6.00 ± 4.86
Engagement	20.40 ± 3.72	18.00 ± 6.07
Disconfirmation	1.20 ± 1.47	1.80 ± 3.60
Impotence	4.20 ± 3.06	1.20 ± 2.40

Table 3. Scores of the ACSE questionnaire (reported as mean ± standard deviation) divided for clinician. ACSE: Assessment of Clinician's Subjective Experience questionnaire; N: Numerosity; V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

The female clinician reported higher scores on the Tension (V01: 2.20 ± 1.72, range 0-5), Difficulty in Attunement (V01: 11.00 ± 4.05, range 6-15), Engagement (V01: 20.40 ± 3.72, range 15-25), and Impotence (V01: 4.20 ± 3.06, range 1-10) dimensions, while the male clinician obtained higher scores on the Disconfirmation dimension (V02: 1.80 ± 3.60, range 0-9) (**Figure 7**).

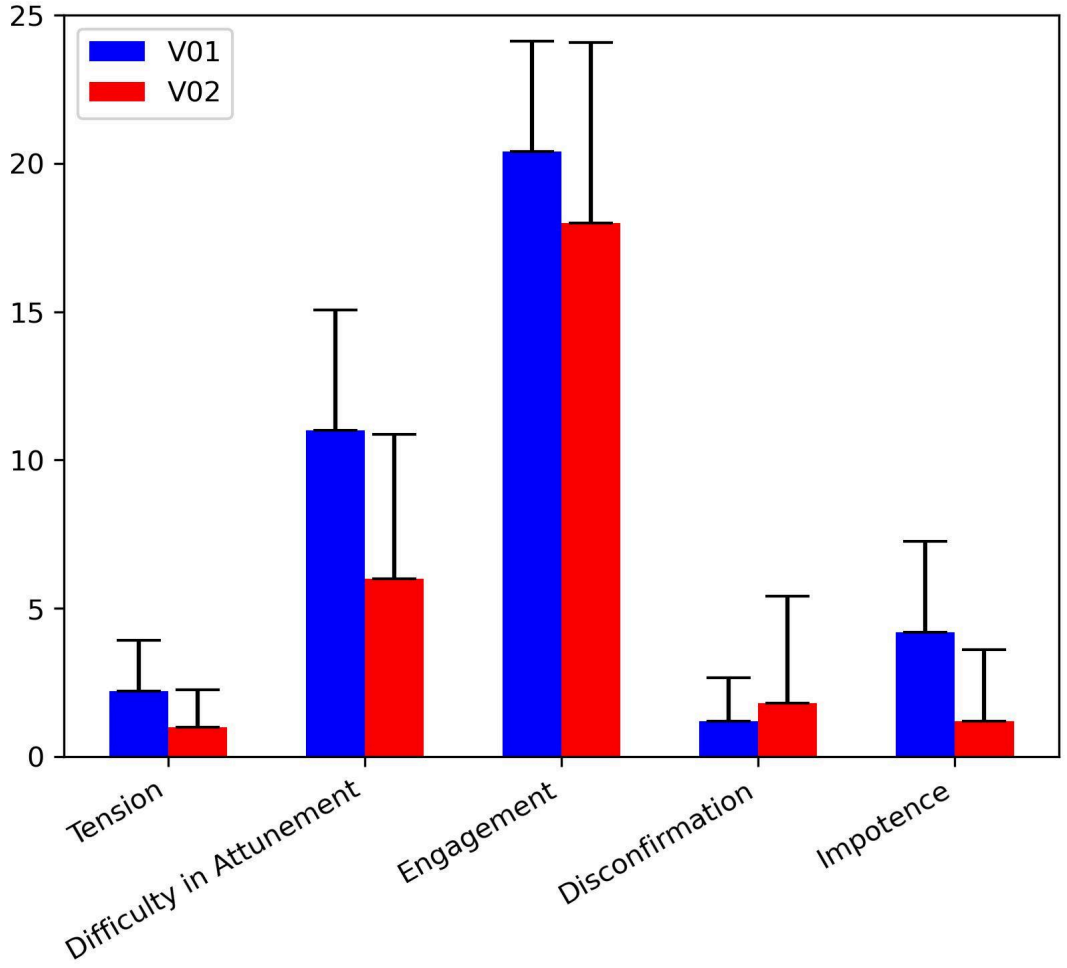

Figure 7. Scores of the ACSE questionnaire (mean and standard deviation) divided for clinician. ACSE dimensions were reported on the x-axis, scores of the questionnaire on the y-axis. V01: Valutatore 1 V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Listening to the first clinical interview

An interesting result emerged from the listening to the first clinical interview recording after the ACSE administration: clinicians did not report any feelings described by Tension and/or Impotence dimensions during the interactions with the patients. Similarly, feelings related to the dimension of Disconfirmation were reported for only two first clinical interviews for both clinicians.

EEG results

During the pre-processing, an average of 6.8 ± 2.5 standard deviations out of 60 ICs were labeled as artifactual and therefore excluded. A detailed report of artifactual ICs divided according to dataset and clinician can be found in **Table 4**.

	Baseline ACSE questionnaire	**ACSE questionnaire**	**Baseline first clinical interview**	**First clinical interview**
V01	3.0 ± 0.0 (range 3-3)	6.4 ± 1.7 (range 5-9)	7.2 ± 2.8 (range 3-10)	7.6 ± 3.0 (range 4-12)
V02	8.0 ± 0.0 (range 8-8)	6.0 ± 1.2 (range 5-8)	5.2 ± 2.3 (range 3-9)	9.2 ± 2.6 (range 6-13)

Table 4. Mean, standard deviation and range (minimum-maximum) of number of artifactual Independent Components are reported for each clinician and each dataset. ACSE: Assessment of Clinician's Subjective Experience questionnaire; V01: Valutatore 1 V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

The first clinical interview data was segmented according to clinicians indication during the listening phase. Neither clinician reported feelings described by Tension and Impotence dimensions during the interactions with patients, therefore EEG analyses of the first clinical interview were performed on the other three ACSE dimensions: Difficulty in Attunement, Engagement, and Disconfirmation. Details regarding the number of segments and their duration for each clinician and dimension are reported in **Table 5**.

ACSE dimensions	Tension	Difficulty in Attunement	Engagement	Disconfirmation	Impotence
Number of segments					
V01	-	2.0 ± 1.4 (range 1-4)	2.3 ± 1.5 (range 1-4)	3.0 ± 0.0 (range 3-3)	-
V02	-	1.0 ± 0.0 (range 1-1)	1.4 ± 0.9 (range 1-3)	1.0 ± 0.0 (range 1-1)	-
Duration of segments (seconds)					
V01	-	50.0 ± 37.9 (range 10-78)	34.7 ± 31.5 (range 6-110)	16.7 ± 5.8 (range 10-20)	-
V02	-	1020.0 ± 678.8 (range 540-1500)	641.4 ± 670.6 (range 30-1620)	150.0 ± 0.0 (range 150-150)	-

Table 5. Mean, standard deviation and range (minimum-maximum) of number and duration of segments identified by the clinician regarding the first clinical interview. ACSE: Assessment of Clinician's Subjective Experience questionnaire; V01: Valutatore 1 V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Lastly, **Table 6** reports the duration of clinicians' responses to questions in the ACSE questionnaire.

ACSE dimensions	Tension	Difficulty in Attunement	Engagement	Disconfirmation	Impotence
V01	5.4 ± 1.4 (range 3.2-9.8)	6.8 ± 2.6 (range 3.5-19.3)	5.8 ± 1.5 (range 3.8-11.3)	5.7 ± 1.6 (range 3.1-11.3)	5.2 ± 1.3 (range 3.4-8.0)
V02	3.6 ± 2.2 (range 2.5-17.9)	3.6 ± 3.2 (range 2.3-21.7)	3.8 ± 4.4 (range 2.4-20.8)	3.7 ± 3.6 (range 2.3-23.0)	3.8 ± 1.7 (range 2.4-11.9)

Table 6. Mean, standard deviation and range (minimum-maximum) of duration of responses (in seconds) of clinicians of the ACSE questionnaire reported according to clinician and ACSE dimension. ACSE: Assessment of Clinician's Subjective Experience questionnaire; Valutatore 1 V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

First clinical interview

Three analyses were performed on the EEG data obtained from the first clinical interview: analysis of rPSD, analysis of node strength, and analysis of global efficiency. The statistical analysis did not report any significant result.

Analysis of rPSD

Analysis of rPSD across the ACSE dimensions revealed distinct frequency-specific and topographical patterns (**Figure 8**).

In the delta band, the male clinician exhibited an increase in spectral power across Difficulty in Attunement and Disconfirmation dimensions. Conversely, the female clinician's delta power remained near baseline.

In the theta band, a similar pattern emerged in the Difficulty in Attunement and Disconfirmation dimensions, where the male clinician exhibited greater spectral power than the female clinician, with the highest peaks observed in the dimension of Disconfirmation. By contrast, the dimension of Engagement showed the opposite trend, with the female clinician demonstrating increased parieto-occipital theta power, whereas the male clinician displayed a marked decrease.

The alpha band showed the most pronounced inter-clinician divergence. The female clinician presented with robust alpha power increases across the entire scalp for all ACSE dimensions. In contrast, the male clinician exhibited a comparable alpha-power increase only in the Disconfirmation dimension, whereas spectral power for Difficulty in Attunement and Engagement remained close to baseline levels.

Beta-band activity was higher in the female clinician across all dimensions (Difficulty in Attunement, Engagement, and Disconfirmation), with the most pronounced and widespread increases observed in the Disconfirmation dimension. Conversely, beta power in the male clinician remained largely unchanged across dimensions.

For the gamma band (both low and high), partially overlapping yet directionally opposite patterns emerged across clinicians The female clinician showed increased gamma power, primarily localized in parietal regions, for the Difficulty in Attunement and Disconfirmation dimensions, while exhibiting reduced, near-baseline gamma activity in the dimension of Engagement. In contrast, the male clinician displayed the reverse pattern, with decreased gamma-band power across Difficulty in Attunement and Disconfirmation dimensions, and a marked increase in gamma activity in the dimension of Engagement.

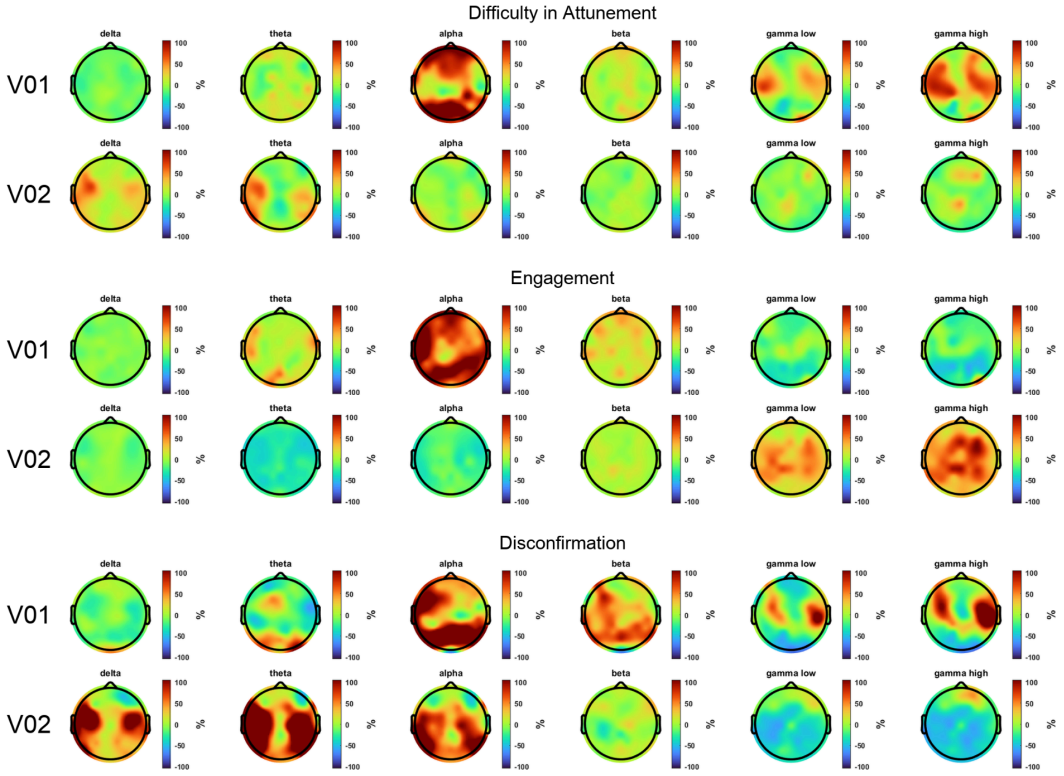

Figure 8. rPSD analysis of the first clinical interview. The color bar represents the median percentage change in rPSD for each ACSE dimension compared to the baseline. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Analysis of node strength

Results of the connectivity analysis, based on node strength, are presented in **Figure 9**.

In the delta band, the female clinician exhibited a global reduction in node strength across the scalp for Difficulty in Attunement and Engagement dimensions. This pattern was less pronounced in the dimension of Disconfirmation, where a relative increase in frontal node strength partially counteracted the overall reduction. In contrast, the male clinician showed no significant deviations from baseline in delta connectivity, except for isolated increases in node strength within parieto-occipital regions for the dimension of Disconfirmation.

Theta band connectivity revealed marked differences between the two clinicians. In the Engagement and Disconfirmation dimensions, the female clinician exhibited a widespread reduction in node strength, whereas the male clinician showed connectivity patterns largely unchanged relative to baseline, with a modest increase in node strength across the scalp specifically in the Disconfirmation dimension. Interestingly, for the dimension of Difficulty in Attunement, both clinicians showed a converging connectivity profile, characterized by modest increased coherence in parietal regions.

In the alpha band, opposing connectivity patterns were observed across all ACSE dimensions. The female clinician demonstrated increases in alpha connectivity, while the male clinician exhibited slight decreases.

Beta- and gamma-band connectivity showed broadly overlapping patterns across clinicians and dimensions, with no substantial deviations from baseline. However, two dimension-specific exceptions emerged in Disconfirmation: the female clinician displayed a reduction in node strength within the gamma-low band, whereas the male clinician exhibited a moderate increase in beta-band connectivity.

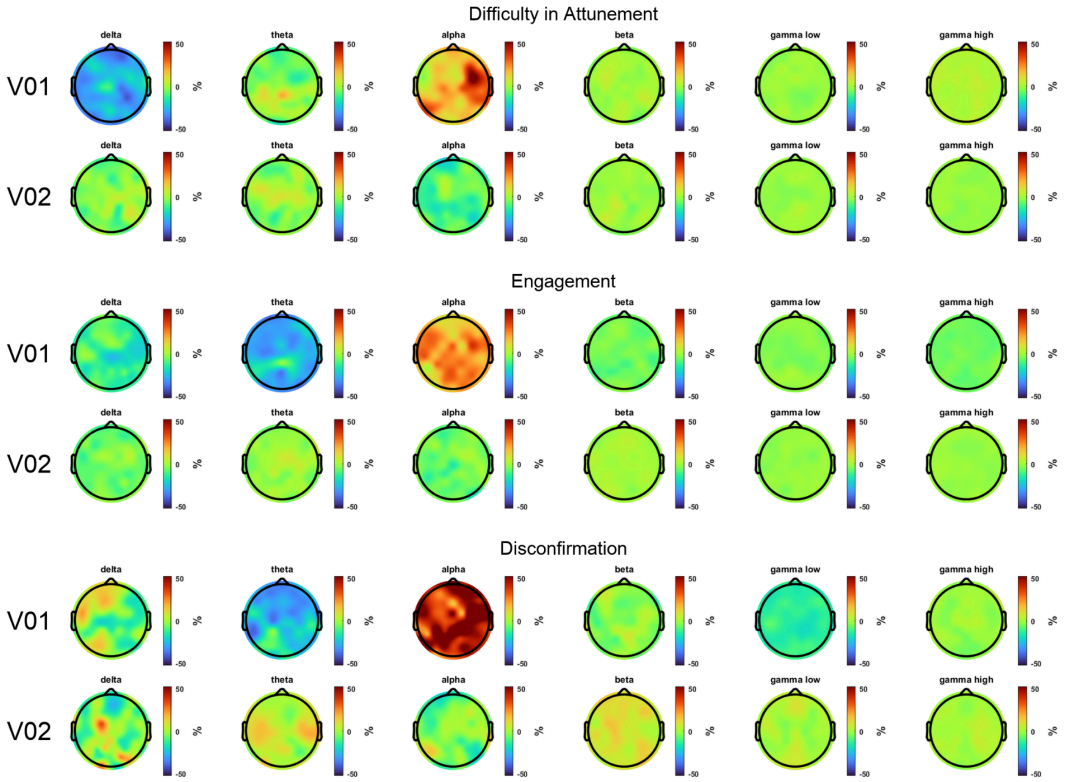

Figure 9. Analysis of node strength of the first clinical interview. The color bar represents the median percentage change in the strength of each single node for each ACSE dimension compared to the baseline. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Analysis of global efficiency

Connectivity analysis based on global efficiency revealed distinct network-level patterns between the two clinicians: across all three ACSE dimensions, the female clinician exhibited highly heterogeneous fluctuations in global efficiency values, both in comparison to baseline and to the male clinician (**Figure 10**).

For the dimension of Difficulty in Attunement, the female clinician showed a notable decrease in global efficiency in the delta band, contrasting with the male clinician, whose values remained relatively stable.

Interestingly, in the alpha band, this pattern was reversed: the female clinician displayed higher global efficiency, indicating enhanced network integration.

This delta-alpha divergence was also reflected in the Engagement and Disconfirmation dimensions, although with a shift in frequency emphasis: in these dimensions, the lowest global efficiency values for the female clinician were observed in the theta band, rather than the alpha band.

By contrast, the male clinician exhibited more stable and linear variations in global efficiency across both frequency bands and ACSE dimensions, underlining a less variable network response.

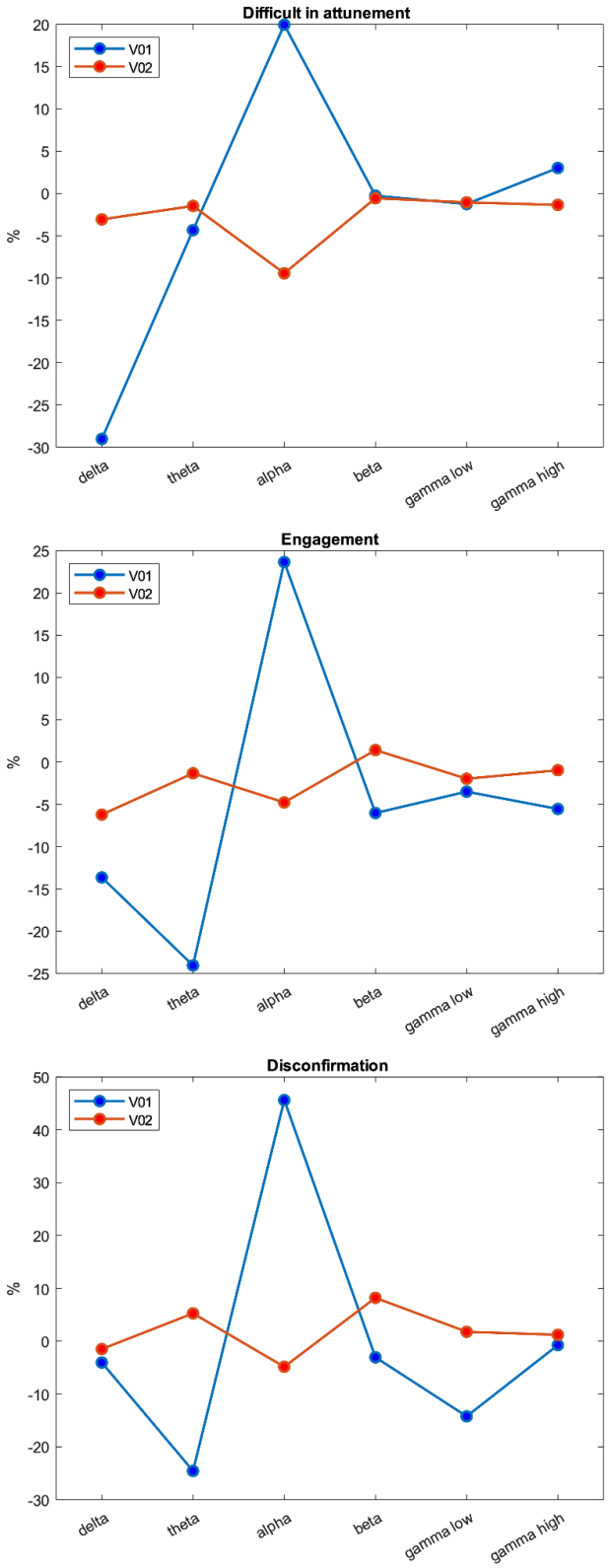

Figure 10. Analysis of global efficiency of the first clinical interview. On the x-axis, EEG frequency bands are reported. On the y-axis, median percentages of global efficiency with respect to baseline

are reported. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

ACSE administration

Correlational EEG analyses were performed including all ACSE dimensions since the questionnaire scores were considered.

Correlations of rPSD

Correlations between rPSD and ACSE dimensions revealed largely weak associations, with most correlation coefficients near zero for both clinicians. However, several dimension- and frequency-specific patterns emerged (**Figure 11**, **Supplementary Table S1-5**, **Supplementary Table S6-10**).

For the dimension of Tension, the female clinician showed negative correlations in parietal regions in the delta band, alongside positive correlations in fronto-occipital regions in theta, alpha, and beta bands.

In contrast, the dimension of Difficulty in Attunement elicited the most distinctive pattern for the male clinician, characterized by positive correlations in parieto-occipital regions in delta and theta bands, and widespread negative correlations across the scalp in both low and high gamma bands.

For the dimension of Engagement, both clinicians exhibited weak negative correlations in parietal regions in the delta band, and weak positive correlations in beta and gamma low bands. In the theta band, the female clinician showed weak positive correlations in frontal, parietal, and occipital regions, while the male clinician showed weak negative correlations in fronto-parietal areas. Additionally, the male clinician demonstrated positive correlations in parieto-occipital regions in the gamma high band.

The dimension of Disconfirmation yielded the most similar patterns between clinicians. Both exhibited positive correlations in frontal, parietal and occipital regions in the delta and theta bands, and negative correlations in the same regions in gamma low and high bands. However, only the female clinician showed negative correlations in fronto-parietal regions in the alpha and beta bands.

Finally, the dimension of Impotence was marked by widespread positive correlations across several frequency bands. In the theta band, the female clinician showed positive correlations in parietal and occipital regions; in the beta band, positive correlations were observed for the female clinician in frontal, parietal, and occipital regions, and for the male clinician in parietal regions. In the gamma bands (both low and high), the male clinician displayed positive correlations in frontal areas. Conversely, delta activity was associated with negative correlations in frontal and occipital regions for both clinicians, and the female clinician also showed negative correlations in parietal regions in the gamma low band.

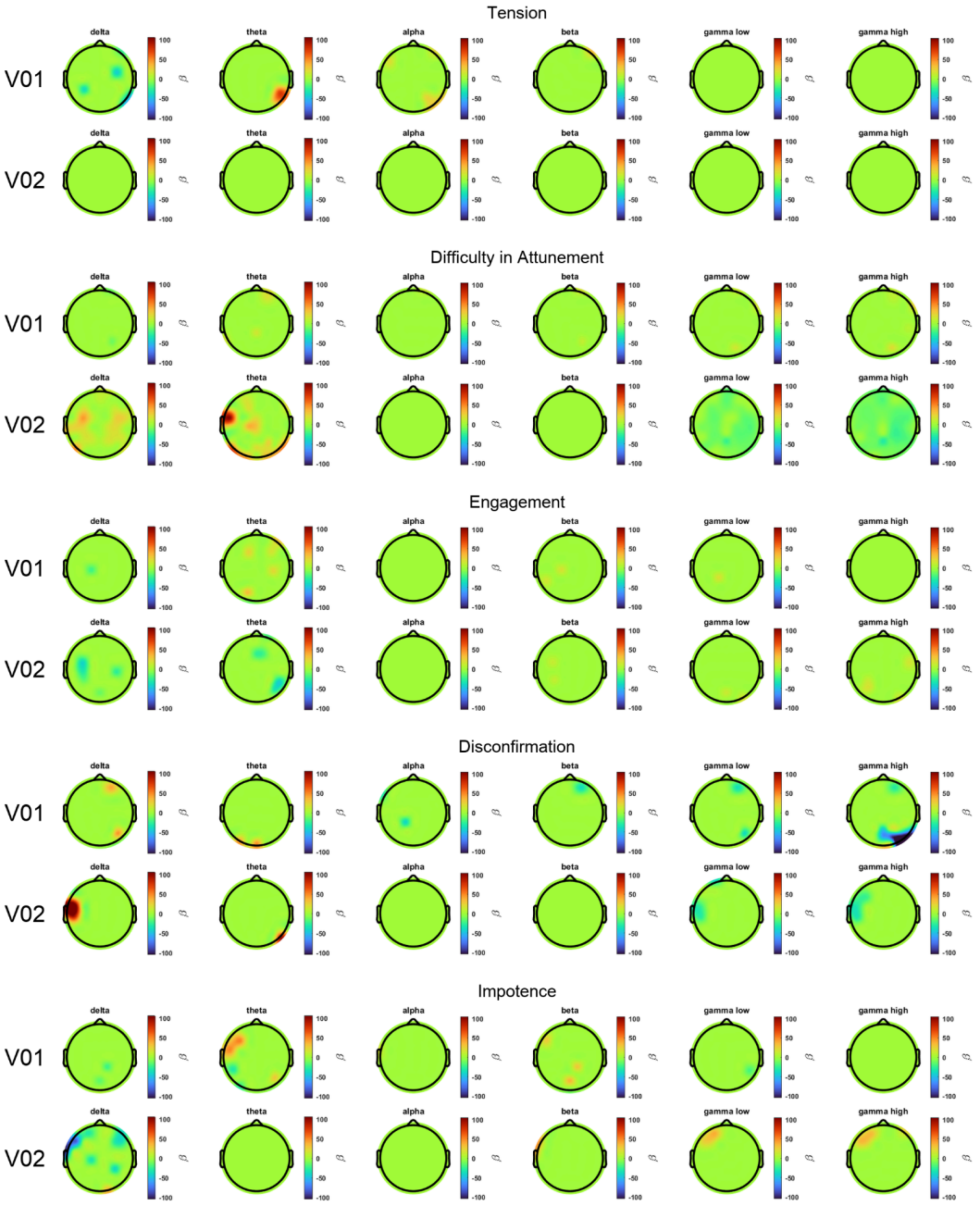

Figure 11. General Linear Model significant ($p < 0.05$) correlation results of rPSD and ACSE scores. The color bar represents the beta estimates of significant results. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Correlations of node strength

Similar to the rPSD results, the correlation analysis of node strength did not yield consistent significant effects across ACSE dimensions, although distinct

clinician-specific and frequency-specific patterns emerged (**Figure 12, Supplementary Table S11-15, Supplementary Table S16-20**).

In the dimension of Tension, the female clinician exhibited positive correlations in the beta band within parietal regions and in the gamma low band within parieto-occipital areas. In contrast, the male clinician showed predominantly negative correlations, particularly in the delta band within occipital regions and in the gamma low band across the entire scalp. Additionally, he displayed a positive correlation in frontal regions in the gamma high band.

For the dimension of Difficulty in Attunement, only the male clinician showed relevant, though generally weak, correlations. Specifically, positive correlations were observed in parietal and occipital regions in the delta, theta and alpha bands.

A different pattern was observed in the dimension of Engagement, where only the female clinician exhibited notable correlations. In particular, negative correlations were found in parietal regions in the theta band, while positive correlations emerged in the beta and gamma low bands, involving parietal and occipital regions. The male clinician, by contrast, showed only weak negative correlations in occipital regions in the beta band.

Among all ACSE dimensions, Disconfirmation revealed the most widespread and differentiated correlation patterns. For the female clinician, positive correlations were evident in parietal and frontal regions in the theta and beta bands, while negative correlations emerged in parietal areas in the alpha band. The male clinician demonstrated correlations across nearly all frequency bands. In the delta band, positive correlations were localized in occipital regions, and in the alpha band, similar positive correlations were found in fronto-occipital areas. In the gamma low band, both positive and negative weak correlations were detected in parietal regions, whereas in the gamma high band, negative correlations, albeit weak, were observed in parietal and occipital regions. Notably, the strongest positive correlations for the male clinician were reported in the theta band, broadly distributed across the scalp, and in the beta band, particularly within frontal, parietal, and occipital regions.

Finally, in the dimension of Impotence, correlations were identified only for the female clinician. Negative correlations emerged in frontal and parietal regions in the delta, theta and alpha bands, whereas strong positive correlations were observed across the entire scalp in the gamma low band.

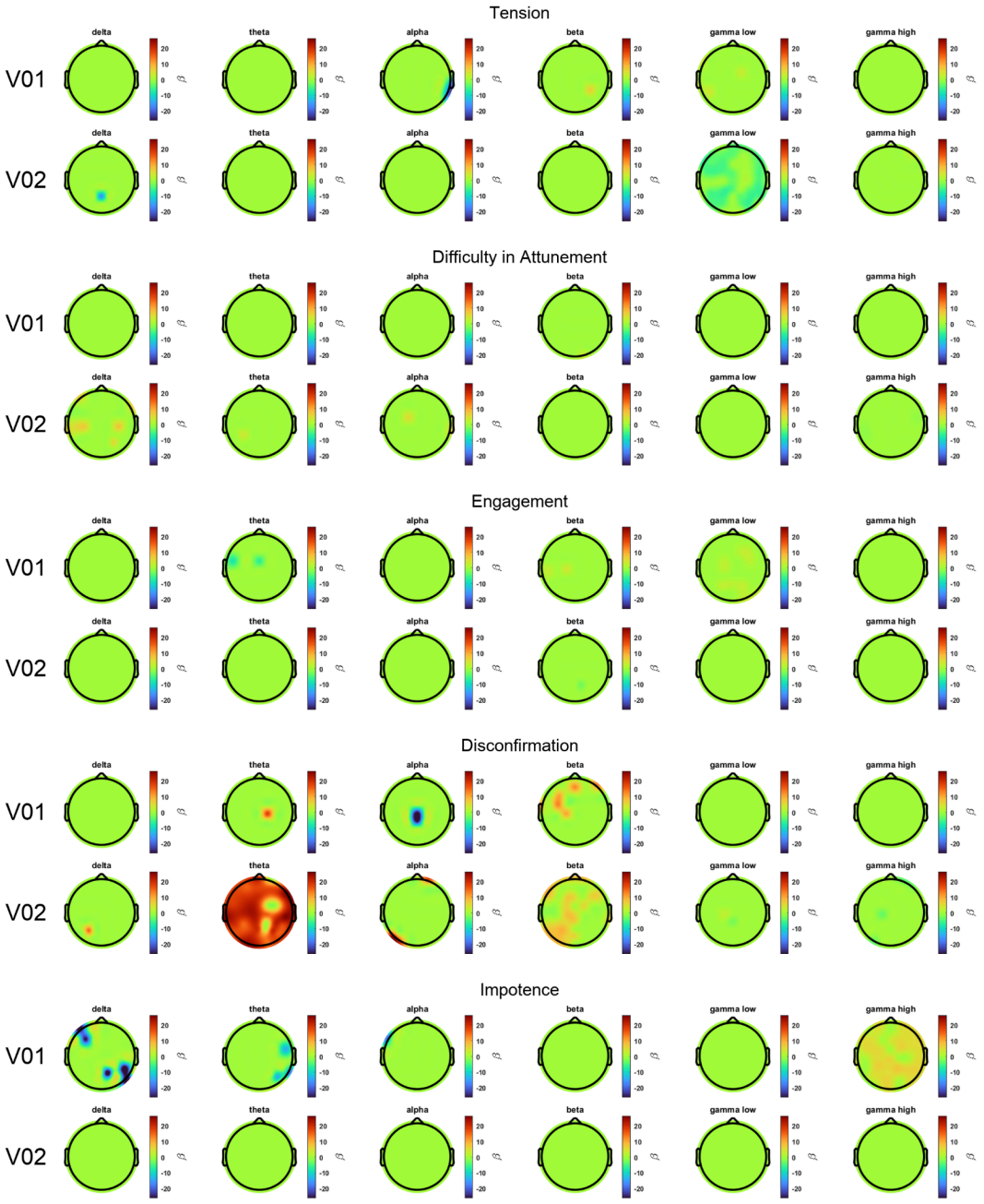

Figure 12. General Linear Model significant ($p < 0.05$) correlational results of node strength iCOH and ACSE scores. The color bar represents the beta estimates of significant results. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician).

Correlations of global efficiency

Only a limited number of significant correlations emerged between global efficiency and ACSE dimensions (**Supplementary Table S21)**.

For the female clinician, a positive correlation was observed between global efficiency in the gamma high band and the dimension of Impotence (β = 4.83, p = 0.02). In contrast, the male clinician showed a negative correlation between global efficiency in the gamma low band and the dimension of Tension (β = 4.09, p = 0.01), alongside positive correlations with the dimension of Disconfirmation in both the theta (β = 17.95, p = 0.0005) and beta bands (β = 4.95, p = 0.04).

DISCUSSION

This pilot study aimed to investigate for the first time the neurobiological correlates of the clinician's subjective experience during interactions with the patient, integrating EEG analysis with the ACSE. Results from the questionnaire confirmed previous findings, while EEG analyses revealed dimension- and frequency-specific patterns across spectral power, node strength, and global efficiency, highlighting distinct network profiles between clinicians. These preliminary findings suggest that clinicians' subjective experiences during interactions with the patient are not only psychologically meaningful but also neurobiologically traceable.

Emerging of subjective experience

The results from the ACSE administration revealed the highest scores in Difficulty in Attunement and Engagement dimensions, while the lowest scores were reported for Tension and Disconfirmation dimensions. The dimension of Impotence scored lower than Difficulty in Attunement and Engagement dimensions, but higher than Tension and Disconfirmation dimensions. Conversely, when considering ACSE scores according to the clinician gender, the female clinician reported higher scores across all dimensions except for Disconfirmation, in which the male clinician obtained the highest scores. These findings were partially supported by the listening to the first clinical interview: clinicians reported strong subjective experiences related to Difficulty in Attunement and Engagement dimensions, limited experiences for the dimension of Disconfirmation, and no reported feelings related to Tension or Impotence dimensions.

These results align with previous literature suggesting that depressive and anxiety disorders are predominantly associated with difficulties in establishing emotional contact, which may reduce the clinician's sense of involvement (Pallagrosi et al., 2016). Moreover, clinicians interacting with these psychiatric disorders often experience lower levels of physical tension, as well as fewer feelings of rejection or failure, which was corroborated by the absence or limited occurrence of reported feelings described by Tension and Disconfirmation dimensions during the first

clinical interview (Pallagrosi et al., 2016). When considering clinician gender, the evidence emerging from the present study only partially aligns with findings reported in the existing literature. Specifically, the higher scores obtained by the female clinician on the Engagement and Impotence dimensions, as well as the higher Disconfirmation scores reported by the male clinician, are consistent with previous observations of gender-related patterns in ACSE responses (Dazzi et al., 2021). However, the results for the Tension and Difficulty in Attunement dimensions diverge from this trend, as both were higher in the female clinician compared to the male clinician. Given that the present study involved only two clinicians, these gender-related differences must be interpreted with caution; the limited sample precludes drawing firm conclusions about systematic gender effects.

More intriguing, however, is the pattern observed for the dimension of Impotence. Although it emerged more prominently than Tension and Disconfirmation dimensions in the ACSE administration, it was not consciously reported by clinicians during the first clinical interview. This discrepancy may indicate that feelings of helplessness and frustration remain below the threshold of awareness during the interaction with the patient. Nevertheless, these experiences may still shape the clinical encounter at an unconscious level, reflecting phenomenological processes that subtly modulate the clinician's internal state in response to patients affected by depressive and/or anxiety disorders.

Interestingly, these results underscore the strong internal consistency and clinical sensitivity of the ACSE in capturing the clinician's subjective experience, even within the context of a pilot study with a limited sample size. However, due to the experimental design and the uneven distribution of psychiatric disorders, it was not possible to perform a detailed analysis of clinician-specific scores or to stratify patient data into diagnostic subgroups.

Finally, an additional noteworthy result concerns the duration of the temporal windows associated with the ACSE dimensions for the two clinicians. Although the overall time required to complete the ACSE was comparable, the clinicians differed substantially in the time intervals during which they reported experiencing feelings

corresponding to each ACSE dimension during the first clinical interview. Specifically, the male clinician consistently identified longer temporal windows than the female clinician. Several hypotheses may account for this difference, including variations in theoretical background, which may have led the male clinician to devote more time to attending to and analysing his own subjective experience. Nevertheless, given the pilot nature of the present study and the involvement of only two clinicians, these interpretations remain preliminary and warrant further investigation in larger and more heterogeneous samples.

The connectivity of "subjective brain"

The EEG findings of this pilot study provide preliminary but compelling evidence for the existence of neurobiological correlates of the clinician's subjective experience as measured by the ACSE. Spectral power and connectivity analyses across the first clinical interview and ACSE administration phases revealed distinct, frequency-specific, and topographically differentiated neural patterns, often diverging between the two clinicians.

Different bands different subjective experience

According to spectral power analysis, each ACSE dimension is associated with distinct spectral profiles. Specifically, Difficulty in Attunement and Engagement dimensions appear to be modulated by changes in delta, theta, alpha, and gamma bands. The dimension of Disconfirmation elicited the most heterogeneous and frequency-spanning modulations, involving significant power changes across all bands and both clinicians, pointing to a complex and individualized neural response.

Difficulty in Attunement and Engagement

Delta and alpha bands appeared to be modulated across the Difficulty in Attunement and Engagement dimensions. This pattern partially aligns with previous research identifying frontal alpha asymmetry as a neural biomarker of emotional alignment in clinical encounters (Coan et al., 2006). More broadly, in clinical contexts, alpha

oscillations have been linked to emotional attunement, often reflecting moments of perceived interpersonal oneness during the therapeutic exchange (Minamisawa & Mitob, 1997). Specifically, alpha-delta coupling observed in temporo-central areas may reflect increased interoceptive attention, supporting interpersonal motor synchronization and reducing physical tension while enhancing emotional engagement (Angioletti & Balconi, 2022). In this framework, the modulation of alpha and delta rhythms may represent the clinician's effort to establish emotional contact with the patient,by engaging both automatic and flexible cognitive strategies (Vakalopoulos, 2014). Overall, these findings suggest that alpha and delta activity may serve as neural biomarkers of emotional attunement in the first clinical interview, especially for Difficulty in Attunement and Engagement dimensions.

An interesting result was that the female clinician exhibited a widespread increase in alpha power and a moderate decrease in delta power across multiple ACSE dimensions. This pattern may reflect a neural profile oriented toward internal regulation, potentially associated with emotional monitoring or self-regulation. Notably, increased alpha activity has been linked to a state of relaxed alertness (Lomas et al., 2015), which may facilitate a more receptive and attuned stance toward the patient, thereby enhancing the dimension of Engagement. In contrast, reduced delta power may reflect the clinician's initial difficulty in empathic attunement, possibly related to the absence of prior relational experience with the patient. Delta activity suppression may mark the beginning of adaptive neural plasticity changes involved in establishing new subjective connections (Assenza & Di Lazzaro, 2015). Importantly, these EEG patterns may capture gender-related differences in brain activation for Difficulty in Attunement and Engagement dimensions, reinforcing previous findings that suggest a potential “gender effect” in ACSE responses and scoring (Dazzi et al., 2021).

Disconfirmation

Compared to Difficulty in Attunement and Engagement dimensions, interactions involving the dimension of Disconfirmation were marked by more intricate and

heterogeneous EEG patterns, particularly in patients diagnosed with depressive and anxiety disorders. This was most evident in the opposite activation patterns observed between the two clinicians across multiple bands, including delta, theta, beta, and both low and high gamma. In several cases, increased activation in one clinician was matched by a corresponding deactivation in the other, suggesting divergent neural processing of the same experiential dimension.

The presence of theta and gamma activity in this context is particularly notable. Theta oscillations have been associated with motor coordination in both cooperative and competitive settings, while gamma oscillations have been implicated in the representation of intentionality during cooperative interactions (Barraza et al., 2020). The simultaneous engagement of these frequencies may indicate that the dimension of Disconfirmation demands both motor and cognitive-affective engagement from the clinician, potentially facilitating key processes such as therapeutic alliance and empathic attunement.

Interestingly, theta and gamma profiles appeared to differentiate the two clinicians in functionally meaningful ways. The female clinician displayed a widespread deactivation in theta bands, possibly reflecting postural stiffening or reduced motor expressiveness, potentially due to challenges in decoding both her own and the patient's movements during the first clinical interview. In contrast, the male clinician showed increased theta activation, particularly in parietal regions associated with motor processing and spatial awareness (Fogassi et al., 2005), suggesting a more confident or embodied motor stance.

Gamma-band activity further reinforced these distinctions. The female clinician exhibited increased gamma activity, especially in parietal regions, which may reflect greater empathic resonance. This pattern is consistent with the activation of mirror neuron systems located in parietal regions, known to support empathic understanding and the formation of authentic therapeutic relationships (Chong et al., 2008). Conversely, the male clinician showed widespread gamma deactivation, which could indicate difficulty in engaging collaboratively with the patient during moments of relational rupture or misattunement.

This interpretation is supported by the beta-band activity, often linked to task engagement and goal-directed behavior (Myers & Hossain, 2022). The female clinician showed a global increase in beta activity, while the male clinician exhibited only localized peaks, alongside a marked deactivation in the posterior parietal cortex. These findings suggest that the female clinician may demonstrate a greater capacity for active, collaborative engagement, potentially enhancing therapeutic alliance and contributing to better treatment outcomes.

A connective profile of subjective experience

Findings from the spectral analysis were supported by node strength and global efficiency measures, which revealed a distinctive pattern of brain connectivity.

The "strength" of the first clinical interview

Node strength analyses further supported the rPSD distinctions, underscoring the frequency- and dimension-specific modulation of functional connectivity across clinicians. In particular, the dimension of Disconfirmation consistently elicited clinician-dependent and topographically distinct connectivity patterns across multiple frequency bands, further highlighting its neural complexity compared to Difficulty in Attunement and Engagement dimensions, which were instead characterized by broadly reduced and more homogeneous connectivity profiles.

One of the most salient findings concerned the greater variability and dimension-specific modulation observed in the female clinician's brain network, particularly in the delta, theta and alpha bands. In contrast, the male clinician's connectivity profile appeared more stable and linear across ACSE dimensions. These divergent patterns may reflect different clinical strategies for engaging with patients diagnosed with depressive and anxiety disorders. Alpha and theta bands have been associated with visuospatial processing and working memory operations (Jun et al., 2024). It is therefore plausible that both clinicians recruit electrophysiological connectome oscillations to support distinct attentional and cognitive processes in response to specific relational dimensions: while the female

clinician exhibited increased alpha-band connectivity across all dimensions (Difficulty in Attunement, Engagement, and Disconfirmation), accompanied by a widespread reduction in theta-band connectivity in the Engagement and Disconfirmation dimensions, the male clinician demonstrated a modest enhancement of theta-band connectivity and a slight reduction in alpha-band connectivity across all dimensions. .

These findings suggest that each clinician may modulate brain activity to more effectively interpret visual cues or integrate salient interpersonal information communicated by the patient. This interpretation aligns with evidence that beta and gamma oscillatory complexity is linked to visuomotor encoding, attentional selection, and perceptual feature binding, functions central to the clinician's moment-by-moment interpretation of external stimuli (Baravalle et al., 2018).

From a broader perspective, the dimension of Disconfirmation once again emerged as the dimension with the most clinician-specific and spatially differentiated connectivity profiles, reinforcing its relative neural complexity compared to Difficulty in Attunement and Engagement dimensions. In particular, the dimension of Disconfirmation revealed distinct and noteworthy patterns in the beta- and gamma-band ranges. High-frequency oscillations in these bands have been linked to visuospatial and memory-related processes (Vecchio et al., 2016), suggesting that such cognitive functions are actively engaged during experiences of disconfirmation. The oscillatory profile identified in this dimension indicates a decrease in gamma-low activity for the female clinician and, conversely, an increase in beta-band activity for the male clinician. These divergent patterns underscore the involvement of different high-frequency neural mechanisms across clinicians when processing relational disruptions during the clinical encounter. However, it remains challenging to determine whether this complexity is inherent to the experiential dimension of Disconfirmation itself, or rather influenced by the clinical characteristics of the patients involved, such as the severity or type of psychiatric disorder.

Wiring interactions with the patient

Global efficiency measures revealed that the female clinician's brain networks were more dynamically modulated across dimensions and frequency bands, whereas the male clinician showed a more consistent and possibly more regulated network profile. Notably, a delta-alpha dissociation emerged in the female clinician, alongside a broad theta-band enhancement in the male clinician specifically for the dimension of Disconfirmation. These patterns suggest differential mechanisms of cognitive and emotional integration in how each clinician processed their subjective experience of interactions with the patient.

In particular, higher global efficiency in delta bands, more evident in the male clinician, is typically associated with the inhibition of external sensory input to support internal concentration during complex cognitive processing (Harmony, 2013). This finding may indicate that the male clinician was better able to filter out external distractions, focusing selectively on the interpersonal interactions of the clinical encounter to construct a coherent internal representation of the patient. This interpretation is consistent with literature showing that enhanced global efficiency in delta frequencies reflects scale-free dynamics and self-organized criticality, both of which are thought to promote near-optimal information processing (Stam & De Bruin, 2004).

The delta-alpha dissociation observed in the female clinician may also point to underlying differences in theoretical background. It is conceivable that distinct training models or therapeutic approaches result in different neural strategies for engaging with patients, some perhaps favoring broader reactivity and others promoting stability and focused integration. This interpretation is further supported by the overall contrast in network behavior: the female clinician’s brain networks were more flexibly modulated across both dimensions and frequencies, while the male clinician’s profile remained more consistent.

Moreover, the broad theta-band enhancement observed for the dimension of Disconfirmation in the male clinician may reflect an increased cognitive load, particularly related to working memory and attentional control. Theta activity has

been repeatedly linked to improved performance on cognitively demanding tasks, especially those involving the manipulation and retention of complex information (Finnigan & Robertson, 2011). In this context, heightened theta connectivity may indicate that the male clinician was actively engaging working memory resources to process, retain, and integrate salient interpersonal content provided by the patient during the first clinical interview. This interpretation is in line with the association between theta-band coherence and cognitive control processes, including goal-directed attention and contextual updating (Cavanagh & Frank, 2014; Mizuhara et al., 2024).

The brain bands of ACSE

The correlational analyses of rPSD and iCOH measures with ACSE scores reinforced findings that were found from analyses of the first clinical interview.

Although most associations were weak or absent, largely due to the reduced sample size and the pilot nature of the study, several specific frequency-dimension clusters nonetheless emerged.

The relational complexity with the patient

Overall, rPSD correlations revealed dimension- and frequency-specific EEG biomarkers that differed between the two clinicians, with more pronounced and spatially distributed correlations observed in Disconfirmation and Impotence dimensions. These patterns suggest that the subjective experience during the first clinical interview is closely linked to specific neural oscillatory mechanisms, which may vary across clinicians and ACSE dimensions.

In the dimension of Disconfirmation, both clinicians exhibited positive correlations in delta bands, suggesting a possible relationship between feelings of failure or rejection and decision-making processes during interactions with the patient. Prior research has demonstrated that delta-band coherence between parietal and frontal cortices is associated with decision-making, supporting its role in coordinating large-scale neural networks (Nácher et al., 2013). The observed positive correlations

in these regions may indicate that greater affective distress in response to relational rupture leads to increased recruitment of cognitive resources to guide adaptive interactional strategies during the first clinical interview.

In contrast, both clinicians showed negative correlations in gamma bands (both low and high) associated with the dimension of Disconfirmation. Gamma oscillations have been proposed to function as general biomarkers of cortical activation, rather than being strictly tied to discrete cognitive processes (Kirschfeld, 1996). The observed gamma-band deactivation in association with higher scores for the dimension of Disconfirmation may therefore reflect a global reduction in cortical activation, potentially impairing cognitive control functions and executive processing. Such neural disengagement could hinder the clinician's ability to respond flexibly and effectively to interpersonal challenges, potentially compromising the therapeutic process.

Interestingly, a divergent gamma-band pattern emerged in the dimension of Impotence for the male clinician, who showed positive correlations, particularly in frontal regions. This may reflect an increased recruitment of higher-order cognitive functions in response to feelings of helplessness and frustration, suggesting an effortful attempt to re-establish control and manage the complexity of the interaction.

A comparable pattern was also observed in beta-band correlations, another high-frequency range, across both clinicians. Beta oscillations have been implicated in the maintenance of current cognitive or sensorimotor states (Engel & Fries, 2010) and the generation of spontaneous cognitive operations (Laufs et al., 2003). Their increased activation, especially when associated with elevated frustration or impotence, may represent a disruption in typical baseline activity, potentially altering the clinician's ability to remain attuned or regulate responses during the interaction. Additionally, beta-band coherence has been shown to vary with motor demands (Peng et al., 2024). In this context, beta-band activity may also reflect the embodied nature of clinician-patient interaction, particularly under emotionally demanding ACSE dimensions such as Disconfirmation and Impotence.

Finally, the positive theta-band correlations observed in the female clinician across all ACSE dimensions and in the male clinician specifically for the Difficulty in Attunement and Disconfirmation dimensions, may reflect the involvement of working-memory-related processes (Dai et al., 2017). Increases in theta activity have been consistently associated with tasks requiring substantial memory load (Muthukrishnan et al., 2019), and are known to correlate negatively with reaction times under high-load conditions (Schapkin et al., 2020). In light of these findings, the heterogeneous pattern of positive theta correlations identified across clinicians and dimensions in the present study may indicate that theta oscillations and task performance are tightly coupled. This aligns with recent evidence showing that individual differences in theta-frequency dynamics reflect structural-functional constraints that shape cognitive performance, supporting the view that theta-band connectivity is task-dependent and dynamically modulates information processing across distributed neural networks (Gómez-Lombardi et al., 2024).

An affective brain modulation

Node strength correlations revealed clinician- and dimension-specific patterns, suggesting differential engagement of large-scale neural connectivity across ACSE dimensions.

In Tension and Engagement dimensions, the gamma-low band prominently characterised the node strength correlations. In both cases, isolated positive correlations were observed in the female clinician, whereas the male clinician exhibited widespread negative correlations. This divergence may reflect either gender-related neurobiological differences or distinct theoretical backgrounds, both of which could influence cortical response patterns. In the female clinician, higher Tension scores were associated with increased gamma-low connectivity, potentially reflecting elevated cognitive processing demands related to perception, attention, and memory (Bosman et al., 2014; Herrmann et al., 2010). Such demands may perturb the typically transient and locally generated gamma rhythms, which arise from synchronised activity of cortical neuronal assemblies (Buzsáki & Wang, 2012).

By contrast, the negative correlations observed in the male clinician may reflect a more stable and efficient cortical state, where higher scores on the dimension of Tension do not necessitate heightened activation, but rather maintain balanced neural oscillations. This interpretation is supported by the global efficiency results, in which gamma-low band connectivity negatively correlated with Tension scores in the male clinician.

Beyond the gamma-low band, the female clinician exhibited widespread positive correlations in the gamma-high band for the dimension of Impotence. This pattern may reflect a subtle disruption in neural modulation, whereby increased gamma activity is not driven by external task demands but rather by internal regulatory processes attempting to compensate for affective discomfort. As with the dimension of Tension, this heightened activation in gamma-high bands might indicate a maladaptive or compensatory mechanism in the absence of overt stimuli, again supported by global efficiency analyses, which confirmed the statistical significance of this correlation pattern.

In the beta band, both clinicians showed positive correlations with Disconfirmation scores, localised in frontal and parietal regions. This finding parallels the gamma-high results and may reflect modulation of frontoparietal networks involved in attentional control and cognitive stability (Hossain et al., 2018). In this context, lower Disconfirmation scores might correspond with a reduced need for cognitive compensation, resulting in lower perturbation of beta-band activity. This could signify a clinician's greater ease in maintaining attentional engagement and emotional regulation during the first clinical interview.

A distinct pattern emerged in the theta band, where positive correlations with Disconfirmation scores were identified in the male clinician. This finding was further supported by the global efficiency analysis, which showed a significant positive correlation between theta-band connectivity and Disconfirmation scores. Theta oscillations are known to underlie high-level cognitive functions, including executive control and cross-modal attentional shifts (Tan et al., 2024; Wang et al., 2016). The engagement of theta networks in the dimension of Disconfirmation may

indicate the clinician's increased cognitive effort in managing the interpersonal complexity associated with this affective experience. Consequently, lower Disconfirmation scores may be associated with less intensive theta-band modulation, suggesting a smoother and less cognitively taxing interaction with the patient.

Finally, only limited and heterogeneous evidence emerged for the delta and alpha bands. The female clinician exhibited a negative correlation in delta-band connectivity for the dimension of Impotence, whereas the male clinician showed a similar negative pattern for the dimension of Tension and an opposite, positive correlation for Difficulty in Attunement and Disconfirmation dimensions. A comparable inconsistency was observed in the alpha band: the female clinician demonstrated negative correlations in the Tension, Disconfirmation, and Impotence dimensions, while the male clinician showed positive correlations in Difficulty in Attunement and Disconfirmation dimensions. Given the sparse and dimensionally inconsistent nature of these findings, they should be interpreted with caution. Future research with larger samples will be essential to clarify the significance of these atypical delta- and alpha-band patterns.

The psycho-dynamics of brain waves

The present EEG results, although preliminary, carry several important theoretical and clinical implications. From a theoretical standpoint, they align with emerging clinical models that conceptualize the clinical encounter not as a unidirectional process, but as a dyadic neurobiological exchange. In these models, the clinician's emotional and cognitive states are not merely passive by-products of the interaction but are actively shaped by (and reciprocally shape) the relational field (Fotopoulou & Tsakiris, 2017; Schiepek et al., 2016). The modulation of spectral and connectivity patterns observed in this study suggests that specific dimensions of subjective experience, particularly Difficulty in Attunement, Engagement and Disconfirmation, may be encoded in distinct neural oscillatory patterns, with low-frequency bands (delta, theta and alpha) indexing general arousal and emotional tone, and high-frequency bands (beta and gamma) supporting cognitive integration

and emotional salience (Başar et al., 2013; Knyazev, 2007). These findings offer neurobiological support for the clinician's internal affective responses, which are regarded not only as reflections of the relational interaction, but also as diagnostic tools and therapeutic mechanisms (Gabbard, 2001).

Importantly, recent hyperscanning research, which involves simultaneous EEG recording from both clinician and patient, has begun to demonstrate that synchronization between brains can emerge during clinical interactions and may reflect shared attention, emotional resonance, or mutual understanding (Koole & Tschacher, 2016). In this light, the clinician's neural activity may not only reflect their own internal state but may also directly or indirectly shape the patient's neural responses, potentially influencing emotional regulation, social engagement, and the therapeutic alliance. Oscillatory coupling, especially in frontal and temporoparietal areas, has been shown to correlate with moments of shared affect and rapport, suggesting a neurobiological substrate for clinical attunement in psychotherapy (Fishburn et al., 2018). These findings reinforce the hypothesis that clinician-specific neural signatures, such as those observed in the present study, might contribute to shaping the patient's brain activity through mechanisms of implicit social regulation and dyadic resonance.

Clinically, these results point toward a more embodied and measurable understanding of the clinician's experience, offering a neurobiological framework for real-time feedback, training protocols, or supervision strategies. Such approaches could be aimed at enhancing empathic accuracy, emotional self-regulation, and the therapeutic relationship. Moreover, the identification of clinician-specific neural biomarkers suggests that interindividual variability in the clinician's subjective responses may have a biological basis, possibly shaped by individual traits, theoretical orientation, or prior clinical experience. If validated in larger and more diverse samples, these biomarkers could support the development of personalized training programs that consider not only the patient's clinical profile but also the clinician's neurocognitive predispositions.

Ultimately, this pilot study contributes to the growing field of interpersonal neuroscience, bridging the divide between phenomenological psychiatry and empirical neuroscience. It highlights the importance of grounding the subjective and relational aspects of clinical care in measurable brain dynamics, and provides preliminary support for a bi-directional model of therapeutic interaction in which both the clinician and the patient are neurobiologically engaged in shaping the therapeutic process.

Limitations and future directions

Despite its innovative design, this pilot study has several limitations that should be acknowledged.

First, the small sample size, involving only two clinicians and ten patients, limits the generalizability of the findings and constrains the statistical power needed to detect subtle effects or conduct between-group comparisons. In this context, the phenomenological profile of these psychiatric disorders constrained the emergence of certain ACSE dimensions during the first clinical interview. While Difficulty in Attunement and Engagement dimensions consistently arose and could therefore be meaningfully investigated, the Tension and Impotence dimensions did not manifest in the clinician-patient interactions, and the dimension of Disconfirmation appeared only in two first clinical interviews for each clinician. Consequently, the restricted range of psychopathological presentations prevented a comprehensive exploration of the neurobiological correlates associated with all ACSE dimensions.

Third, while efforts were made to standardize EEG data collection across ACSE dimensions, variability in interview dynamics, clinician behavior, and EEG baseline acquisition may have introduced a bias. Specifically, as emerged from listening to the first clinical interview, each clinician identified different temporal windows during which they experienced the feelings described by the ACSE dimensions. This variability in segment duration poses a methodological limitation, as it affects the statistical power of the EEG analyses by providing unequal amounts of signal acquisition time across segments. A second limitation concerns the use of a single

baseline for all ACSE administrations for each clinician. To increase the methodological rigor, the baseline should be recorded for each questionnaire session before the ACSE administration.

Furthermore, the manual synchronization between the administration of ACSE items and EEG segmentation represented a methodological limitation, as it was not automated and therefore susceptible to human error. To mitigate this issue, two independent experimenters simultaneously annotated the EEG time markers, enabling cross-verification and improving the reliability of the segmentation process. Nevertheless, the methodological rigor in the design and execution, particularly the use of ACSE-guided segmentation and multimodal EEG analysis, provides a strong foundation for future work.

Larger studies should aim to replicate these findings across a broader range of clinicians and patient diagnoses, ideally incorporating hyperscanning methodologies. Given the pilot nature of the present study, particular attention was devoted to maintaining the most familiar and least intrusive environment possible for patients. Notably, despite the psychiatric diagnoses represented in the sample, none of the patients exhibited fear or discomfort when interacting with a clinician wearing an EEG helmet. This finding indicates that hyperscanning procedures may be feasible in future studies, thereby enabling the investigation of the bidirectional and dynamic neural processes that unfold during the clinical encounter.

Finally, future research should also consider integrating psychophysiological or behavioral measurements, such as heart rate variability or facial expression analysis, to triangulate the EEG findings and more fully capture the multidimensional nature of the clinician’s experience.

CONCLUSION

This preliminary research investigated the neurobiological correlates of the clinician's subjective experience in clinical encounters by integrating the ACSE questionnaire with EEG analyses of spectral power and functional connectivity. The findings provide preliminary support for the hypothesis that specific experiential dimensions, particularly Difficulty in Attunement, Engagement and Disconfirmation, are associated with distinct oscillatory patterns across multiple frequency bands. Notably, these neural signatures were not homogeneous across clinicians, suggesting that individual neurocognitive and emotional dispositions may shape the way clinical interactions are internally processed.

The results align with recent theoretical models that frame the clinical encounter as a dyadic neurobiological process, where both participants influence and are influenced by the relational field at both conscious and non-conscious levels. Moreover, the study contributes to emerging efforts within interpersonal neuroscience to integrate first-person subjective reports with third-person neurobiological data. Although limited by its exploratory design, small sample size, and lack of hyperscanning, this work demonstrates the feasibility of linking EEG-derived neural biomarkers to qualitative aspects of clinical experience. It thus offers a potential framework for future research aiming to deepen our understanding of the embodied dynamics underlying the therapeutic relationship.

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SUPPLEMENTARY MATERIALS

Tension												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	- 25.892	0.014	ns	ns	22.620	0.012	33.610	0.026	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	19.359	0.027	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	- 44.738	0.011	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	- 43.050	0.012	59.547	0.017	23.271	0.028	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	69.696	0.008	ns	ns	ns	ns	ns	ns	ns	ns

'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	- 38.570	0.035	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	- 41.587	0.020	40.241	0.032	26.586	0.018	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	39.840	0.011	24.071	0.031	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	22.131	0.027	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	22.863	0.037	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S1. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the female clinician related to the dimension of Tension. ns: not significant.

Difficulty in Attunement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'AF3'	ns	ns	17.479	0.047	ns	ns	ns	ns	ns	ns	8.496	0.022
'FP1'	- 12.240	0.001	19.100	0.004	12.364	0.019	16.397	0.010	12.438	0.002	9.587	0.004
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	18.215	0.024	25.538	0.012
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	10.178	0.037	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	6.498	0.046
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	13.513	0.023	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	- 12.342	0.036	ns	ns	ns	ns	10.842	0.028	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	15.133	0.018	20.362	0.022
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	14.968	0.039	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S2. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the female clinician related to the dimension of Difficulty in Attunement. ns: not significant.

Engagement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	31.137	0.014	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'F3'	ns	ns	17.023	0.024	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	24.074	0.039	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	22.050	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	- 22.886	0.033	ns	ns	ns	ns	17.565	0.024	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	18.927	0.047	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	15.695	0.040	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	34.057	0.006	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S3. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the female clinician related to the dimension of Engagement. ns: not significant.

Disconfirmation												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	41.026	0.012	ns	ns	ns	ns	- 38.597	0.035	- 37.184	0.002	- 29.935	0.003
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	- 33.595	0.040	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 50.488	0.045
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	- 41.279	0.030	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 134.247	0.028
'P5'	47.122	0.044	ns	ns	ns	ns	ns	ns	- 38.943	0.047	- 59.206	0.030
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 182.144	0.037
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 96.930	0.049
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	41.480	0.045	ns	ns	ns	ns	ns	ns	ns	ns

'OZ'	ns	ns	46.369	0.035	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 45.992	0.047
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 65.825	0.011

Supplementary Table S4. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the female clinician related to the dimension of Disconfirmation. ns: not significant.

Impotence												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	50.556	0.036	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	35.801	0.027	ns	ns	27.856	0.010	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	49.447	0.019	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	24.047	0.011	20.262	0.026	ns	ns	ns	ns	ns	ns

'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	- 21.153	0.036	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	- 23.563	0.042	ns	ns	ns	ns	30.019	0.019	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	- 31.934	0.033	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	29.334	0.033	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	- 24.324	0.028	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'POZ'	- 16.273	0.037	ns	ns	ns	ns	36.195	0.011	ns	ns	ns	ns

Supplementary Table S5. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the female clinician related to the dimension of Impotence. ns: not significant.

Tension												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S6. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the male clinician related to the dimension of Tension. ns: not significant.

Difficulty in Attunement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 8.783	0.024
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	10.843	0.019	ns	ns	ns	ns	ns	ns	- 12.398	0.020	- 14.874	0.003

'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 14.429	0.045
'AF4'	ns	ns	15.488	0.016	ns	ns	ns	ns	ns	ns	- 10.150	0.026
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 9.822	0.044
'F7'	11.730	0.036	23.096	0.028	ns	ns	ns	ns	ns	ns	- 16.519	0.002
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 11.192	0.020
'F3'	11.864	0.015	ns	ns	ns	ns	ns	ns	- 8.573	0.040	- 14.013	0.005
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	- 7.716	0.031	- 12.093	0.003
'F2'	ns	ns	18.455	0.029	ns	ns	ns	ns	- 10.005	0.043	- 10.985	0.010
'F4'	17.501	0.047	ns	ns	ns	ns	ns	ns	- 12.267	0.027	- 13.570	0.007
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 11.301	0.023
'F8'	20.063	0.023	ns	ns	ns	ns	ns	ns	ns	ns	- 11.482	0.009
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	21.353	0.023	ns	ns	ns	ns	ns	ns	- 13.019	0.046	- 17.506	0.006
'FC3'	26.949	0.009	ns	ns	ns	ns	ns	ns	- 14.944	0.035	- 18.598	0.010
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 15.657	0.014
'FC2'	16.230	0.039	ns	ns	ns	ns	ns	ns	- 13.538	0.005	- 12.724	0.007
'FC4'	44.224	0.001	ns	ns	ns	ns	ns	ns	- 12.433	0.008	- 12.957	0.003
'FC6'	ns	ns	100.746	0.021	ns	ns	ns	ns	ns	ns	- 9.719	0.036
'FT8'	ns	ns	79.101	0.023	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	- 17.898	0.017	- 10.921	0.050
'C3'	20.206	0.011	ns	ns	ns	ns	ns	ns	- 14.889	0.035	- 20.708	0.005
'C1'	14.647	0.026	ns	ns	ns	ns	ns	ns	- 12.499	0.017	- 18.690	0.005
'C2'	ns	ns	36.151	0.002	ns	ns	ns	ns	- 11.632	0.013	- 11.473	0.014
'C4'	23.609	0.015	ns	ns	ns	ns	ns	ns	- 11.024	0.004	- 9.250	0.010
'C6'	23.740	0.014	ns	ns	ns	ns	ns	ns	- 9.191	0.040	- 10.384	0.035
'T4'	28.294	0.024	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	37.007	0.006	ns	ns	ns	ns	- 10.292	0.046	- 13.985	0.028
'CP5'	15.373	0.029	ns	ns	ns	ns	ns	ns	- 14.481	0.005	- 18.722	0.008
'CP3'	17.251	0.011	ns	ns	ns	ns	ns	ns	- 16.471	0.005	- 23.379	0.002
'CP1'	12.205	0.018	ns	ns	ns	ns	ns	ns	- 13.605	0.005	- 19.751	0.002
'CP2'	10.435	0.023	ns	ns	ns	ns	ns	ns	- 12.231	0.001	- 12.215	0.001
'CP4'	17.184	0.006	ns	ns	ns	ns	ns	ns	- 12.655	0.001	- 10.954	0.001
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 9.105	0.042
'T5'	16.928	0.038	42.573	0.003	ns	ns	ns	ns	- 13.849	0.009	- 12.914	0.011
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	- 13.010	0.010	- 14.599	0.008
'P3'	13.377	0.037	26.616	0.034	ns	ns	ns	ns	- 14.300	0.005	- 17.914	0.004

'P1'	13.592	0.013	ns	ns	ns	ns	ns	ns	- 12.642	0.013	- 16.107	0.006
'P2'	11.768	0.029	ns	ns	ns	ns	ns	ns	- 11.730	0.003	- 13.370	0.002
'P4'	12.432	0.030	ns	ns	ns	ns	ns	ns	- 10.973	0.006	- 11.517	0.009
'P6'	16.376	0.002	ns	ns	ns	ns	ns	ns	- 12.783	0.003	- 12.337	0.002
'T6'	46.888	0.003	65.660	0.046	ns	ns	ns	ns	- 12.542	0.006	- 12.157	0.006
'FPZ'	9.169	0.042	ns	ns	ns	ns	ns	ns	- 15.536	0.011	- 14.634	0.004
'PO7'	ns	ns	27.107	0.014	ns	ns	ns	ns	- 10.771	0.021	- 12.314	0.013
'PO3'	ns	ns	19.591	0.035	ns	ns	ns	ns	- 9.003	0.016	- 11.311	0.006
'O1'	ns	ns	26.927	0.010	ns	ns	ns	ns	- 7.701	0.015	- 10.024	0.006
'O2'	ns	ns	28.409	0.003	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 10.594	0.025
'PO8'	ns	ns	30.131	0.019	ns	ns	ns	ns	ns	ns	- 7.951	0.041
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 6.166	0.040	- 8.621	0.016
'AFZ'	8.117	0.030	ns	ns	ns	ns	ns	ns	- 16.694	0.004	- 18.548	0.000
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 11.260	0.005	- 11.753	0.002
'FCZ'	ns	ns	18.707	0.026	ns	ns	ns	ns	ns	ns	- 7.835	0.032
'CZ'	ns	ns	30.122	0.037	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	15.110	0.041	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	4.860	0.022	ns	ns	ns	ns	ns	ns	- 24.256	0.011	- 30.711	0.003
'POZ'	ns	ns	20.121	0.010	ns	ns	ns	ns	- 9.940	0.011	- 13.494	0.004

Supplementary Table S7. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the male clinician related to the dimension of Difficulty in Attunement. ns: not significant.

Engagement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	- 19.755	0.037	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	- 20.995	0.046	ns	ns	ns	ns	ns	ns	ns	ns

'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	15.757	0.029
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	- 41.941	0.043	ns	ns	ns	ns	11.848	0.040	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	- 27.515	0.036	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	- 31.629	0.020	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	- 45.662	0.042	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	- 16.998	0.046	ns	ns	ns	ns	10.574	0.036	ns	ns	11.591	0.045
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	- 34.075	0.020	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	15.269	0.040
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	14.445	0.039
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	16.254	0.029	15.883	0.050

'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	- 26.100	0.003	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	- 13.351	0.049	ns	ns	ns	ns	ns	ns	13.201	0.042	ns	ns

Supplementary Table S8. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the male clinician related to the dimension of Engagement. ns: not significant.

Disconfirmation												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	- 38.363	0.048	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 22.337	0.034
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 22.397	0.043
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	159.856	0.002	ns	ns	ns	ns	ns	ns	- 26.980	0.048	- 32.802	0.016
'FT8'	109.974	0.002	ns	ns	ns	ns	ns	ns	- 27.557	0.014	- 26.479	0.018
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	82.401	0.023	ns	ns	ns	ns	ns	ns	- 28.136	0.046	- 32.654	0.029
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	88.427	0.033	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S9. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the male clinician related to the dimension of Disconfirmation. ns: not significant.

Impotence												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	- 38.735	0.045	ns	ns	ns	ns	ns	ns	ns	ns	25.737	0.029
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	- 31.560	0.015	ns	ns	ns	ns	ns	ns	38.561	0.020	32.867	0.023
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	- 35.193	0.037	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	- 31.020	0.046	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	24.667	0.045	27.456	0.031
'F6'	- 81.644	0.007	ns	ns	ns	ns	ns	ns	24.426	0.049	34.115	0.023
'F8'	- 70.251	0.026	ns	ns	ns	ns	43.333	0.007	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	- 110.209	0.012	ns	ns	ns	ns	43.603	0.001	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	- 33.645	0.035	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	- 40.493	0.044	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	32.307	0.030	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S10. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of rPSD for the male clinician related to the dimension of Impotence. ns: not significant.

Tension												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	3.505	0.011	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	3.042	0.029	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	- 22.164	0.008	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	2.667	0.038	ns	ns
'TP7'	ns	ns	ns	ns	- 18.268	0.045	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	6.758	0.040	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	3.872	0.018	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S11. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the female clinician related to the dimension of Tension. ns: not significant.

Difficulty in Attunement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	2.647	0.038	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S12. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the female clinician related to the dimension of Difficulty in Attunement. ns: not significant.

Engagement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	2.654	0.027	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	2.238	0.017	ns	ns

'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	2.096	0.028	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	2.014	0.023	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	- 8.305	0.045	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	3.905	0.028	2.128	0.047	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	3.038	0.035	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	2.144	0.021	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	2.564	0.008	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	2.158	0.049	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	2.571	0.022	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	2.259	0.021	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	2.356	0.015	ns	ns

'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	2.160	0.028	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	2.108	0.023	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	- 6.821	0.031	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	1.940	0.038	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S13. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the female clinician related to the dimension of Engagement. ns: not significant.

Disconfirmation												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	13.840	0.029	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	10.184	0.039	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	12.723	0.026	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	11.129	0.046	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	18.369	0.014	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	10.527	0.042	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	12.372	0.033	ns	ns	ns	ns

'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	- 31.458	0.024	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	- 28.680	0.022	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S14. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the female clinician related to the dimension of Disconfirmation. ns: not significant.

Impotence												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.497	0.023
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.704	0.034
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.079	0.018
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.441	0.025
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.570	0.029
'AF8'	- 30.392	0.035	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.733	0.008
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.201	0.011
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.844	0.017
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.452	0.014
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	- 26.794	0.021	ns	ns	ns	ns	ns	ns	ns	ns	4.317	0.046
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.639	0.045
'F8'	ns	ns	ns	ns	- 20.435	0.033	ns	ns	ns	ns	4.758	0.036
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.686	0.047
'FC5'	ns	ns	- 14.102	0.048	ns	ns	ns	ns	ns	ns	4.914	0.029
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.521	0.044
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.493	0.019
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.929	0.040
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.413	0.017
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.861	0.026
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.516	0.037
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.186	0.026

'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.747	0.046
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.771	0.036
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.429	0.036
'TP7'	ns	ns	- 16.827	0.031	ns	ns	ns	ns	ns	ns	5.301	0.022
'CP5'	- 36.269	0.012	ns	ns	ns	ns	ns	ns	ns	ns	6.298	0.011
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.652	0.016
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	6.726	0.004
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	6.072	0.014
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	6.075	0.008
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	- 30.753	0.028	ns	ns	ns	ns	ns	ns	ns	ns	4.871	0.029
'P5'	ns	ns	- 14.525	0.031	ns	ns	ns	ns	ns	ns	5.152	0.022
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.817	0.036
'P1'	- 33.698	0.021	ns	ns	ns	ns	ns	ns	ns	ns	6.082	0.012
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.078	0.026
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.737	0.026
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.457	0.032
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.322	0.044
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.817	0.033
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.502	0.015
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.307	0.015
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	3.920	0.045
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.771	0.012
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.471	0.020
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.323	0.015
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	5.331	0.018

Supplementary Table S15. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the female clinician related to the dimension of Impotence. ns: not significant.

Tension												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.005	0.004	3.842	0.019
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.128	0.034	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	- 3.611	0.045	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.229	0.007	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.842	0.010	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	- 3.670	0.038	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.983	0.023	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.587	0.009	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.113	0.033	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	- 6.565	0.000	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.191	0.009	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.120	0.047	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.166	0.007	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.983	0.017	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.690	0.002	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.174	0.009	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.771	0.000	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.088	0.014	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	- 6.155	0.006	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.354	0.036	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.082	0.016	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	- 6.342	0.000	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.568	0.012	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	- 3.937	0.035	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.991	0.013	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.560	0.007	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	- 5.124	0.021	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.264	0.042	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.081	0.024	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.712	0.022	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.318	0.032	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.111	0.018	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	- 3.948	0.030	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.142	0.048	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.152	0.038	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 3.488	0.049	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	- 4.639	0.023	ns	ns
'PZ'	- 17.139	0.046	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S16. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the male clinician related to the dimension of Tension. ns: not significant.

Difficulty in Attunement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	6.536	0.020	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	6.692	0.044	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 0.987	0.046
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	5.212	0.032	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	5.593	0.044	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	7.524	0.005	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	7.053	0.009	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	5.075	0.025	ns	ns	ns	ns	ns	ns	ns	ns	- 1.051	0.048
'T4'	4.843	0.024	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	3.776	0.038	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	- 1.090	0.036
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	5.673	0.021	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S17. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the male clinician related to the dimension of Difficulty in Attunement. ns: not significant.

Engagement												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	- 3.032	0.045	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S18. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the male clinician related to the dimension of Engagement. ns: not significant.

Disconfirmation												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	15.138	0.019	ns	ns	ns	ns	ns	ns	- 3.227	0.019
'AF3'	ns	ns	15.309	0.022	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	17.444	0.024	7.387	0.002	ns	ns	- 3.797	0.046
'FP2'	ns	ns	18.575	0.003	ns	ns	6.625	0.012	ns	ns	ns	ns
'AF4'	ns	ns	15.093	0.032	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	17.496	0.003	ns	ns	7.684	0.014	ns	ns	ns	ns
'F7'	ns	ns	27.164	0.000	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	23.146	0.002	ns	ns	6.544	0.031	ns	ns	ns	ns
'F3'	ns	ns	14.392	0.013	ns	ns	5.513	0.043	ns	ns	ns	ns
'F1'	ns	ns	14.279	0.016	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	19.853	0.001	ns	ns	6.582	0.014	ns	ns	ns	ns
'F4'	ns	ns	18.842	0.007	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	17.904	0.006	ns	ns	6.579	0.038	ns	ns	ns	ns
'F8'	ns	ns	17.827	0.014	ns	ns	9.015	0.004	ns	ns	ns	ns
'FT7'	ns	ns	24.981	0.000	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	18.917	0.020	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'FC1'	ns	ns	ns	ns	ns	ns	5.713	0.025	ns	ns	ns	ns
'FC2'	ns	ns	23.009	0.000	ns	ns	6.395	0.021	ns	ns	ns	ns
'FC4'	ns	ns	20.832	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	18.722	0.010	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	20.537	0.014	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	22.512	0.001	ns	ns	5.919	0.024	ns	ns	ns	ns
'C5'	ns	ns	25.773	0.001	ns	ns	ns	ns	ns	ns	ns	ns
'C3'	ns	ns	17.334	0.008	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	15.386	0.030	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	23.368	0.002	ns	ns	7.703	0.007	2.674	0.044	- 3.673	0.026
'C4'	ns	ns	21.420	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	22.478	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	25.455	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	21.087	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	16.448	0.044	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	20.896	0.006	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	20.201	0.015	ns	ns	5.559	0.034	ns	ns	ns	ns
'CP4'	ns	ns	14.624	0.016	ns	ns	5.727	0.028	ns	ns	ns	ns
'CP6'	ns	ns	19.209	0.002	ns	ns	5.658	0.021	ns	ns	ns	ns
'TP8'	ns	ns	17.630	0.005	ns	ns	7.126	0.008	ns	ns	ns	ns
'T5'	ns	ns	17.923	0.010	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	15.769	0.017	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	20.046	0.006	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	18.791	0.009	ns	ns	6.120	0.020	ns	ns	ns	ns
'P4'	14.789	0.047	16.641	0.006	ns	ns	9.499	0.003	ns	ns	ns	ns
'P6'	ns	ns	16.948	0.002	ns	ns	8.228	0.009	ns	ns	ns	ns
'T6'	ns	ns	16.946	0.008	23.053	0.003	8.673	0.003	ns	ns	ns	ns
'FPZ'	ns	ns	20.237	0.001	ns	ns	6.027	0.011	ns	ns	ns	ns
'PO7'	ns	ns	17.600	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	14.814	0.021	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	13.919	0.023	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	23.310	0.001	ns	ns	6.155	0.040	ns	ns	ns	ns
'PO4'	ns	ns	21.597	0.004	ns	ns	5.975	0.020	ns	ns	ns	ns
'PO8'	ns	ns	22.633	0.000	15.098	0.021	8.461	0.008	ns	ns	- 3.521	0.043
'OZ'	ns	ns	19.684	0.007	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	17.326	0.005	ns	ns	ns	ns	ns	ns	ns	ns

'FZ'	ns	ns	20.054	0.003	ns	ns	5.243	0.041	ns	ns	ns	ns
'FCZ'	ns	ns	18.264	0.002	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	20.242	0.004	ns	ns	5.896	0.030	ns	ns	ns	ns
'CPZ'	ns	ns	17.730	0.025	ns	ns	6.317	0.028	- 2.723	0.026	ns	ns
'PZ'	ns	ns	17.725	0.003	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	15.976	0.009	ns	ns	5.892	0.016	ns	ns	ns	ns

Supplementary Table S19. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the male clinician related to the dimension of Disconfirmation. ns: not significant.

Impotence												
Bands	**delta**		**theta**		**alpha**		**beta**		**gamma low**		**gamma high**	
Electrodes	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
'AF7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AF8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'F8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FC6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FT8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

'C3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'C6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CP6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'TP8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P5'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'P6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'T6'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO7'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO3'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O1'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'O2'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO4'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PO8'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'OZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'AFZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'FCZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'CPZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'PZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
'POZ'	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S20. Beta values and p values of statistically significant ($p < 0.05$) results of General Linear Model of iCOH connectivity for the male clinician related to the dimension of Impotence. ns: not significant.

Bands	delta		theta		alpha		beta		gamma low		gamma high	
Clinician	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***	***β estimate***	***pval***
Tension												
V01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
V02	ns	ns	ns	ns	ns	ns	ns	ns	- 4.089	0.011	ns	ns
Difficulty in Attunement												
V01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
V02	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Engagement												
V01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
V02	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Disconfirmation												
V01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
V02	ns	ns	17.949	0.001	ns	ns	4.951	0.036	ns	ns	ns	ns
Impotence												
V01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	4.832	0.024
V02	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

Supplementary Table S21. Beta estimates and p values of statistically significant ($p < 0.05$) results of General Linear Model of global efficiency for each clinician and ACSE dimension. V01: Valutatore 1 (first evaluator - female clinician); V02: Valutatore 2 (second evaluator - male clinician); ns: not significant.