LINGUISTIC SYNCHRONY:
INDICATOR OR FACILITATOR OF THERAPEUTIC BOND

by

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Abstract

Interpersonal synchrony is an adaptive and pro-social process that has been associated with social bonding, cohesion, and cooperation. Existing research in a therapeutic context has primarily conceptualized linguistic synchrony as an indication of the therapeutic relationship. However, in non-therapeutic contexts, synchrony has been conceptualized as a process that facilities relationship formation and maintenance. The aim of the present study was to examine if an indication model or facilitation model provided a better explanation for the association between linguistic synchrony and the therapeutic bond. Online text-based crisis sessions ($N = 350$) with clients in suicidal crisis were coded for linguistic synchrony (i.e., similarity of function words) and therapeutic bond. To examine the indication and facilitation models, we used Random Intercept Cross-Lagged Panel Models (RI-CLPM; Hamaker et al., 2015) and compared the model fit of the competing models. The association between linguistic synchrony and therapeutic bond was better explained by the facilitation model (i.e., linguistic synchrony predicting the therapeutic bond) than the indication model (i.e., linguistic synchrony and therapeutic bond occurring simultaneously). However, a combined model that included (a) linguistic synchrony predicting therapeutic bond and (b) the cross-sectional association between therapeutic bond and linguistic synchrony was the best fit to our data. This study contributes theoretical understanding of the association between linguistic synchrony and therapeutic bond. Clinical implications for counsellor practice are discussed.

Lay Summary

Synchronous behaviour is an adaptive and pro-social process that has been linked to bonding and cooperation. Previous research has suggested that synchronous language may indicate relationship quality between a counsellor and a client. However, outside the therapeutic context synchrony has been broadly considered to be a process that facilitates positive relationships. The aim of this study was to examine whether synchronous language indicated the therapeutic bond or facilitated the therapeutic bond between clients and counsellors in online text-based crisis chats with adults experiencing suicidality. Our findings indicate that while synchronous language between a client and a counsellor facilitates a better therapeutic bond, synchronous language can also indicate the client-counsellor bond.

Preface

This thesis is original, unpublished work by the author, Tayler M. S. Colton , supervised by Dr.

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Introduction

Interpersonal synchrony is an adaptive and pro-social process. Conceptualized as a social glue, synchrony is an evolved mechanism that has been consistently associated with social bonding, cohesion, and cooperation (Chartrand & Bargh, 1999; Launay et al., 2016). Synchrony has been observed in the alignment of motor movement, physiology, and neurological functioning between interaction partners. Infant-mother pairs synchronize cardiac activity (Feldman et al., 2011), dyads imitate facial expressions and foot shaking (Chartrand & Bargh, 1999), conversational partners adopt one another's accent (Delvaux & Soquet, 2007), and guitar duets coordinate brain activity (Sänger et al., 2012). The tendency to synchronize is also detected in natural spoken conversation and the written word through a mirroring of grammar and prosody (Ireland & Pennebaker, 2010; Manson et al; 2013). Researchers have identified that the way people use language, rather than language content, provides insight into adaptive social processes that relate to relationship quality. Given the clinical importance of establishing a strong relationship—particularly when working with suicidal clients (e.g., Jobes & Ballard, 2001)— linguistic synchrony in counselling has garnered increased scholarly attention (e.g., Aafjes-van Doorn et al., 2020; Lord et al., 2015). However, the role that synchronous language plays in therapy remains unclear.

Existing research in the therapeutic context has primarily conceptualized linguistic synchrony as an indication of the therapeutic relationship. However, in non-therapeutic contexts, synchrony has been conceptualized as a process that facilities relationship development and maintenance. Therefore, the aim of our study was to examine if an indication or facilitation model best described the association between linguistic synchrony and therapeutic relationship for those in suicidal crisis. The importance of establishing the therapeutic relationship rapidly in

a crisis context is critical due to the urgent nature of crisis distress and singular opportunity for intervention. Further, to isolate the linguistic component from other auditory and visual cues, we studied the association between synchronous language and the therapeutic bond by examining real-time text-based crisis-counselling sessions for adults in suicidal crisis.

Interpersonal Synchrony

Interpersonal synchrony is when two or more people engaging in a social interaction demonstrate behaviours that spontaneously align in form and time (McNaughton & Redcay, 2020). The phenomenon of interpersonal synchrony emerges early in infant-caregiver pairs through mirrored expression and responses which are fundamental to later social and emotional learning (Feldman, 2007; Markova et al., 2019). In adulthood, intimate partners can attune to one another through synchronized behaviours to adaptively co-regulate emotions (Helm et al., 2014). Interpersonal synchrony has been associated with various affiliative social processes during face-to-face, telephone, and text-based interactions (Ireland et al., 2011; Machin et al., 2020). These synchronous exchanges, even when unnoticed, allow interaction partners to reciprocally adjust their behaviours to each other in various ways that signal connectedness and safety (Chartrand & Bargh, 1999; Markova et al., 2019).

One way to operationalize interpersonal synchrony is via coordinated language. *Language style matching* (Niederhoffer & Pennebaker, 2002) is the similarity and rate of function words (e.g., pronouns, prepositions, auxiliary verbs, negations) exchanged between people (Gonzales et al., 2009). Because function words are processed quickly, largely outside of conscious awareness, and only hold meaning for a precise time and space (Pennebaker et al., 2003; Segalowitz & Lane, 2004), they require people to have shared knowledge and joint understanding of words' meaning. (Meyer & Bock, 1999). For example, the function words (underlined) in the sentence (she dropped it on the floor) are only clear with previous

understanding of the woman and the object that was dropped. Therefore, language style matching is more likely to occur when people are attuned to one another's emotional and situational experience (Pennebaker, 2011).

The relational atmosphere in the therapeutic context can be grounded in client-counsellor complementarity or similarity (Norcross & Wampold, 2018). The link between the therapeutic relationship (i.e., strong collaborative relationship between a client and counsellor) and counselling outcomes has been well established whereby a strong alliance is consistently associated with reduced psychological distress across clinical diagnoses, client populations, and treatments (Horvath, 2000). Client-counsellor synchrony has been suggested to be critical to the therapeutic relationship whereby therapists' active mirroring of vocal pitch, facial expression, body posture, and even physiology can signal understanding (Bar-Kalifa et al., 2019; Koole & Tschacher, 2016). In therapeutic contexts requiring accelerated clinical decision making (e.g., working with suicidal clients), client-counsellor synchrony has been associated with successful crisis intervention (Bryan et al., 2018). These findings highlight the importance of the therapeutic relationship and the experience of synchrony. However, while research on synchronous behaviour and the therapeutic relationship has been conducted, theoretical understanding of the association between linguistic synchrony and the therapeutic bond remains unclear.

Linguistic Synchrony as an Indicator of the Therapeutic Relationship

The argument has been made that linguistic synchrony, operationalized as language style matching, may offer an unobtrusive, objective, and implicit indication of the therapeutic relationship (Borelli et al., 2019; Lord et al., 2015). The primary conceptual explanation has been that synchrony *is* the therapeutic relationship – synchrony indicates the mutual experience of shared emotions and understanding (Koole & Tschacher, 2016). Evidence for synchrony as an

indication of the therapeutic relationship includes findings that high-empathy rated therapy sessions had more synchronous language than low-empathy rated sessions (Lord et al., 2015). Another pilot study reported that greater early phase linguistic synchrony correlated with improved client outcomes (e.g., decreases in post treatment distress; Borelli et al., 2019). These findings indicate conceptual similarities with notable aspects of the therapeutic relationship such as attachment bond and collaboration (Horvath & Luborsky, 1993). Yet pilot and exploratory research in a therapeutic context has found mixed, even contradictory, results that linguistic synchrony may be an indication of therapeutic relationship when directly comparing linguistic synchrony with established measures of therapeutic bond (Aafjes-van Doorn et al, 2020). Despite notable benefits for using linguistic synchrony as a measure of the therapeutic relationship (e.g., time efficient analysis, non-invasive ways to examine client-counsellor dynamics; Aafjes-van Doorn & Müller-Frommeyer, 2020), it remains unclear if linguistic synchrony is appropriately conceptualized as an indication of the therapeutic relationship.

Linguistic Synchrony as a Facilitator of the Therapeutic Relationship

An alternate conceptualization for the association between linguistic synchrony and the therapeutic relationship is that interpersonal synchrony *facilitates*—rather than indicates—the therapeutic relationship. This explanation is taken from the findings throughout diverse literatures that have consistently positioned interpersonal synchrony as a facet of relationship development which serves to facilitate greater bonding, affinity, cooperation, and cohesion (e.g., Chartrand & Bargh, 1999; Feldman, 2007). When conceptualizing synchrony as a facilitator, counsellors can strengthen the therapeutic relationship through synchronizing with their clients (Tschacher & Meier, 2020) and subsequent positive outcomes (Ramseyer & Tschacher, 2011). Synchrony as a facilitator of the therapeutic relationship is consistent with several longitudinal

and experimental studies suggesting synchrony fosters social bonding, which increases distress tolerance and reduces reactivity (Rasmussen et al., 2017), as well as promotes compassion (Valdesolo & DeSteno, 2011) and trust (Launay et al., 2012). Further, linguistic synchrony has been found to predict relationship stability (Ireland et al., 2011), increase perceptions of social support (Rains, 2016), and decrease emotional distress following supportive interactions (Cannava & Bodie, 2016). The interpersonally beneficial effects of linguistic synchrony have been observed in in-person and online contexts (Donahue & Liang, 2011). Collectively, these empirical findings provide evidence for the facilitative role that linguistic synchrony may play in promoting adaptive relationship development and attachment, which are crucial aspects of the therapeutic relationship.

Present Study

In therapeutic contexts, researchers have made the argument that linguistic synchrony captures implicit aspects of the therapeutic relationship whereby greater alignment of specific language (i.e., function words) indicates stronger therapeutic relationships between clients and counsellors. However, researchers in non-therapeutic contexts have suggested that synchrony leads to, or facilitates, relationship strength. The aim of the present study was to examine if an indication model or a facilitation model provides the better explanation for the association between linguistic synchrony and the therapeutic relationship. Drawing from the empirical and theoretical work in non-therapeutic contexts, we hypothesize that a model in which linguistic synchrony facilitates the therapeutic bond will be a better fitting model than a model in which linguistic synchrony is an indication of the therapeutic bond. This research seeks to contribute to theoretical aspects of the counselling process, clarify the role of coordinated language in a therapeutic setting, and elucidate the potential benefits of linguistic synchrony towards best practice for counsellor training.

Presently, we examined the association between linguistic synchrony and the therapeutic bond in a text-based online crisis-counselling context with clients in suicidal crisis. Text-based (i.e., chat) platforms have become an increasingly popular medium for crisis counselling because they afford increased anonymity, perceptions of control, and faster suicide disclosures for those in suicidal crisis (Predmore et al, 2017). This real-time text-based context is a distinctive space to observe linguistic synchrony independent of other naturally occurring visual or auditory synchronous behaviours or relational cues (e.g., tone, prosody, posture, mannerism, pre-existing rapport, group similarity). Further, because of the single-session nature of the crisis-counselling context and the emphasis placed on crisis-counsellors developing a therapeutic relationship (Mishara et al., 2007), we were able to examine variations in bond within a single session and without having the confound of previous encounters between the clients and the counsellors.

Method

Participants

Approval for this study was obtained from the affiliated research ethics board. A random

sample of online crisis-chat sessions and the corresponding transcripts (N = 350) was selected

from a large, urban, suicide-prevention and crisis-intervention center. To be included in this

study, participants (18 years and older) had to be first-time crisis-chat users, actively expressing

suicidality, and sessions had to exceed 30-minutes – in alignment with similar process-studies of

crisis-chats (e.g., Mokkenstorm et al., 2016). Clients provided their age and gender on a non-

compulsory questionnaire when logging into the crisis-chat portal. Within our sample, the mean

age was 29.4 years (SD = 9.2). Regarding gender, 28.9% of participants reported being men,

64% women, 1.4% transgender, and 5.7% did not report their gender.

Measures

Linguistic Synchrony

Transcripts were coded using the Linguistic Inquiry Word Count (LIWC; Pennebaker et

al., 2015) software, which codes each word in a text file on several linguistic and psychological

categories using pre-existing dictionaries. Prior to coding, all transcripts were cleaned following

the guidelines from the LIWC manual (e.g., correct misspellings; Pennebaker et al., 2015). The

LIWC was used to code word categories relevant to linguistic synchrony (i.e., function words)

within each session transcript: personal pronouns (e.g., *I, she, they*), impersonal pronouns (e.g.,

that, those, it), articles (e.g., *a, an, the*), auxiliary verbs (e.g., *is, will, can*), high frequency

adverbs (e.g., *too, very, quite*), conjunctions (e.g., *and, while, because*), prepositions (e.g., *in,

about, before*), quantifiers (e.g., *tons, some, few*), and negations (e.g., *never, no, not*).

Analysis was consistent with procedures for measuring Reciprocal Language Style

Matching (rLSM; Müller-Frommeyer et al., 2018) to assess client-counsellor similarity (i.e.,

synchrony) on their function word use throughout the session. Given the text-based nature of online sessions, there was an objective delineation of talk-turns. Following standard rLSM procedures, to compute linguistic synchrony for each adjacent talk-turn, we used the following two formulas (see below), depending on whether the client's talk-turn followed the counsellor's or if the counsellor's talk-turn followed the client's.

$$rLSM = 1 - \frac{|FW_{cousnsellor1} - FW_{client1}|}{|FW_{cousnsellor1} + FW_{client1} + .0001|}$$

$$rLSM = 1 - \frac{|FW_{client1} - FW_{counsellor2}|}{|FW_{client1} + FW_{counsellor2} + .0001|}$$

Where $FW_{counsellor1}$ is the percentage of function words in a single talk-turn by the counsellor and $FW_{client1}$ is the percentage of function words in the adjacent talk-turn by the client. This resulted in a linguistic synchrony score for each adjacent talk-turn ranging from 0 (*no synchrony*) to 1 (*complete synchrony*). The denominator contains the value of .0001 to avoid blank sets if certain function word categories resulted in a zero for both speakers (i.e., neither counsellor nor client used the categories). After percentages were generated for the nine function word categories for each adjacent counsellor and client talk-turn, a mean rLSM score was then calculated for each quartile of each session.

Therapeutic Bond

To measure the therapeutic bond over the course of each session, we used the therapeutic-bond scale of the observer-rated Segmented Working Alliance Inventor-Observer (SWAI-O; Berk et al, 2013). The measure was developed to capture the therapeutic relationship over time and within a session. We used a five-item version of the bond subscale, omitting the item, "The client is aware that the therapist is genuinely concerned for his or her welfare," as the research team

concluded that it could not be validly coded in the single-session text-based context after piloting the measure.

To code for therapeutic bond, we segmented each session into quarters (i.e., four equal quarters within each session) based on the time stamp data (e.g., hour/minute/second). Raters coded the five therapeutic bond items for each quarter of each session from 1 (*strong evidence against*) to 4 (*no evidence/equal evidence*) to 7 (*strong evidence for*).

Coders were two graduate students in counselling psychology and two crisis counsellors who were research assistants on the project. Coders were trained through procedural explanations of coding schemes, coding practice, individual feedback, and group discussions. After training, coders worked independently to code the sessions and met periodically to prevent rater drift and affirm consistency in conceptualization.

Statistical Methods

To examine whether linguistic synchrony is an indication of the therapeutic bond (indication model) or synchrony facilitates the therapeutic bond (facilitation model), we used the Random Intercept Cross-Lagged Panel Model (RI-CLPM; Hamaker et al., 2015) in Mplus (version 8.7). We used the RI-CLPM rather than the traditional Cross-Lagged Panel Model, because it disaggregates within-person (i.e., over time and within the session) and between-person variance. By separating between-person variance from within-person variance, the within-person (e.g., cross-lagged) associations are solely reflective of change within each client-counsellor dyad. We depicted the cross-sectional associations between bond and synchrony (Figure 1 and Figure 2) as single-headed arrows (regression parameters) rather than double-headed arrows (co-variance parameters) because this depiction is conceptually consistent with synchrony being an indication of bond.

Maximum likelihood was used to estimate the models, and because data were observational, there were no missing data. To assess model fit we used the Chi-square (χ^2) difference test, the Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square (SRMR). Measures and analytic syntax are available from the second author.

Results

Preliminary Analysis

We conducted a series of univariate models to examine the structure of our two primary variables—(a) therapeutic bond and (b) linguistic synchrony—over time. An unconditional model of bond indicated that 53.9% of the variance in bond was between-session variance and 46.1% was within-session (i.e., over time) variance. An unconditional model of linguistic synchrony indicated that 25.0% of the variance in synchrony was between-session variance and 75.0% was within-session variance. Next, we examined the most appropriate structure for modeling within- and between-session bond and synchrony. In univariate models of bond and synchrony, the best fitting random-intercept autocorrelation models were ones in which the within-person autocorrelations and variances were unconstrained to be equal and the within-person grand-means were constrained to the equal; thus, these univariate models were used in the cross-lagged panel-models reported below. Both univariate models provided acceptable fit to the data. The univariate therapeutic-bond model was a good fit to the data $\chi^2(4) = 26.304$, $p < .0001$, RMSEA = .126 (90% CI .083, .174), CFI = .962, TLI = .943, SRMR = .088. The univariate linguistic-synchrony model was also a good fit to the data, $\chi^2(4) = 4.936$, $p = .2939$, RMSEA = .026 (90% CI .000, .088), CFI = .993, TLI = .990, SRMR = .054.

Facilitation v. Indication Model

First, we examined the fit of the facilitation model (see Figure 1), where cross-lagged effects between therapeutic bond and linguistic synchrony (i.e., synchrony$_{t-1}$ → bond$_t$) were estimated, but the cross-sectional associations between therapeutic bond and linguistic synchrony (i.e., bond$_t$ → synchrony$_t$) were constrained to zero. The facilitation model provided an acceptable fit to the data, $\chi^2(22) = 44.285$, $p = .0033$, RMSEA = .054 (90% CI .030, .077), CFI = .970, TLI = .962, SRMR = .085.

Next, we examined the fit of the indication model (see Figure 1), where the cross-sectional associations between bond and synchrony (i.e., bond$_t$ → synchrony$_t$) were estimated

but the cross-lagged effects between therapeutic bond and linguistic synchrony (i.e., $bond_{t-1} \rightarrow$ $synchrony_t$) were constrained to zero. The indication model also provided an acceptable fit to the data, $\chi^2(21) = 48.713$, $p = .0005$, RMSEA = .061 (90% CI .039, .084), CFI = .963, TLI = .950, SRMR = .079.

To test our primary hypothesis that the facilitation model is a better explanation of the association between the therapeutic bond and linguistic synchrony, we compared the facilitation and indication models (see Figure 1). This comparison supported our hypothesis – the indication model was a significantly worse fit to the data than the facilitation model $\chi^2(1) = 4.428$, $p = .035$. In sum, while both the facilitation and indication models provided acceptable fit to the data, the facilitation model was a better fit to the data than the indication model.

Combined Facilitation & Indication Model

Next, we examined a model in which we simultaneously estimated the cross-sectional and the cross-lagged associations between bond and synchrony. This model was a good fit to the data, $\chi^2(20) = 36.047$, $p = .0152$, RMSEA = .048 (90% CI .021, .073), CFI = .978, TLI = .970, SRMR = .074. When we compared this combined model with the facilitation model, the facilitation model was a significantly worse fit to the data than the combined indication and facilitation model $\chi^2(2) = 8.238$, $p = .016$.

In sum, our findings support our hypothesis that the association between the therapeutic bond and linguistic synchrony is better explained by the facilitation model than the indication model. However, a model that includes (a) linguistic synchrony predicting therapeutic bond *and* (b) the cross-sectional associations between therapeutic bond and linguistic synchrony was the best fitting model.

Discussion

The purpose of the study was to empirically examine if linguistic synchrony was a facilitator or an indicator of the therapeutic bond. While existing work in therapeutic contexts has often conceptualized linguistic synchrony as an indication of the therapeutic relationship (e.g., Aafjes-van Doorn et al., 2020); based on synchrony research in non-therapeutic contexts (Ireland et al., 2011), we hypothesized that linguistic synchrony facilitates the therapeutic bond. When we compared the indication and facilitation model, our hypothesis was supported – the facilitation model was a better fit to our data than the indication model. Our finding, that linguistic synchrony between clients and counsellors facilitates greater therapeutic bond, is consistent with previous work in clinical (e.g., Ramseyer & Tschacher, 2011) and non-clinical (Ireland & Pennebaker, 2010; Cannava & Brodie, 2017) contexts. However, we found that a combined model that included synchrony as both a facilitator and indicator of the therapeutic bond was the best fit.

Conceptualizing Linguistic Synchrony

When we interpret our findings based on research and theory of synchrony from other contexts, we can posit that dyads naturally synchronize their language to positively affiliate. In a counselling context, the perception of being understood moves the relationship forward, allowing enhanced trust and disclosure (i.e., the therapeutic bond). Factors that buffer suicidality (e.g., perception of support, attunement with counsellors) directly relate to a sense of connection that facilitates safety and disclosure (Joiner et al, 2007). Thus, in a crisis counselling context, when counsellors are successfully connecting with their clients—regardless of individual differences in language style—spontaneous alignment develops toward similar ways of communicating that

foster shared understanding and emotional resonance, which may be particularly impactful when working with suicidal clients.

Based on our findings, it may be appropriate to conceptualize linguistic synchrony as a manifestation of clinician responsiveness. Counsellors are therapeutically responsive when they modify aspects of their communication to appropriately respond to their clients, which facilitates clients' therapeutic change. Like responsiveness, linguistic synchrony is an emergent rather than prescriptive process, as spontaneous matching of observed mental states allows for cognitive experiential access to that state (Chartrand and Bargh, 1999; Koehne et al., 2015). As counsellors attune to their clients, the pair dynamically adjusts according to feedback garnered from the interaction (Stiles et al., 1998). As seen in our findings, the adaptations made in text-based responses may be interpreted as appropriate responsiveness, providing suicidal clients with the perception of enhanced connection which facilitates greater therapeutic bond.

Another possible conceptualization of linguistic synchrony is that it is an expression of effective emotion co-regulation, whereby clients' and counsellors' emotional states co-vary, with the therapeutic aim of helping clients move back to their pre-crisis baseline (see Butler & Randall, 2013). Prior studies observing parent-child relationships and intimate partnerships have demonstrated synchronous adaptations occur as a process of emotional co-regulation (Feldman, 2007; Helm et al., 2014). It would be reasonable to assume that in the therapeutic context, similar regulatory capacities are enacted between clients and counsellors. Participants in our sample were experiencing suicidal crisis, and presumably emotion dysregulation at the time of the session; thus, linguistic synchrony may be an expression of attunement towards a more regulated emotional state. In other words, linguistic synchrony may result from emotional convergence. This is a slightly different conceptualization of synchrony than therapeutic responsiveness

because responsiveness is more of a conscious process that therapists enact in response to their client's needs and states. Comparatively, emotion co-regulation is less conscious as it is the enmeshment of emotional states to moderate clients' emotional intensity and help them attain their manageable or pre-crisis state.

Combined Facilitation & Indication Model

Interestingly, the best overall fit for our data was a combined facilitation and indication model whereby linguistic synchrony facilitates the therapeutic bond *and* when a client and counsellor have a strong therapeutic bond, they are more likely to be linguistically synchronous. This unexpected finding led us to expand our interpretation of how linguistic synchrony functions throughout the therapy process.

Synchronization is a complex occurrence and may best be considered as an interpersonal process with component parts that successively and cumulatively influence relationship formation, development, and maintenance. This combined model may be interpreted as a facilitative process by which linguistic synchrony initially catalyzes the therapeutic bond then may be indicative of the bond as it reflects the dyad's connection. Our findings may be similar to other key interpersonal processes associated with positive relationship development and maintenance such as intimacy, whereby being intimate facilitates a strong relationship and that intimacy can indicate a strong relationship. Based on our results, synchronous language may serve multiple roles best captured by the combined model of linguistic synchrony facilitating and indicating the therapeutic bond throughout single session text-based crisis session.

Limitations

Our results should be considered within the framework of the study's limitations. In our study, we compared linguistic synchrony and the therapeutic bond by examining each quarter of

each session. Future research that examines these variables moment-to-moment (i.e., at each adjacent talk-turn) would capture greater nuance, which could offer further insight into key relational processes that contribute to the therapeutic relationship. Also, given the robust association between a strong therapeutic bond and positive outcomes, future studies may wish to include outcome measures to expand understanding of how linguistic synchrony is positively associated with client improvement over time. Additionally, because previous work has indicated that client diagnosis may impact linguistic synchrony (Aafjes-van Doorn et al., 2020), and given that our study solely consisted of participants in suicidal crisis, it would be useful to explore linguistic synchrony and the association with the therapeutic bond in counselling non-suicidal clients. Further, given that suicide prevention includes multiple mediums of crisis support, it would be valuable to extend research on linguistic synchrony and the therapeutic relationship into other modes of service, such as phone and in-person services.

Tables and Figures

Table 1

Correlations and Descriptive Statistics for Therapeutic Bond and Linguistic Synchrony

Variable	Time 1 Bond	Time 2 Bond	Time 3 Bond	Time 4 Bond	Time 1 Synchrony	Time 2 Synchrony	Time 3 Synchrony	Time 4 Synchrony
Time 1 Bond	—							
Time 2 Bond	0.51***	—						
Time 3 Bond	0.46***	0.68***	—					
Time 4 Bond	0.48***	0.62***	0.67***	—				
Time 1 Synchrony	0.11*	0.19***	0.12*	0.15**	—			
Time 2 Synchrony	0.11*	0.24***	0.15**	0.19***	0.30***	—		
Time 3 Synchrony	0.08	0.17***	0.19***	0.18***	0.30***	0.29***	—	
Time 4 Synchrony	-0.01	0.10	0.08	0.06	0.22***	0.33***	0.27***	—
M	4.92	4.89	4.78	4.66	0.82	0.85	0.83	0.78
SD	0.54	0.69	0.81	0.98	0.11	0.11	0.13	0.14

Note. Bond = therapeutic bond; Synchrony = linguistic synchrony, Time = quartile.

p < .05. **p* < .01. ***p* < .001.

Figure 1

Parameters estimated in the of Facilitation and Indication Models
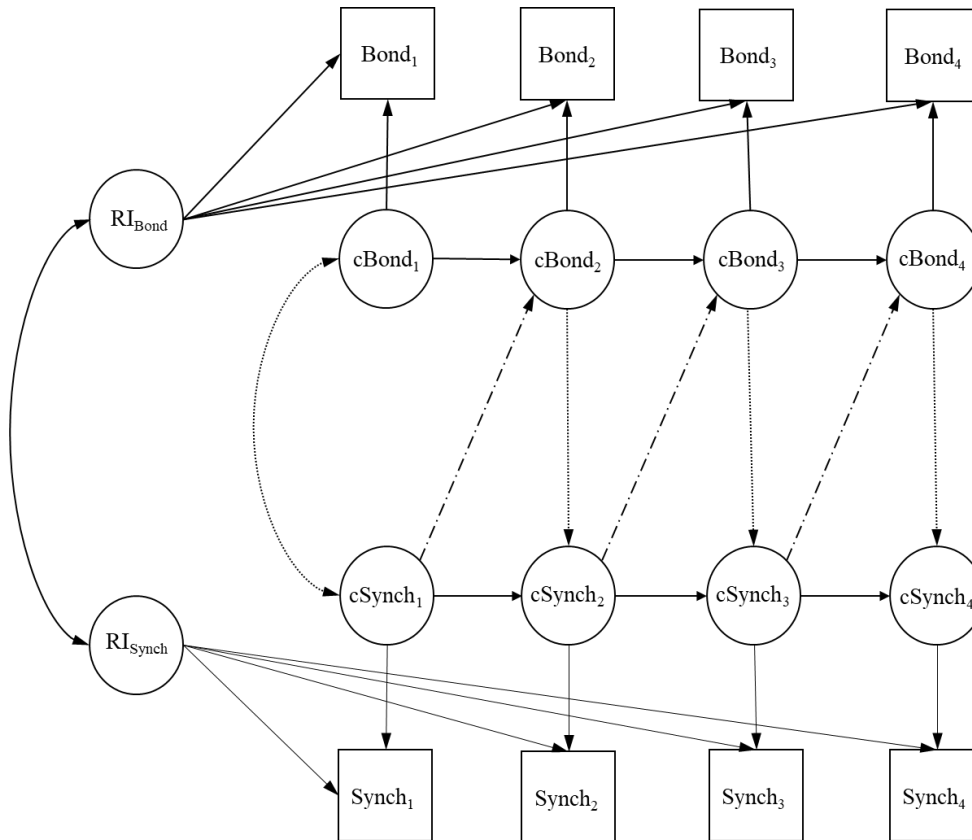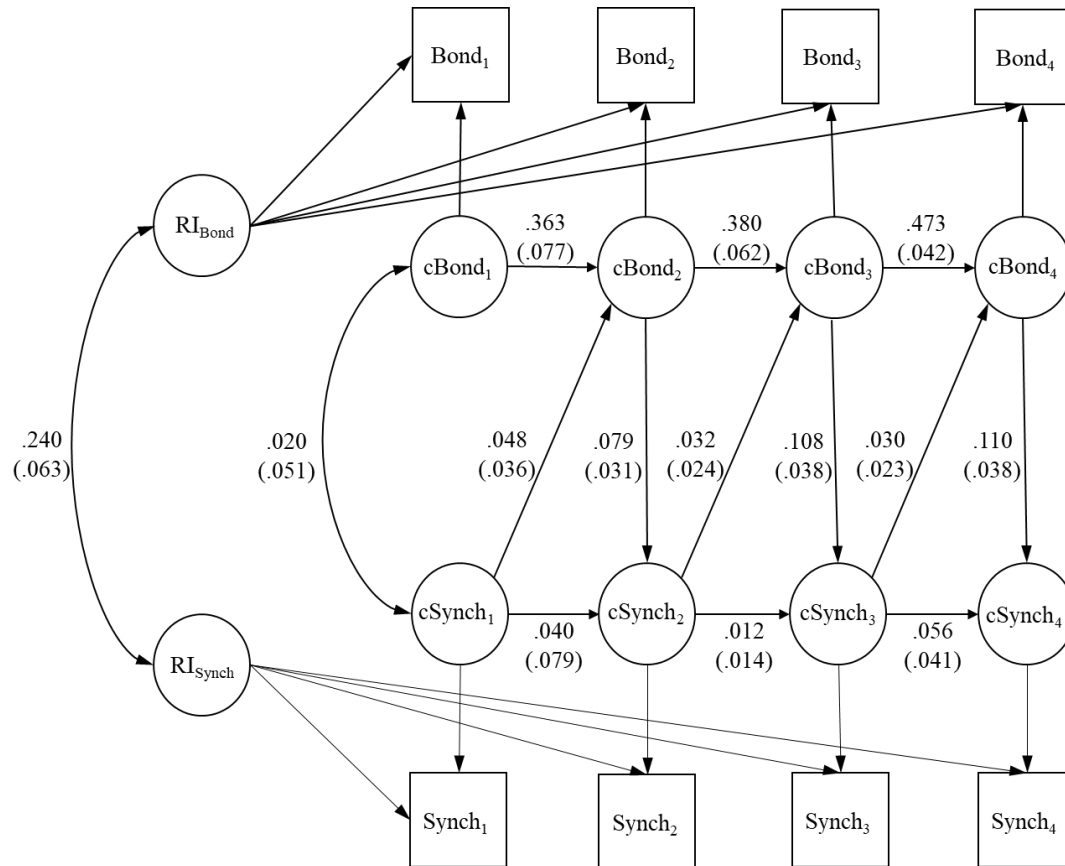

Note. Bond = therapeutic bond; Synch = linguistic synchrony; c = centred; RI = random intercept; subscript numbers represent chat quartiles.
— · — · — · Paths estimated in the facilitation model; ···················paths estimated in the indication model; —————paths estimated in both models.

Figure 2

Combined Facilitation and Indication Model of Therapeutic Bond and Linguistic Synchrony

Note. Values are standardized parameter estimates and parenthetical values are standard error estimates. Bond = therapeutic bond; Synch = linguistic synchrony; c = centred; RI = random intercept; subscript numbers represent chat quartiles.

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