ORIGINAL ARTICLE

Congruence couple therapy for alcohol use and gambling disorders with comorbidities (part I): Outcomes from a randomized controlled trial

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Abstract

A nonblinded randomized trial was conducted at two Canadian provincial outpatient addiction clinics that tested the effectiveness of a systemic congruence couple therapy (CCT) versus individual-based treatment-as-usual (TAU) on nine clinical outcomes: (1) primary outcomes—alcohol use and gambling, psychiatric symptoms, and couple adjustment; (2) secondary outcomes—emotion regulation, substance use, depression, post-traumatic stress symptoms, and life stress. Data of primary clients and partners ($N = 46$) were analyzed longitudinally across baseline, posttreatment (5 months), and follow-up (8 months). Alcohol use disorder (95%) and gambling disorder (5%) were in the severe range at baseline, and co-addiction was 27%. Psychiatric comorbidity was 100%, and 18% of couples were jointly addicted. *Between-group* comparison favored CCT in primary outcomes with medium-to-large effect sizes (Cohen's $h = 0.74$–1.44). Secondary outcomes were also significantly stronger for CCT (Cohen's $h = 0.27$–1.53). *Within-group*, for all primary outcomes, a significant proportion of symptomatic CCT clients and partners improved, converging with ANOVA results of large effect sizes (0.14–0.29). All secondary outcomes improved significantly in CCT with large effect

sizes (0.14–0.50). TAU showed significant within-group improvement in alcohol use, other substance use, and life stress with large effect sizes (0.16–0.40). Primary clients and partners made largely equivalent improvement within CCT and within TAU. Results were triangulated with clients' satisfaction ratings and counselors' reports. Overall, significant within-group effects were detected for CCT both clinically and statistically and between-group difference favored CCT. Future trials are required to validate these promising findings.

INTRODUCTION

Developing treatment for disorders of alcohol use disorder (AUD) and gambling disorder (GD) with their mental health comorbidities is an ongoing challenge that requires empirical studies (Denomme & Benhanoh, 2017; Karapareddy, 2019; Yakovenko & Hodgins, 2018). In addition to the common co-occurrence in AUD and GD with a wide range of comorbid psychiatric disorders and substance use (Castillo-Carniglia et al., 2019; Hartmann & Blaszczynski, 2018), both problematic drinking and gambling are associated with close relationship difficulties (Fairbairn et al., 2018; McComb et al., 2009) and intimate partner violence (Cafferky et al., 2018; Dowling et al., 2016). Although advances have been made regarding the use of couple intervention for the treatment of AUD and substance use (Hogue et al., 2022), couple models have been understudied and underutilized for GD and its comorbidities (Yakovenko & Hodgins, 2016, 2018), owing to a long tradition of individual-focused framing of addiction research, service organization, and the training of addiction professionals.

A recent meta-analysis demonstrated that integrating significant others into substance use disorder (SUD) treatment yielded advantageous effects in reducing substance use and related problems compared with individually based treatments (Ariss & Fairbairn, 2020). These findings pose important questions for addiction conceptualization and interventions involving significant others and their processes in addictive disorders. The present randomized controlled trial (RCT) tested the effectiveness of a humanistic, integrative, systemic couple model for the treatment for AUD, GD, and their mental health comorbidities in reducing primary symptoms of alcohol use and gambling, psychiatric symptoms/functioning, and improving couple adjustment. Secondary symptoms of depression, post-traumatic stress, other substance use, emotion dysregulation, and life stress were also examined.

Addiction and couple therapy

To date, the most well-researched couple therapy models in alcohol and substance treatment are alcohol-focused behavioral couple therapy (ABCT) (McCrady et al., 2016) and behavioral couples therapy (BCT) (O'Farrell & Clements, 2012). Both assume "reciprocal causality" between alcohol/substance use and relationship dysfunction (Klostermann et al., 2011;

McCrady et al., 2016). Based on cognitive-behavioral principles, these approaches view alcohol and substance use as cued by environmental stimuli, including partner behaviors and responses (McCrady & Flanagan, 2021). Key components of ABCT and BCT comprise of (1) targeting the individual's drinking/drug use; (2) enhancing the significant other's skills to support change; and (3) using behavioral couple therapy to strengthen couple communication skills and problem-solving around alcohol-focused topics (Klostermann et al., 2011; McCrady et al., 2016). Both models were found to be "probably efficacious" as stand-alone treatments for drinking outcomes (Hogue et al., 2022, p. 178). Real-world effectiveness studies for these models are currently limited (McCrady et al., 2016; Schumm & Renno, 2022). A recent meta-analysis drew more cautious conclusions in relation to BCT outcomes for substance use and relationship adjustment in comparison with alternative treatment methods, including individual-based treatments and brief couples' therapy (Schmit et al., 2022). For problem gambling, one couple-based RCT reported using an Internet-based form of BCT that involved gamblers and their significant others seen separately that did not yield any significant differences in efficacy compared with individual cognitive-behavioral therapy for the gamblers only (Nilsson et al., 2020).

Congruence couple therapy

Congruence couple therapy (CCT) is a manualized humanistic, systemic couple therapy conceptualized and developed by Lee (2009). It provides conceptualization, integration, and extension of the growth "vehicles" of Satir et al. (1991), eminent family therapy pioneer whose work has not previously been theorized and structured into a clinical model for specific disorders amenable to research (Brubacher, 2006; Nichols & Schwartz, 2012; Wretman, 2015). Through an iterative process between theory (Lee, 2002a) and application (Lee, 2002b, 2002c, 2015), the four-dimensional structure of CCT was developed to promote congruence as the core concept of therapeutic change (Lee, 2009, 2015). The four dimensions consist of intrapsychic, interpersonal, intergenerational, and universal-spiritual processes. CCT is distinguished by its four-dimensional integrative framework, in particular, the intergenerational and universal-spiritual dimensions that have not been found in stand-alone addiction treatment models.

A theoretical distinction has been made between couple therapy based primarily on systemic principles versus behavioral principles (Lebow, 2020; Petra & Kourgiantakis, 2020; von Sydow et al., 2010). Behavioral models conceptualize the partner as a treatment collaborator to promote and reward abstinence of the index client by improving couple communication. Primary attention is given to the addicted client and secondarily to the partner as an aid to the other's recovery.

In CCT, gambling and alcohol use are not viewed as the primary problem in treatment but as the outcome of an underlying system dysfunction. CCT shifts framing gambling and use of alcohol as an individual problem to that of a disturbance or symptom from distressed relational interactions that repeat patterns of childhood family dysfunction, emotional dysregulation, and thwarted universal human needs for connection, safety, and worth. There is now robust evidence that supports the high prevalence of a history of adverse childhood experience (ACE) among those with alcohol, substance use, and gambling disorders (Felitti et al., 1998; Hughes et al., 2017; Sharma & Sacco, 2015). In CCT, past and present are seen as systemically connected in a reciprocal loop. The consequences of ACE are most exposed in intimate relationships making it a prime site of intervention. Hence, positive changes in present couple process can loosen the grip of the dysfunctional patterns of the past. When stress becomes overwhelming, alcohol use, gambling, and mental problems develop as symptoms of distress.

Congruence is operationalized as the four A's: attention, awareness, acknowledgment, and alignment that are fostered in and among the dimensions (Lee, 2009). In CCT, a couple

learn to pay conscious attention to and gain awareness of themselves and each other with acknowledgment of what is present. The therapist facilitates awareness and acknowledgment of the couple's four dimensions at strategic moments in the therapeutic process to help the couple increase alignment among their four dimensions. Congruence is fostered by weaving interventions in the four dimensions of the couple's experience progressively in the course of therapy rather than working on one element or one dimension at a time.

The three phases of CCT

As a principle-based model, CCT provides a manual and a clear structure (Lee, 2016) as a roadmap for interventions, with sufficient flexibility to allow for the therapist's clinical acumen and creativity. A short-term therapy, CCT typically consists of 12 sessions in three phases:

The beginning phase (sessions 1–3) involves building a balanced alliance with the couple, goal-setting, and mapping the timeline of addiction onset that often co-occurs with life transitions and major life stressors. The convergence of stress points and addiction onset is brought to the couple's awareness. The therapist inquires into the couple's relationship history, their communication postures, and their family of origin history to identify any adverse childhood experience with suggested linkages to current difficulties. During this phase, the therapist reframes problems and complaints into hopes and wishes, awakens hope by tapping into the couple's deep "yearnings" (Satir et al., 1991, p. 151) for "connection, safety and worth" (Lee, 2018, p. 11) to build a strength-based alliance, and shared goals for the couple and therapist. Work on linkages of the four dimensions is deepened incrementally in the middle phase.

The middle phase (sessions 4–9) helps the couple realign their communication toward congruence, as the therapist delineates the processes and tension points of their communication using a communication typology, raises the couple awareness and acknowledgment of the intrapsychic and intergenerational influences in how they regard and talk to each other, and coaches them to better acknowledge self and other with congruent communication to solve the problems they encounter. The couple also learn to acknowledge the intrinsic positive qualities in themselves and in each other. In sum, the interventions aim to affirm the couple as active agents of their healing drawing energy from their inherent self-worth corresponding to the universal-spiritual dimension.

The consolidation phase (sessions 10–12) involves the couple in articulating and acknowledging their process of change and validating each person's agency in producing the changes they have achieved. Addiction is framed as a product of their four-dimensional distress. Through preparing couples for relapse and setbacks as learning opportunities, a new narrative of addiction is developed from a story of moral failure and defectiveness to one of resilience that gives cohesion to their past, present, and future. This narrative brings out their dignity, compassion for themselves and their family of origin, and hope for self and other.

While conceptually the model may sound complex, in practice, therapists find CCT to be simple, holistic, and intuitive (Lee et al., 2016; Lee & Northey, 2020) as it follows the flow of the clients' natural processes. Case illustrations of how the four dimensions are interwoven in CCT's therapeutic interventions can be found in two earlier studies (Lee, 2009, 2015) and in its manual (Lee, 2016). An earlier CCT cohort study (Lee & Rovers, 2008) and a pilot randomized trial (Lee & Awosoga, 2015) yielded positive outcomes in addictive symptoms, mental health, and couple adjustment. Participant satisfaction was high across earlier studies with client-reported change narratives corresponding to the four dimensions of change in CCT. Feedback from counselors trained in delivering the model was equally favorable (Lee et al., 2008). Following is a brief case example employing the principles and dimensions of CCT.

A case illustration of principles and dimensions of CCT

Rick and Rona drink together that puts them at risk of intimate partner violence and interferes with their jobs and parenting (negative consequences). The drinking usually starts when they get into an argument about problems with Rona's daughters (stress). Drinking helps the couple avoid an unpleasant topic that never reaches a resolution (stress) and is one thing they can do to spend time together (avoidance and pseudo-connection). As a stepfather, Rick criticizes Rona for not setting boundaries with her children, while Rona defends her girls and justifies her alliance with them as "all I have got" (interpersonal; incongruent communication).

The CCT therapist nonjudgmentally and empathically legitimizes Rick's struggle to find his place in this new family and validates his feelings of anxiety in his role as stepfather (intrapsychic). The therapist also brings forth Rick's positive intention for the girls and his desire to form a relationship with them (universal-spiritual). Rona increases her awareness of her own anxiety about letting Rick get close to her daughters (intrapsychic), which she came to realize is related to her ex who was abusive, and her abuse by her own father (intergenerational). Rona is encouraged to identify ways in which Rick is different from her father and her ex and look for indicators that he could be trusted (differentiating past from present). With acknowledgment from the therapist, Rick gains awareness and acknowledgment of himself and the hardships he experienced in growing up with the absence of a father and the pressure of working at a young age to provide for his siblings and mother (intergenerational). His longing to have an intact family of his own and to assume a role of giving paternal support is validated (universal-spiritual). Both partners are affirmed for their positive intentions to become better parents than what they had experienced themselves (universal-spiritual). Their grief and loss as children are acknowledged to promote mutual empathy (intergenerational and interpersonal). CCT raises the couple's awareness and acknowledgment of how their adverse childhood experience (intergenerational) influenced their current fears (intrapsychic), communication patterns and perceptions of each other (interpersonal), and their yearnings for safety, connection, and worth (universal-spiritual) in their present relationship.

Thus, past and present form a recursive loop (systemic) that can be interrupted by choices toward congruence in communication patterns (interpersonal) with attention, awareness, acknowledgment, and alignment of the four dimensions (systemic). Rather than framed as a pathology or character flaw, drinking is seen as a last resort when the couple could not find a way out of their predicament of helplessness and hopelessness (systemic). The internal and external stress load predisposes them to emotionally regulate through drinking leaning on its psychoactive effects (addiction as a symptom and way of coping) which unfortunately exacerbates their current problems (systemic recursion).

Congruence couple therapy helps the couple communicate with each other in congruent ways to solve their problems, and improve their communication with the children. They become aware of their triggers and patterns that stem from their adverse childhood experiences (ACE), leading to a change in the family system with greater connection, safety, and worth for all members involved (linkages, systemic changes in four dimensions; congruence). Internal and external stress is reduced and drinking ceases to be the only way the couple can be together without conflict (symptom reduction).

Research collaboration with health services

This randomized controlled trial was the first study ever conducted in the addiction and mental health services of a publicly funded health system in a Canadian province to compare a systemic couple therapy with an individual-oriented treatment-as-usual (TAU) for alcohol use and/or gambling clients and their partners. The implementation of this research within a

real-world environment was the result of an integrated knowledge translation (IKT) approach (Graham et al., 2018) involving knowledge users at an early stage to provide input into the research question and procedure, represented by clinicians, managers, decision-makers, and couples (Lee et al., 2020). The assembled group concluded that couple and family therapy is an acute treatment and research omission constituting a disservice. This gap in service and counselors' training was substantiated by a province-wide assessment report on addiction and mental health services (Wild et al., 2014). Encouraged by the promising results and feasibility indicated by an earlier pilot RCT of congruence couple therapy (Lee & Awosoga, 2015), the intersectoral network formed from the IKT meeting collaborated to secure funding for this RCT that was implemented in the health system between 2016 and 2018 for 22 months.

METHOD AND INSTRUMENTS

Study design

This nonblinded RCT compared effectiveness of an experimental treatment (CCT) with an existing program of individual-based treatment (TAU) for couples with at least one member who met criteria for AUD and/or GD. After initial screening, couples meeting study criteria were randomly assigned to one of two parallel treatments, CCT or TAU, at two outpatient addiction clinics. The participants completed online assessment surveys at baseline (O1), 5-month post-treatment (O2), and 8-month post-treatment follow-up (O3). Validated outcome measures were selected to correspond to the intended outcomes of CCT and its process. The trial design and the flow of the participants through the trial are presented in Figure 1.

Ethics approval

The study received approval from the Health Research Ethics Board—Health Panel, University of Alberta Pro00062248.

Sampling

Recruitment

Recruitment was conducted via posters, tele-info screens, and internal referrals by other addiction counselors at the two addiction outpatient clinics.

Screening procedures

Two hundred and forty-seven individuals inquired about the study by phone or email. Inquirers were either current clients in the system or new couple treatment seekers with concerns of AUD or GD. Among the inquirers, 181 individuals (73%) gave their verbal informed consent to complete a phone screening for alcohol use, gambling, psychotic symptoms, suicidality, and risk of intimate partner violence. Screening also included questions on basic demographics, self-reported relationship commitment, mental health diagnoses, and counseling received in the past 12 months. Screening instruments (see details under Instruments) were as follows: (1) DSM-5 alcohol use disorder (American Psychiatric Association [APA], 2013); (2) DSM-5
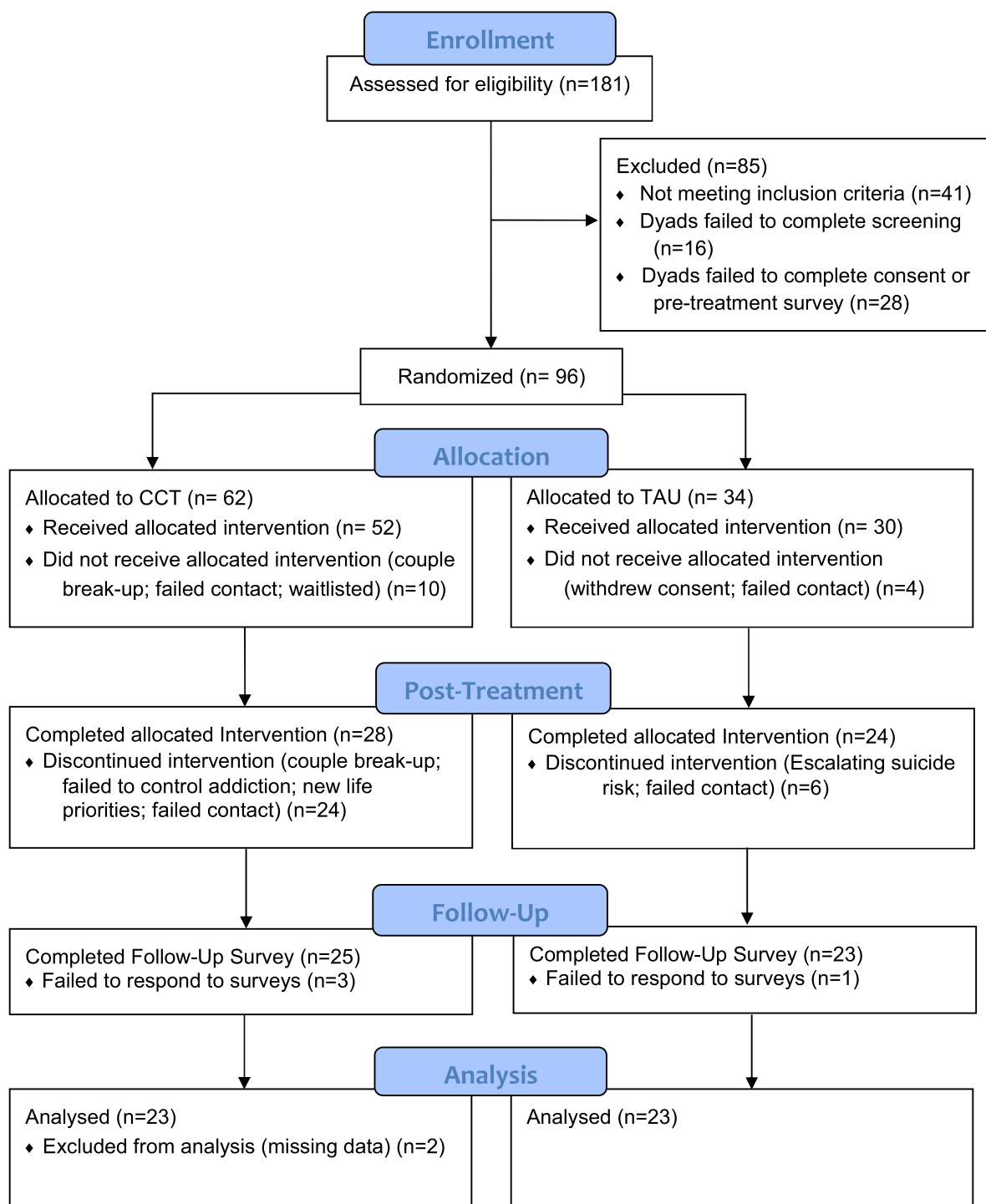
FIGURE 1 CONSORT flowchart for randomized controlled trial of congruence couple therapy versus treatment-as-usual

gambling disorder (APA, 2013); (3) the alcohol use disorder identification test (AUDIT; Babor et al., 2001a); (4) the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001); (5) a four-item intimate partner violence screening—Hurts, Insults, Threatens Harm, and Screams (HITS; Sherin et al., 1998); (6) an eight-item suicide risk screen on past-year suicidal thoughts, plans, attempts, and lifetime suicide attempts and (7) a 5-item psychosis screen. Of those screened, 48 couples (96 individuals) were deemed eligible for the study (Figure 1).

Eligibility

Inclusion criteria were as follows: (1) one or both partners in the couple met the DSM-5 (APA, 2013) criteria for AUD or GD in the past 12 months; (2) 18 years of age or older; and (3) both partners were committed to the couple relationship by self-definition. Exclusion criteria were: (1) serious suicidal ideation or a suicidal attempt in the past year; (2) psychotic symptoms in the past month; (3) recurring intimate partner violence; and (4) involvement with loan sharks incurring additional risks.

Randomization

One member of the couple was asked to select from one of two unmarked envelopes which contained within an indication of "TAU" or "CCT." Subsequently computer-generated block randomization was used to ensure more even allocation to the respective TAU and CCT groups.

Purpose of study and directional hypotheses

Our purpose was to determine the clinical effectiveness of CCT as a systemic conjoint treatment and its relative performance against individual-based TAU for couples with members seen separately from each other. Based on the positive results of earlier studies on CCT (Lee, 2002c; Lee & Rovers, 2008) and the pilot RCT (Lee & Awosoga, 2015), we proposed the following directional hypotheses:

Hypothesis 1   *TAU group will show within-group improvement in primary and secondary outcomes across the three time points.*
Hypothesis 2   *CCT group will show within-group improvement in primary and secondary outcomes across the three time points.*
Hypothesis 3   *CCT will show greater effectiveness relative to TAU for primary and secondary outcomes across the three time points.*

Experimental vs Control Group

Congruence Couple Therapy

Congruence couple therapy couples attended an average of 13 sessions. A total of 52% of participants who started CCT completed the treatment and 48% responded to the outcome surveys at all three time points. The couples assigned to CCT were advised not to access other treatment programs in addition to CCT between O1 and O2. At least one member of the couple met DSM-5 criteria for either AUD or GD in the study.

CCT counselors

Congruence couple therapy counselors received a 5-day in-person experiential training. CCT was delivered at two sites by five addiction counselors who had bachelor's and master's levels in social work, addiction counseling, and counseling psychology. Average experience in counseling was 17 years (range 3–35), with an average of 13 years (range: 3–25) in addiction. Two

counselors had prior training or experience with other models of couple therapy. During the trial, counselors attended weekly group phone conferences for case consultation and submitted ongoing case notes for reviews and comments to ensure adherence and fidelity to CCT principles, concepts, and interventions.

Adherence

Three research team members familiar with the CCT model independently rated the counselors' average adherence at a 7 out of a 10-point scale based on the counselors' weekly reports and case notes with 10 as the highest level of adherence, using criteria of target CCT interventions.

Treatment-as-usual counselors

Addiction counselors in the health system were trained in a variety of therapeutic models, including motivational interviewing, solution-focused therapy, cognitive-behavioral therapy, and relapse prevention to work with the addicted client and partner individually.

Treatment-as-usual

The average number of sessions attended by clients and partners was 8 between O1 and O2. TAU included one-on-one counseling sessions for primary client and partner separately, family support groups, and psychoeducation programs routinely offered at the clinic, but attendance was at the discretion of the addicted client and their partner. After treatment during the follow-up period, 35% of TAU participants continued with individual services for an approximate additional nine sessions. In some cases, TAU participants attended regular 12-step groups outside of the clinic throughout their TAU participation. The TAU condition reflects what participants would normally receive as usual. None of the TAU couples accessed couple therapy during their TAU participation.

Instruments

Binarization with cut-off scores

Validated instruments were used for screening and assessing key clinical outcomes. A cut-off score for each measure based on the normed scores or recommended cut-offs was used to binarize the scores into symptomatic versus nonsymptomatic categories for the nonparametric analysis.

Screening

DSM-5 alcohol use disorder
DSM-5 alcohol use disorder (APA, 2013) consists of 12 items to assess symptoms of alcohol use disorder in the last 12 months. Mild range of AUD is 2–3; moderate is 4 or 5, and a score 6 or above is rated as severe.

DSM-5 gambling disorder

DSM-5 gambling disorder (APA, 2013) consists of 10 items to assess symptoms of gambling disorder in the last 12 months. An item is scored in a binary fashion. The minimum qualifying score for gambling disorder is 4. A score of 4 or 5 is mild; 6 or 7 is moderate; and a score 8 or 9 is severe.

Hurts, insults, threatens harm, and screams (HITS; Sherin et al., 1998)

HITS is a 4-item instrument for screening intimate partner violence used for inclusion in the study. Measuring verbal and physical aggression, a total possible score is 4–20, with the cut-off score of 10 indicating intimate partner violence. HITS showed good internal consistency (Cronbach's $\alpha = 0.80$) and good construct validity in differentiating abuse victims from patients of family practice.

Alcohol use

Alcohol use disorders identification test (AUDIT; Babor et al., 2001b)

AUDIT is a screening instrument for hazardous and harmful alcohol consumption (Saunders et al., 1993). Ten items covered alcohol consumption, drinking behavior, and alcohol-related problems. Internal consistency is high, with a median reliability coefficient of 0.83, ranging from 0.75 to 0.97 (Reinert & Allen, 2007). A cut-off of 8 points or higher has been determined in earlier studies (Saunders et al., 1993) to have optimum sensitivity and specificity to identify persons with hazardous drinking.

Gambling

Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001)

PGSI assesses problem gambling behavior, its symptoms, and consequences using nine self-reported items. Scores are classified into non-PG (score = 0), low-risk gambler (score = 1–2), moderate-risk gambler (score = 3–7), and problem gambler (score = 8–27). Internal reliability of the scale is good with Cronbach's $\alpha = 0.84$ (Ferris & Wynne, 2001) to excellent with Cronbach's $\alpha = 0.90$ (Williams & Volberg, 2014). For this study, the nonsymptomatic score was 0, and scores from 1 to 27 were considered symptomatic.

Other substance use

The alcohol, smoking and substance involvement screening test (ASSIST; World Health Organization, 2002)

ASSIST uses 7-item questions to assess experiences with alcohol, tobacco, and other substances or drugs across the lifetime and in the past 3 months. Six items are used to assess past 3 months substance use experiences, with responses ranging from 0 to 7 resulting in a total score. Alcohol was excluded from our calculation as it was assessed by AUDIT. Low risk is 0–3, moderate risk is 4–26; and high risk is 27 or higher. For this study, we summed up the total scores for each substance to create an overall score into symptomatic (moderate and high risk) and nonsymptomatic (low risk) groups for substance use outside of alcohol.

Psychiatric symptom and functioning

Behavior and Symptom Identification Scale
Behavior and Symptom Identification Scale (McLean eBASIS-24, 2006) is a brief 24-item self-report clinical scale assessing six psychiatric functioning and symptom distress used primarily for assessing treatment outcomes. The domains measured are as follows: depression/functioning, interpersonal relationships, psychotic symptoms, alcohol/drug use, emotional lability, and self-harm. The scale demonstrates robustness in terms of internal consistency, good validity compared with the Brief Symptom Inventory (Derogatis, 1993), reliability ($\alpha = 0.75–0.91$), and responsiveness to change in a diverse clinical sample (Cameron et al., 2007). Overall mean score of 0–1 is indicative of no difficulty; a score higher than 1 is considered symptomatic.

Depression

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001)
PHQ-9 is a brief depression measure of nine items. Cut-points of 5, 10, 15, and 20 represent the thresholds for mild, moderate, moderately severe, and severe depression, respectively. A score of 10 or greater is recommended for major depression. The internal reliability of the PHQ-9 was reported as excellent, with a Cronbach α of 0.89 and 0.86 in two studies. For this study, a cut-off of ≥4 was used to dichotomize nonsymptomatic from symptomatic scores.

Post-traumatic stress

Post-traumatic stress disorder checklist for DSM-5 (PCL-5; Ashbaugh et al., 2016)
The PCL-5 consists of 20 items corresponding to the 20 criteria for PTSD in DSM-5, conceptualized as four symptom clusters, that is, re-experiencing, avoidance, negative alterations in cognition and mood, and increased arousal and reactivity. Responses are for the past month ranging from 0 to 80. English version of the scale showed excellent internal consistency ($\alpha = 0.95$), with strong convergent and divergent validity. A score of 31 in the English sample was deemed to have the greatest likelihood of correctly diagnosing PTSD according to the DSM-5 guidelines (Ashbaugh et al., 2016) to differentiate symptomatic versus nonsymptomatic scores.

Couple adjustment

Dyadic Adjustment Scale (DAS; Spanier, 1976)
This 32-item scale measures the quality of any committed couple relationship in four subscales: consensus, satisfaction, cohesion, and affectional expression. The total score ranges from 0 to 151 showing high reliability with a Cronbach's α of 0.96. Testing for criterion validity found a significant difference ($p < 0.001$) between married persons ($n = 218$) with mean total scores of 114.8 (SD = 17.8) and divorced persons ($n = 94$) with mean total scores of 70.7 (SD = 23.8). The total mean score combining married and divorced samples was 101.5 and was adopted as the cut-off for distressed versus nondistressed couples.

Emotion regulation

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)
DERS is a 36-item measure of emotional regulation difficulties comprising of six factors: non-acceptance of emotional response, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion dysregulation strategies, and lack of emotional clarity. DERS has good construct validity and high overall internal consistency ($\alpha = 0.93$) and within each subscale ($\alpha > 0.80$). Participants rate how often each item applies to them from 1 (Almost Never; 0%–10%) to 5 (Almost Always; 91%–100%) with higher scores indicating greater emotional regulation difficulties. "Almost never" (a score of 1) is optimal emotional functioning. A cut-off score of 2 and higher was considered symptomatic in our analysis.

Life stress

Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967)
The SRRS is a scale originally developed to investigate the relationship among life events, stress, and susceptibility to illness. It includes 43 life events, each scored from 0 to 100 units of life change (ULC; Holmes & Rahe, 1967). A score ranging between 0 and 149 ULC is associated with no significant stress problem, and 300 ULC or higher is considered a major stress that has an 80% chance of illness or health change (Holmes & Rahe, 1967). A cut-off score of ≤150 was used to differentiate nonsymptomatic versus symptomatic responses.

Adverse childhood experience

Jacobs neglect, abandonment, and abuse protocol (J-NAAP) (Jacobs, 2002)
J-NAAP assesses traumatic childhood adverse experience of loss/abandonment, serious neglect, physical abuse, emotional abuse, and sexual abuse. The test–retest reliability ($N = 93$) is 0.86 as reported by the Jacobs (Personal Communication with Jacobs, 2011).

Primary client and partner satisfaction

Client Satisfaction Questionnaire (CSQ) (Lee et al., 2006)
This short survey is composed of seven items to assess client and partner's satisfaction rating of CCT and TAU on a Likert scale (1 = highly dissatisfied and 7 = highly satisfied) in terms of "overall satisfaction," "meeting your needs," and "recommending to others." Four open-ended questions ask participants to list what was most helpful, how they benefited from CCT, key ideas, words, and concepts that came to mind regarding their experience of CCT, and any additional comments.

Counselor feedback

Case Termination Questionnaire (CTQ)
Case Termination Questionnaire (CTQ) (Lee et al., 2006) was filled out by counselors at case termination. It consists of number of sessions completed, number of sessions missed, client's crises during course of treatment, condition of termination (mutually agreed, nonmutual, completed, and premature), status of client at termination (goals achieved, partially achieved,

and not achieved), referrals, recommendation for further treatments (individual, couple, and group), and counselor's rating of clients' change.

Data collection

The assessments were administered online using Qualtrics (2016). A $25 gift card was sent to each participant who completed the outcome surveys at each time point.

Statistical analysis

The final sample for analysis ($N = 46$) in this study fell short of the projected sample calculated based on the pilot RCT of 280 participants (Lee & Awosoga, 2015) after running the current trial for 22 months. Intention-to-treat was not used to avoid an increase in heterogeneity if dropouts were to be included in the final analysis, making interpretation difficult (Gupta, 2011). We included both primary clients and partners in the analysis.

We used both nonparametric and parametric statistics for between and within-group comparisons and for estimations of statistical power to gauge clinical changes. Nonparametric and parametric results were triangulated. The post hoc statistical power of each result was computed. Raw scores were used for the analysis of symptom severity. In keeping with the use of directional hypotheses, one-tailed probabilities were used for determining statistical significance.

Many trials have used binary variables to assess treatment intervention effectiveness (Charles et al., 2009; Rombach et al., 2020). Using this method, we binarized continuous data into nonsymptomatic and symptomatic groups based on validated clinical cut-offs with reference to the instruments used. Binarization based on clinical cut-offs also serves as one indicator of clinical significance not routinely reported in RCTs in psychotherapy (Kazdin, 1999).

The equivalence of CCT and TAU groups in baseline measures was determined by Chi-square for categorical measures and t-tests for continuous measures. Changes in the proportion of participants reporting symptomatic outcomes across three time points within the CCT and TAU groups were assessed using the nonparametric Cochran's Q test. CCT and TAU between-group differences in the proportion of symptomatic participants across three time points were examined with the z-test with computed Cohen's h effect sizes. The repeated measures of analysis of variance (ANOVA) was used to determine changes in mean symptoms across three time points in CCT and TAU separately. The between-group differences in mean symptom changes and the statistical power of the results were determined using one-way ANOVA.

Data analyses were performed independently for reliability by two statisticians without their consultation with each other prior to analysis: one using the statistical package SPSS version 26.0 and the other an in-house code written in Clojure (clojure.org) respectively.

RESULTS

Demographics of participants and baseline characteristics

The experimental (CCT) and control (TAU) groups at baseline were equivalent in their demographic characteristics, scores on all measures (Table 1), and mean symptom severity levels (Table 2, all $p > 0.05$), indicating successful randomization.

The sample ($N = 46$) had a mean age of 45 years, 87% were Caucasian, 52% female sex at birth, 57% had postsecondary education, 35% were not working in the last 30 days, and

TABLE 1 Demographic and other characteristics of participants at baseline

Variable	Overall (*N* = 46) No. (%)	TAU (*n* = 23)	CCT (*n* = 23)	*p*-Value between groups
Age, mean (SD)	45.0 (9.7)	42.4 (8.0)	47.7 (10.6)	0.07
Sex at birth				
Female	24 (52.2)	12 (52.2)	12 (52.2)	1.00
Male	22 (47.8)	11 (47.8)	11 (47.8)	
Gender orientation				
Heterosexual	41 (89.1)	22 (95.7)	19 (82.6)	0.74
Gay/Lesbian	4 (8.7)	0 (0.0)	4 (17.4)	
Bisexual	1 (2.2)	1 (4.3)	0 (0.0)	
Race				
Caucasian	40 (87.0)	20 (87.0)	20 (87.0)	1.00
Other	6 (13.0)	3 (13.0)	3 (13.0)	
Education				
Secondary or less	20 (43.5)	8 (34.8)	12 (52.2)	0.23
Postsecondary	26 (56.5)	15 (65.2)	11 (47.8)	
Employment				
Working	30 (65.2)	13 (56.5)	17 (73.9)	0.22
Not working	16 (34.8)	10 (43.5)	6 (26.1)	
Household annual income				
≤$100,000	19 (41.3)	11 (47.8)	8 (34.8)	0.37
>$100,000	27 (58.7)	12 (52.2)	15 (65.2)	
Household income				
Not meeting living needs	10 (21.7)	17 (73.9)	19 (82.6)	0.48
Social support				
Partner	30 (65.2)	15 (65.2)	15 (65.2)	0.26
Other family	9 (19.6)	6 (26.1)	3 (13.0)	
Friends	3 (6.5)	1 (4.3)	2 (8.7)	
Community	1 (2.2)	1 (4.3)	0 (0.0)	
None	3 (6.5)	0 (0.0)	3 (13.0)	
Sleeping place last 30 days				
House/apartment	41 (89.1)	21 (91.3)	20 (87.0)	0.84
Group home	2 (4.3)	1 (4.3)	1 (4.3)	
Other	3 (6.5)	1 (4.3)	2 (8.7)	
Relationship status				
Married	31 (67.4)	15 (65.2)	16 (69.6)	0.48
Living with partner	9 (19.6)	5 (21.7)	4 (17.4)	
Living with others	2 (4.3)	0 (0.0)	2 (8.7)	
Boy/girlfriend	1 (2.2)	1 (4.3)	0 (0.0)	
Other	3 (6.5)	2 (8.7)	1 (4.3)	

TABLE 1   (Continued)

Variable	Overall (*N* = 46)	TAU (*n* = 23)	CCT (*n* = 23)	*p*-Value between groups
	No. (%)			
Religion				
Christians (Protestant and Catholic)	9 (19.6)	5 (21.7)	4 (17.4)	0.44
Other (Hindu, Jewish, and other)	14 (30.4)	5 (21.7)	9 (39.1)	
None	23 (50.0)	13 (56.5)	10 (43.5)	
Status of respondents				
Client	22 (47.8)	11 (47.8)	11 (47.8)	1.00
Partner	24 (52.2)	12 (52.2)	12 (52.2)	
AUD/GD (DSM screening)	26 (56.5)	13 (56.5)	13 (56.5)	1.00
Adverse childhood experiences	22 (47.8)	13 (56.5)	9 (39.1)	0.24

Note: Group equivalence in baseline characteristics with categorical responses were assessed with a Chi-square test. Group equivalence in age was assessed with a *t*-test.

Abbreviation: ACE, adverse childhood experience.

TABLE 2   Baseline mean symptom severity scores

	Total (*N* = 46)	TAU (*n* = 23)	CCT (*n* = 23)	Ind *t*-test
	Mean (SD)			*p*-Value
Primary outcomes				
Alcohol use (DSM-A)	8.1 (2.5)	8.4 (2.5)	7.8 (2.5)	0.59
Alcohol use (AUDIT)	20.6 (7.1)	20.6 (5.0)	20.7 (9.1)	0.99
Problem gambling (DSM-G)	7.4 (2.9)	6.5 (4.4)	8.2 (0.8)	0.50
Problem gambling (PGSI)	12.6 (8.5)	13.3 (10.9)	12.0 (7.4)	0.84
Psychiatric symptoms (BASIS)	0.9 (0.5)	1.0 (0.5)	0.9 (0.6)	0.52
Couple adjustment (DAS)	99.8 (16.70)	103.3 (15.7)	96.2 (17.2)	0.15
Secondary outcomes				
Other substance use (ASSIST)	29.3 (37.6)	21.9 (25.7)	37.0 (45.9)	0.17
Depression (PHQ-9)	5.9 (4.5)	5.9 (5.4)	6.0 (3.4)	0.92
PTSD (PCL-5)	18.6 (17.9)	14.7 (15.0)	22.5 (19.9)	0.14
Emotion dysregulation (DERS)	74.5 (23.6)	73.4 (25.7)	75.6 (21.9)	0.76
Life stress (SRRS)	291.4 (172.0)	261.7 (140.6)	321.0 (197.2)	0.25

Note: Only those who reported a score on alcohol and gambling were included in the calculation of the mean and severity rating of DSM-A and AUDIT (*n* = 25) and DSM-G and PGSI (*n* = 9). *T*-test was used to establish baseline group equivalency using the clinical mean scores.

59% exceeded $100,000 annual family income. Household income insufficient to meet living needs was reported by 22% and those with unstable housing was 11%. More partners (52%) were represented in the sample who completed follow-up surveys than primary addicted clients. The main source of social support was partner/spouse (65%), followed by other family members (20%). Most of the couples were married (67%) or living with a partner (20%). Mean duration of couple relationship was 14.5 years (SD = 10.9; range = 0.8–44).

Self-identified lesbian, gay, or bisexual couples was 11%; 50% declared no religion. The TAU (57%) and CCT (39%) groups reported equivalent history of one or more ACE types ($p = 0.24$).

Comorbidities

All primary clients met DSM-5 criteria: AUD (68%), GD (5%), or AUD & GD (27%). Clients and their partners also reported problematic use of tobacco (54%), cannabis (52%), sedatives (37%), cocaine (26%), amphetamines (24%), and opioids (20%).

Concurrent symptomatic alcohol use and symptomatic depression was 80%. Concurrent symptomatic alcohol use and psychiatric symptoms/functioning was 100%. Concurrent symptomatic gambling and symptomatic depression was 89%. Concurrent symptomatic gambling and psychiatric symptoms/functioning was 100%. Concurrent symptomatic alcohol use and PTSD was 40%. Concurrent symptomatic gambling and PTSD was 33%.

Symptom severity and group equivalency at baseline

Baseline mean symptom levels on all clinical measures were equivalent for the TAU and CCT at baseline (Table 2, all $p > 0.05$). The means and symptom severity for the total sample consisting of primary clients and partners ($N = 46$) are as follows: alcohol use (DSM-5, APA, 2013) was in the *severe range*, mean ($M = 8.1$, SD = 2.5), corroborating with symptomatic score on AUDIT ($M = 20.6$, SD = 7.1); problem gambling fell in the symptomatic range of DSM-5 gambling disorder ($M = 7.4$, SD = 2.9) corroborating with the moderate–severe range of PGSI score of 12.6 (SD = 8.5); mean score for other substances with ASSIST indicated high-risk range of use ($M = 29.3$, SD = 37.6). Mean depression symptoms (PHQ-9) was in the mild range ($M = 5.9$, SD = 4.5); mean psychiatric symptoms and functioning (BASIS-24) was symptomatic for clients and partners positive for addiction ($M = 1.1$, SD = 0.5) and nonsymptomatic for partners without addiction ($M = 0.7$; SD = 0.4); mean couple adjustment ($M = 99.8$, SD = 16.7) on DAS was in the distress range; mean DERS scores ($M = 74.5$, SD = 23.6) indicated emotion dysregulation; mean post-traumatic stress on PCL-5 ($M = 18.6$, SD = 17.9) represented non-symptomatic scores; mean major life stress on SRRS ($M = 291.4$, SD = 172.0) indicated close to major life stress with health consequences.

Primary clients and partners comparisons at baseline

Primary clients had significantly higher mean scores than their partners at baseline for alcohol use ($p < 0.05$), higher problem gambling symptoms ($p = 0.07$), problem with other substances ($p = 0.01$), depression symptoms ($p = 0.01$), mean psychiatric symptoms and functioning ($p = 0.01$), and emotion dysregulation ($p < 0.05$). Client and partner groups had equivalent levels of couple adjustment distress ($p = 0.46$), PTSD ($p = 0.12$), and life stress ($p = 0.19$). The primary clients (50.0%) and partners (46.0%) had an equivalent report of one or more ACE (Table 3).

Male and female comparisons at baseline

At baseline, more male than the female participants had alcohol use disorders (76%), problem with other substances (86%), gambling disorders (89%), depression (60%), emotion

TABLE 3   Primary clients and partners mean (SD) clinical scores at baseline

Clinical outcomes	TAU and CCT combined (*N* = 46)		
	Clients	Partners	*p*-Value
Primary outcomes			
Alcohol use	19.4 (8.2)	5.6 (8.3)	0.001**
Problem gambling	4.4 (8.1)	0.9 (3.0)	0.07
Psychiatric symptoms	1.2 (0.5)	0.7 (0.5)	0.004*
Couple adjustment	101.7 (12.8)	98.0 (19.7)	0.46
Secondary outcomes			
Other substances	46.0 (44.5)	14.0 (21.2)	0.01*
Depression	7.7 (4.7)	4.3 (3.6)	0.01*
PTSD	22.9 (19.4)	14.6 (15.7)	0.12
Emotion dysregulation	87.5 (22.8)	62.6 (17.7)	0.001**
Life stress	326.3 (169.6)	259.3 (171.4)	0.19

Note: Only those who reported a score on alcohol and gambling were included in the calculation of the mean and severity rating of AUDIT (*n* = 25) and PGSI (*n* = 9). *T*-test was used to establish group equivalency based on the mean scores.
*$p < 0.05$; **$p < 0.001$.

dysregulation (65%), and PTSD (58%) in both the experimental and the control groups. By contrast, slightly more women than men reported psychiatric symptoms and functioning (100% vs. 96%), couple adjustment distress (54%), and life stress (51%). Men (50%) and women (46%) reported one or more ACEs.

Within-group improvements

Binarized analysis

The proportions of symptomatic participants across three time points for the primary and secondary outcomes were determined by the Cochran *Q* test results for within-group changes, displayed in Table 4 (see also Figure 2a–i) for the CCT and TAU groups separately. Each result has adequate statistical power (>0.8).

Parametric analysis

Mean symptoms across three time points were determined by repeated measures ANOVA results of the within-group changes, displayed for the primary and secondary outcomes in Table 5. Note that for the couple adjustment, higher scores indicate better adjustment.

Hypothesis 1. TAU group will show within-group improvement in primary and secondary outcomes across the three time points

Binarized clinical outcomes

TAU did not demonstrate statistically significant proportions of improved primary outcomes. In secondary outcomes, TAU showed significant improvement in the symptoms

TABLE 4 Cochran's Q test of within-group changes in proportions of symptomatic participants at baseline, 5- and 8-month ($N = 46$)

	TAU ($n = 23$)					CCT ($n = 23$)				
	Proportions (%)			p-Value	Power[b]	Proportions (%)			p-Value	Power[b]
	O1	O2	O3	(effect size[a])		O1	O2	O3	(effect size[a])	
Primary outcomes										
Alcohol use	57	52	43	0.09 (0.08)	0.88	52	26	30	0.02* (0.15)	0.95
Problem gambling	17	13	17	0.30 (0.02)	0.99	22	17	4	0.02* (0.14)	0.95
Psychiatric symptoms	96	96	100	0.23 (0.02)	0.97	100	91	96	0.01* (0.07)	0.96
Couple adjustment	48	35	48	0.11 (0.07)	0.96	65	22	35	0.003* (0.26)	0.95
Secondary outcomes										
Other substance use	65	52	57	0.05* (0.10)	0.88	91	61	61	0.001** (0.27)	0.96
Depression	57	57	48	0.32 (0.02)	0.99	74	35	39	0.001** (0.29)	0.95
PTSD	22	13	13	0.26 (0.03)	0.95	30	17	4	0.03* (0.12)	0.95
Emotion dysregulation	39	43	39	0.44 (0.01)	0.97	48	26	30	0.02* (0.15)	0.95
Life stress	74	43	52	0.03* (0.13)	0.97	78	39	35	0.001** (0.28)	0.95

Note: All analyses are one-tailed. Partial eta squared effect size interpretation: Small effect size = 0.01. Medium effect size = 0.06. Large effect size = 0.14. Much larger than typical effect size = 0.21 (Morgan et al., 2019).

[a]Eta squared effect size.
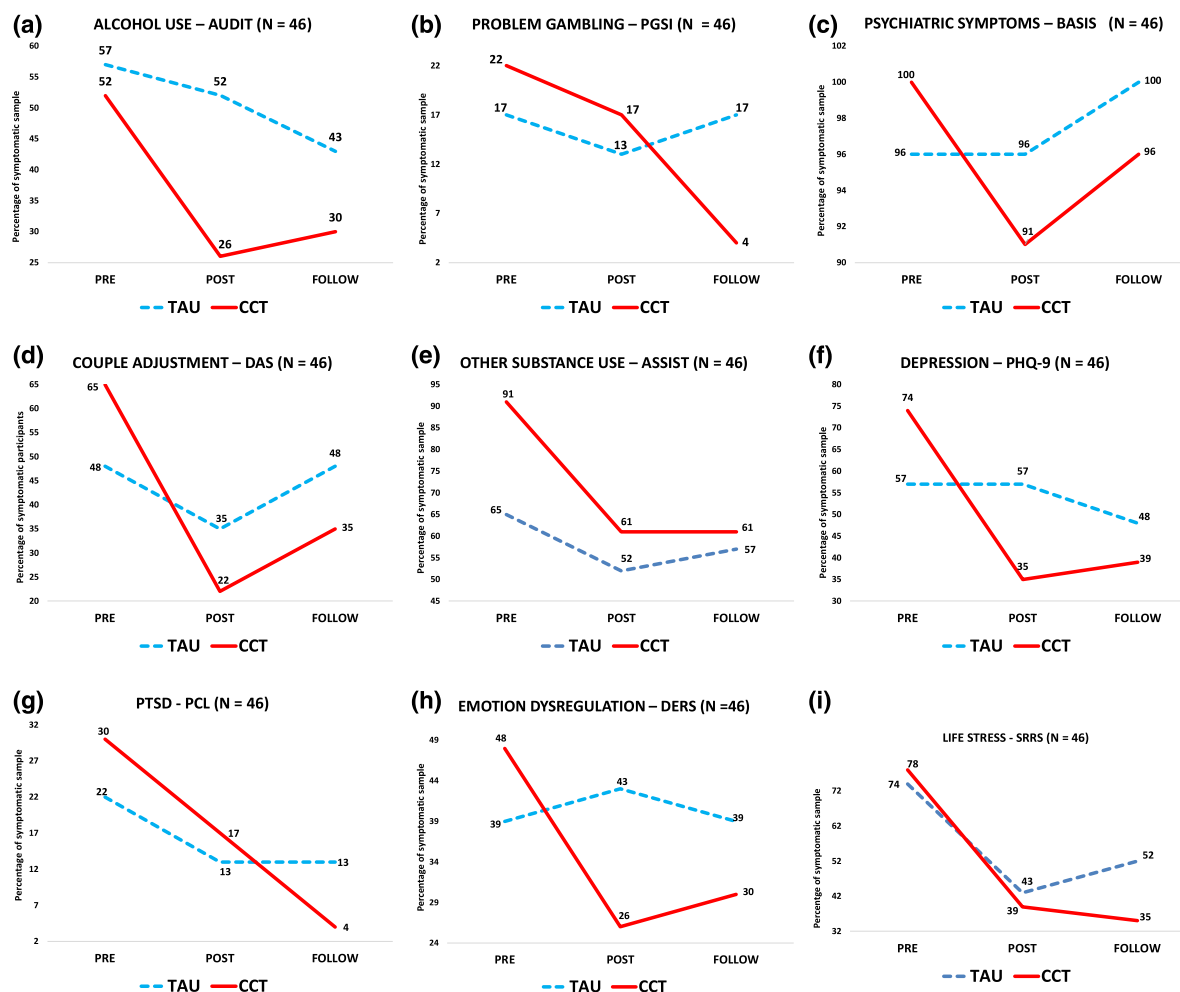
[b]Post hoc power.

*$p < 0.05$; **$p < 0.001$.

FIGURE 2   Changes in clinical outcomes from O1, O2 to O3. (a) Changes in alcohol use. (b) Changes in problem gambling. (c) Changes in psychiatric symptoms/functioning. (d) Changes in couple adjustment. (e) Changes in other substance use. (f) Changes in depression. (g) Changes in PTSD. (h) Changes in emotion dysregulation. (i) Changes in life stress

of life stress ($p = 0.03$) and substance use ($p = 0.05$) with large effect sizes (0.10 and 0.13, respectively).

Parametric results

TAU showed statistically significant decreased mean symptoms across time for the primary outcome of alcohol use ($p = 0.01$), and the secondary outcomes of other substance use ($p = 0.01$) and life stress ($p < 0.001$) with large effect sizes (0.16–0.40).

Hypothesis 2. CCT group will show within-group improvement in primary and secondary outcomes across the three time points

Binarized clinical outcomes

This hypothesis is supported for CCT, demonstrating significant within-group improvement in the proportion of symptomatic participants for all primary and all secondary outcomes with medium-to-large effect sizes (0.07–0.29).

TABLE 5 ANOVA within-group change in CCT and TAU in mean scores across baseline, 5- and 8-month ($N=46$)

| | O1 | | O2 | | O3 | | | Within-group changes | |
	TAU	CCT	TAU	CCT	TAU	CCT		TAU	CCT
	Mean (SD)								
Primary outcomes									
Alcohol use	12.6 (10.1)	11.9 (11.5)	10.3 (11.3)	6.0 (7.2)	7.8 (8.0)	5.5 (5.8)	F-score (df), p-Value	4.1 (2, 44), 0.01*	7.1 (1, 28), 0.01*
							Effect size[a]	0.16	0.24
							Power[b]	0.70	0.80
Problem gambling ($n=9$)	2.5 (6.5)	2.6 (6.0)	1.6 (5.1)	1.6 (5.8)	1.4 (4.7)	0.7 (3.5)	F-score (df), p-value	0.9 (1, 23), 0.18	3.6 (2, 44), 0.02*
							Effect size	0.04	0.14
							Power	0.15	0.60
Psychiatric symptoms	0.9 (0.6)	1.0 (0.5)	0.9 (0.6)	0.6 (0.4)	0.8 (0.6)	0.6 (0.4)	F-score (df), p-value	0.6 (2, 44), 0.29	9.1 (2, 44), 0.001**
							Effect size	0.03	0.29
							Power	0.14	0.97
Couple adjustment	103.3 (15.7)	96.5 (17.5)	105.6 (17.9)	112.1 (15.0)	101.8 (25.1)	107.2 (28.1)	F-score (df), p-value	1.0 (2, 44), 0.19	7.9 (2, 42), 0.001**
							Effect size	0.04	0.27
							Power	0.21	0.94
Secondary outcomes									
Other substances	21.3 (26.3)	37.0 (45.9)	12.1 (14.7)	19.8 (24.7)	11.9 (13.8)	17.7 (19.2)	F-score (df), p-value	4.8 (1, 29), 0.01*	3.6 (1, 27), 0.03*
							Effect size	0.19	0.14
							Power	0.64	0.49

TABLE 5 (Continued)

	O1		O2		O3			Within-group changes	
	TAU	CCT	TAU	CCT	TAU	CCT		TAU	CCT
	Mean (SD)								
Depression	5.9 (5.4)	6.0 (3.4)	5.4 (4.3)	3.7 (2.7)	5.1 (4.0)	4.5 (3.6)	F-score (df), p-value	0.5 (2, 33), 0.28	5.5 (2, 44), 0.004*
							Effect size	0.02	0.20
							Power	0.12	0.83
PTSD	14.7 (15.0)	22.5 (19.9)	12.1 (12.4)	11.4 (12.7)	12.3 (13.0)	8.3 (9.3)	F-score (df), p-value	0.5 (2, 44), 0.30	6.9 (2, 33), 0.003*
							Effect size	0.02	0.24
							Power	0.13	0.84
Emotion dysregulation	73.4 (25.7)	75.6 (21.9)	73.2 (23.9)	62.7 (18.1)	71.9 (25.9)	63.5 (22.9)	F-score (df), p-value	0.1 (2, 35), 0.45	7.7 (1, 32), 0.002*
							Effect size	0.003	0.26
							Power	0.06	0.86
Life stress	261.7 (140.6)	301.1 (176.6)	132.1 (96.8)	116.8 (91.9)	160.0 (112.0)	101.9 (97.2)	F-score (df), p-value	14.5 (2, 44), 0.001**	20.7 (1, 31), 0.001**
							Effect size	0.40	0.50
							Power	0.99	0.99

Note: Partial eta squared effect size interpretation: Small effect size = 0.01. Medium effect size = 0.06. Large effect size = 0.14. Much larger than typical effect size = 0.21 (Morgan et al. 2019). All ANOVA analyses are one-tailed.

[a]Partial eta squared.

[b]Observed power of results.

*p<0.05; **p<0.001.

Parametric results

The mean symptom improvement in primary and secondary outcomes was statistically significant for CCT with large effect sizes (0.14–0.50). GD and other substance use were underpowered.

Hypothesis 3. CCT will show greater effectiveness relative to TAU for primary and secondary outcomes across three time points

Between-group differences with binarized analysis

Congruence couple therapy showed significantly greater proportion of participants than TAU with improved primary symptoms of alcohol use ($p = 0.002$), gambling ($p = 0.04$), psychiatric symptoms ($p = 0.04$), and couple adjustment ($p < 0.001$) supported by medium-to-large effect sizes (0.7–1.4; see Table 6). For secondary outcomes, CCT again showed significantly greater proportion of participants with improved symptoms relative to TAU for depression ($p < 0.001$), PTSD ($p = 0.04$), emotion dysregulation ($p = 0.004$), and life stress ($p = 0.004$) with medium-to-large effect sizes (0.7–1.5). Both groups exhibited equivalent proportions of participants with other substance use ($p = 0.18$).

Parametric analysis

There is close agreement in the between-group results from the one-way ANOVA (Table 7) converging with the between-group z-test for both the primary and the secondary outcomes. CCT showed significantly greater improvement in mean symptoms on the primary outcomes of alcohol use ($p = 0.05$), couple adjustment ($p = 0.02$), and psychiatric symptoms ($p < 0.001$) than TAU with medium-to-large effect sizes (0.06–0.15). Note that problem gambling did not meet normality assumption. For secondary outcomes, CCT also demonstrated

TABLE 6 Z-test of TAU and CCT between group difference in the proportions of symptomatic participants across baseline, 5- and 8-month ($N = 46$)

	Effect size[a]	p-Value	Power[b]
Primary outcomes			
Alcohol use	0.93	0.002*	0.91
Problem gambling	0.74	0.04*	0.56
Psychiatric symptoms	0.74	0.04*	0.56
Couple adjustment	1.44	0.001**	0.99
Secondary outcomes			
Other substance use	0.27	0.18	0.23
Depression	1.53	0.001**	0.99
PTSD	0.74	0.04*	0.56
Emotion dysregulation	0.84	0.004*	0.87
Life stress	1.07	0.004*	0.86

Note: Cohen's $h = 0.20$: small effect size; Cohen's $h = 0.50$: medium effect size; Cohen's $h = 0.80$: large effect size. All analyses are one-tailed.

[a]Cohen's h.

[b]Post hoc power.

*$p < 0.05$; **$p < 0.001$.

TABLE 7 One-way ANOVA test of TAU and CCT between-group difference in mean symptom scores across baseline, 5- and 8-month ($N = 46$)

| | O1 | | O2 | | O3 | | TAU and CCT between-group differences | | |
| | TAU | CCT | TAU | CCT | TAU | CCT | F-score (df) | p-Value (Effect size[a]) | Power[b] |
	Mean (SD)								
Primary outcomes									
Alcohol use	12.6 (10.1)	11.9 (11.5)	10.3 (11.3)	6.0 (7.2)	7.8 (8.0)	5.5 (5.8)	2.7 (1, 44)	0.05* (0.06)	0.36
Problem gambling	2.5 (6.5)	2.6 (6.0)	1.6 (5.1)	1.6 (5.8)	1.4 (4.7)	0.7 (3.5)	0.1 (1, 44)	0.36 (0.003)	0.06
Psychiatric symptoms	0.9 (0.6)	1.0 (0.5)	0.9 (0.6)	0.6 (0.4)	0.8 (0.6)	0.6 (0.4)	8.0 (1, 44)	0.001** (0.15)	0.79
Couple adjustment	103.3 (15.7)	96.5 (17.5)	105.6 (17.9)	112.1 (15.0)	101.8 (25.1)	107.2 (28.1)	4.8 (1, 43)	0.02* (0.10)	0.57
Secondary outcomes									
Other substance use	21.3 (26.3)	37.0 (45.9)	12.1 (14.7)	19.8 (24.7)	11.9 (13.8)	17.7 (19.2)	0.04 (1, 43)	0.42 (0.001)	0.05
Depression	5.9 (5.4)	6.0 (3.4)	5.4 (4.3)	3.7 (2.7)	5.1 (4.0)	4.5 (3.6)	2.2 (1, 44)	0.07 (0.05)	0.30
PTSD	14.7 (15.0)	22.5 (19.9)	12.1 (12.4)	11.4 (12.7)	12.3 (13.0)	8.3 (9.3)	3.3 (1, 44)	0.04* (0.07)	0.43
Emotion dysregulation	73.4 (25.7)	75.6 (21.9)	73.2 (23.9)	62.7 (18.1)	71.9 (25.9)	63.5 (22.9)	4.7 (1, 44)	0.02* (0.10)	0.56
Life stress	261.7 (140.6)	301.1 (176.6)	132.1 (96.8)	116.8 (91.9)	160.0 (112.0)	101.9 (97.2)	4.5 (1, 43)	0.02* (0.10)	0.55

Note: Partial eta squared effect size interpretation: Small effect size = 0.01. Medium effect size = 0.06. Large effect size = 0.14. Much larger than typical effect size = 0.21 (Morgan et al., 2019). All ANOVA analyses are one-tailed. O1 = baseline; O2 = 5-month post-treatment; O3 = 8-month follow-up.

[a]Partial eta squared.

[b]Observed power of results.

*$p < 0.05$; **$p < 0.001$.

significantly greater improvement in mean symptoms of PTSD ($p = 0.04$), emotion dysregulation ($p = 0.02$), and life stress ($p = 0.02$) relative to TAU with medium-to-large effect sizes (0.07–0.10).

Comparing improvement for primary clients and partners

Primary clients and partners made equivalent symptom improvement with CCT in all primary and secondary symptoms except alcohol use at O1–O2 and O1–O3 based on z-test (all $p > 0.05$). Due to higher baseline symptoms for primary clients, they made more significant progress than partners in improving alcohol use at both time points in the CCT group. In the TAU group, symptoms improvement in all outcomes were equivalent except for the percentage of partners with PTSD symptoms *increased significantly* at the post ($p < 0.01$) and follow-up ($p = 0.02$).

Comparing improvement for single addiction versus comorbid addictions

AUD-only clients improved more than those with comorbid AUD and GD: AUD symptoms ($p = 0.002$ vs. 0.22), couple adjustment ($p = 0.04$ vs. 0.25), PTSD symptoms ($p = 0.05$ vs. 0.12), and life stress ($p = 0.01$ vs. 0.47), based on the Cochran's Q test. Sample size did not permit similar analysis for GD-only sample.

Comparing improvement of jointly addicted versus singly addicted couples

Jointly addicted couples (18%) showed significantly greater symptom improvement across the three time points than singly addicted couples: AUD ($p = 0.03$ vs. $p = 0.22$), GD ($p = 0.02$ vs. $p = 0.37$), other substance use ($p = 0.002$ vs. $p = 0.37$), depression ($p = 0.04$ vs. $p = 0.72$), couple adjustment ($p = 0.002$ vs. $p = 0.22$), and life stress ($p < 0.001$ vs. $p = 0.37$). Both jointly and singly addicted couples showed equivalent improvement in symptoms of PTSD ($p = 0.12$ vs. $p = 0.22$) and emotion dysregulation ($p = 0.20$ vs. $p = 0.37$). Sample size did not permit group comparisons for TAU and CCT separately. Insufficient group differences did not allow for gambling and psychiatric symptoms analysis.

Number of sessions

Analysis of covariance (ANCOVA) showed no statistically significant effects of the number of treatment sessions on the TAU and CCT group differences in changes in scores on the primary and secondary outcomes ($p > 0.05$).

Therapies received by TAU and CCT participants during the follow-up period

During the follow-up period, 35% of TAU participants received individual therapy compared with 12% for CCT participants, indicating greater post-treatment continued utilization of services by TAU clients than CCT. More TAU than CCT participants reported medication management treatment (17% vs. 8%) between post-treatment and follow-up.

Clients' satisfaction with the CCT and TAU treatment

Both primary clients' and partners' satisfaction ($N = 46$) with the CCT and TAU treatments they received was assessed at post-treatment and follow-up on a scale of 1–7, with a higher score indicating greater satisfaction (Figure 3). TAU clients reported ratings in the moderate range on all three items indicative of clients' satisfaction at post-treatment and follow-up. At both time points, CCT clients consistently reported a maximum level of overall satisfaction score (7 = highly satisfied), that the treatment met their needs (7 = extremely well) and they were likely to recommend it to others (7 = definitely yes). The Mann–Whitney U test showed significant group differences (all $p < 0.05$).

Counselors' feedback on couples' outcomes

Counselors' feedback was collected at the completion of each case using the Case Termination Questionnaire and in three focus groups at three points in the study: after training, mid-term, and after the completion of the trial. There was a consensus in their feedback on the acceptability of CCT in their practice in the health system (Lee et al., 2016, 2022 in preparation; Lee & Knighton, 2017). They cited it as a necessary service, its alignment with health system philosophy, effectiveness with addiction and mental health concerns, safety, the comprehensive and integrative nature of the systemic model, and increased job satisfaction (Lee et al., 2016). Counselors' mean ratings of their clients' and partners' progress upon completion of each case were 8.0 (SD = 0.9) and 7.62 (SD = 1.6), respectively (1 = minimal; 10 = very significant). Summaries provided for their couples at termination were as follows: (1) *AUD and GD*: abstinence or more commitment to controlled drinking, insight into factors that contributed to drinking and gambling; (2) *interpersonal*: increase in empathy, congruent communication, supportive listening, expressing needs and requests, trust in
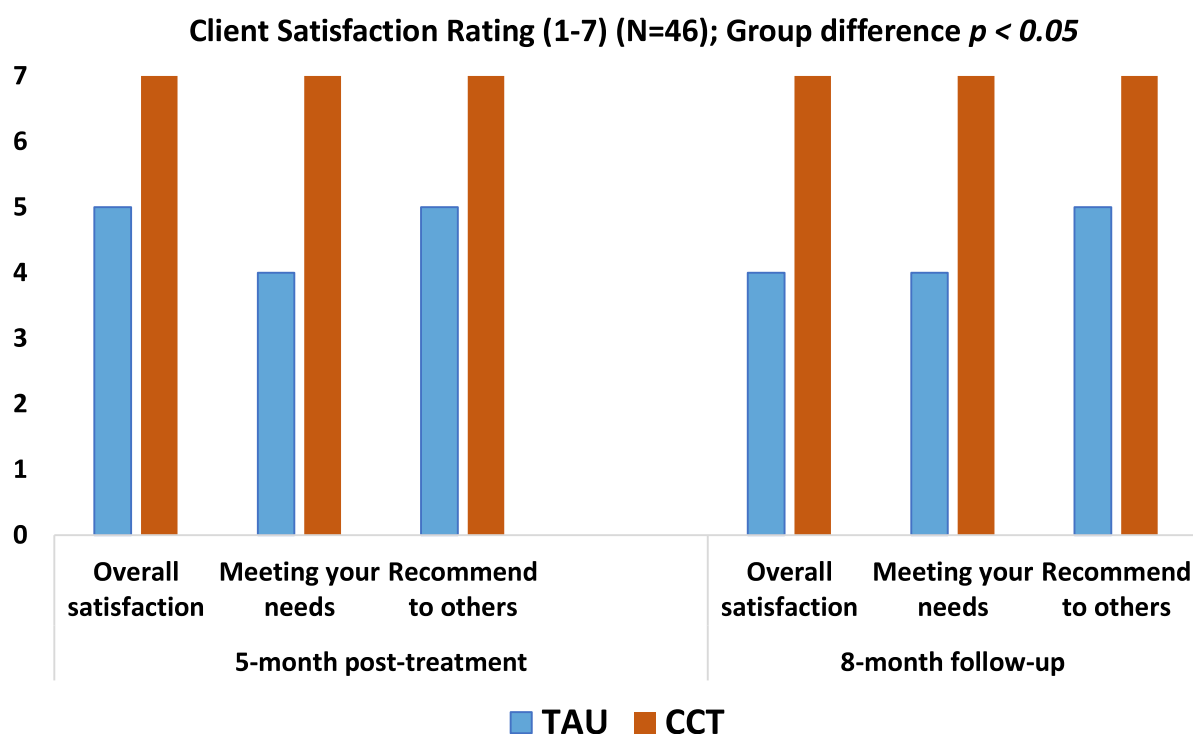

FIGURE 3 Client satisfaction

TABLE 8 Counselors' feedback on couple cases

Thematic categories	Quotes from Counselors' notes
AUD and GD	C = client; S = spouse
• Abstinence or more commitment to controlled drinking	○ BC remained abstinent from his primary gambling mode and from alcohol. ○ FC did cut back on his gambling of lottery tickets and abstained from gambling at casino. ○ WC went from daily excessive drinking to minimal drinking. ○ XC took a harm reduction approach to his drinking and attempted a more controlled pattern of consumption
• Insight and awareness into factors that contributed to drinking and gambling	○ TC became more aware of the warning signs re: his anger. ○ ZC Insight into the factors that contributed to his addictions (upbringing, communication patterns, mental health, and lack of coping strategies)
Interpersonal	
• Expressing feelings, needs and requests, making choices	○ WS expressed deep love and commitment to her partner. ○ IS thinking before she reacts (i.e., in anger) and choosing how she wanted to respond
• Increase in empathy and self-compassion	○ DC became much more aware of his emotions and yearnings… more self-compassionate and more willing to discuss his feelings with his spouse
• Congruent communication • Joint problem-solving	○ AS began to communicate openly and honestly with her partner and showed empathy toward her husband's relationship with his father. ○ WS learned to talk from self, not other, big task for her. ○ IC remained abstinent and has been using his congruent communication skills. ○ OS became less superior and critical of her husband, more empathetic and congruent in her communication. ○ FC appeared to make changes in how he communicated with his wife and involving her in their financial decisions
• Better boundaries and self-other differentiation	○ FS set healthy boundaries with her partner and encouraged him to get more supports in his life not just from her. She reported feeling less depressed. ○ MS became less superior/fixing/mothering toward her husband allowing him to make his own mistakes and take on more responsibilities
• Supportive listening	○ MC became less defensive/avoidant when [wife] voiced her concerns and was more validating of her needs
• More forgiveness, less bitterness	○ OS showed more forgiveness and less bitterness about partner's past mistakes
• Awareness of reciprocity of their couple interaction	○ XC and XS demonstrated better communication with one another as counseling went on. They also appeared much more connected and were spending time together. They were able to point out progress in one another and note appreciations. It was very sweet to see the two of them connect back as good friends. ○ WS was able to take responsibility for how her reactions and responses to her partner's drinking kept the negative cycle going
Intrapsychic	
• Increased awareness of emotions and triggers	○ MC grew in his awareness of his feelings and better able to express them. ○ I2S gained awareness of her communication posture (fixing)

TABLE 8 (Continued)

Thematic categories	Quotes from Counselors' notes
• Better self-care	○ MS also began to focus more on her own self-care. ○ XS prioritizing her self-care
• Better emotion regulation	○ I2S identified how her pattern increased her own anxiety and impacted her partner, and she made adjustment toward congruence. ○ I2C clearly struggled with emotional regulation, and she made great strides in predicting what could set her off and adjusting her plans accordingly. ○ WC accessed feelings and learned to express them
Intergenerational	
• Connecting present functioning to family of origin influence	○ OC demonstrated further insight into the pressure points in his life and upbringing that factored into his addiction. ○ MC was able to link his upbringing to his current patterns of coping. ○ WS was willing to explore her family of origin and make connections to her current life and relationships. ○ WC made significant connections from current patterns to family of origin. ○ IC and IS appeared to be more empathetic toward each other re: family of origin triggers and identified old patterns that they wished to change in their life. ○ Through exploration of her partner's family of origin I2S recognized that she can support her partner without having to "fix" the problem
• Reduced impact of trauma	○ LC made incredible progress based on the severity of their traumatic backgrounds and their issues. ○ EC took risks, made changes and made efforts to open up. From where he came from he did remarkably well
Universal-spiritual	
• Accessing spiritual resources	○ When I2C did encounter challenging situations, she was more aware of her feelings, could slow things down, and then rely on being active, outdoors, music and breathing to help her through. ○ OS got more in touch with her spirituality and began to focus more on her own self-care
• Acknowledge their own yearnings and worth	○ TC and AS decreased emotional avoidance by becoming more comfortable in expressing private feelings, taking risks and looking at bringing positive characteristics of each others. Improved communication toward more congruence. Affirm each others strengths
Stress reduction	
• Less stress in home environment	○ As time went on and XS witnessed progress in her partner, her trust for him grew and the stressors at home decreased. ○ AS was starting to feel heard and understood by her partner and not waiting for the other shoe to drop. ○ BC and BS reported things were better between them, that is, less fighting and felt happier, less stressed. ○ As a couple in CCT and applying and implementing the CCT concepts EC and ES did fantastic. They have re-connected and re-engaged in a way that they did not know was possible. They are communicating in a healthy way and have renewed intimacy. There is no longer any tension, walking on eggshells, withdrawing, isolating, retreating to safe corners of the house, stuffing feelings
• Better handling of stress at work	○ With that, XS was able to better manage her workplace stress

(Continues)

TABLE 8 (Continued)

Thematic categories	Quotes from Counselors' notes
Systemic changes	
• All aspects of changes affect one another	○ DC and DS were on the brink of divorce. Both parties were exhausted, sad, and resentful. Their communication postures were stuck in fixing-avoidant and superior–inferior. By the end of the sessions, DC and DS were more hopeful, more congruent in the communication, and functioned more as equal partners. They showed more affection and humor as our time progressed and gained more insight into the contributors to DC's addiction (namely FOO and worthiness issues). The couple also began to see growth in his relationship with their sons

partner, more forgiveness, less bitterness, awareness of reciprocity of their couple interaction, and decreased stress at home; (3) *intrapsychic*: increased awareness of emotions and triggers, better self-care, acknowledging own strength, and better emotion regulation; (3) *intergenerational*: connecting present functioning to family of origin influence and reduced impact of trauma; (4) *universal-spiritual*: hope, connection with own spirituality, acknowledge their own yearnings and worth; (5) *stress reduction*: less stress in home environment, better handling of stress at work; (6) *systemic changes*: all aspects of changes affecting one another (Table 8).

DISCUSSION

In this RCT, we tested the randomized effectiveness of congruence couple therapy in a real-world setting for the treatment of AUD, GD, and their comorbidities using the couple unit as the main focus of intervention, relative to TAU for couples seen separately as individuals in the control condition.

Within-group effectiveness of CCT in primary and secondary outcomes

TAU group reduced significantly in symptoms of alcohol use, other substance use and life stress, but other outcomes did not show significant improvement. CCT displayed significantly reduced symptoms of all primary and secondary outcomes of alcohol use, problem gambling, psychiatric symptoms including depression and PTSD, couple adjustment, emotion regulation, and life stress. These within-group improvements for CCT showed medium-to-large effect sizes.

Between-group difference of CCT and TAU

The trial showed significant difference in symptom improvement between CCT and TAU with medium-to-large effect sizes between groups for both primary and secondary outcomes (except other substance use) favoring CCT. Parametric results support this trend but some comparisons of differences were underpowered. The results of the between-group comparison pointed to CCT being more effective than TAU in treating symptoms of addiction, psychiatric symptoms/function, couple adjustment, emotion regulation, and life stress. Future large sample RCTs are required to validate these findings.

Primary clients and partners

An increased interest is evident in the literature in how affected others can be assisted in their distress in the context of addiction (Edgren et al., 2022; Merkouris et al., 2022), but efficacy is reportedly low for affected others' improvement with individual-based interventions (Dowling, 2020). Primary clients' and partners' symptoms collected in this RCT showed that at baseline, primary clients relative to partners exhibited more severe symptoms of addiction, mental health comorbidities, and emotion dysregulation. However, both clients and partners made equivalent degree of improvement with CCT over time in primary and secondary symptoms using a conjoint, systemic approach. The effectiveness of CCT and its mechanisms for improving the clinical outcomes of distressed affected others with a conjoint, systemic approach should be pursued in future studies.

Jointly addicted versus singly addicted couples

Treatment outcomes for jointly addicted couples versus singly addicted couples have not been an area of wide research. We found that couples with both partners reporting addictive symptoms of AUD, GD, and/or SUD demonstrated greater significant improvements in nearly all treatment outcomes compared to singly addicted couples. This differs from some studies that reported no significant difference in treatment outcomes for jointly addicted versus singly addicted couples (O'Farrell et al., 2017; Schumm et al., 2012). Our findings suggest that when both partners display addictive symptoms, engaging them together in treatment could be conducive to positive treatment outcomes as they recover in tandem.

Comorbidities and process outcomes

Studies on treatment intervention effectiveness rarely include comorbidities, a practice that has been criticized, as a high percentage of addicted clients present with psychiatric and other comorbid conditions (Castillo-Carniglia et al., 2019; Parhami et al., 2014). This study went beyond the reliance on abstinence and reduction in symptom severity of AUD and GD as measures of change (Pallesen et al., 2005; Petry et al., 2017) and included indices of mental health, couple adjustment, emotion regulation, and life stress. A consortium of problem gambling researchers recommended that treatment outcomes must focus not only on the gambling behaviors but also on the problems caused by gambling and their assumed processes of change (Walker et al., 2006). Couple adjustment, emotion regulation, and reduced life stress as assumed processes of change all showed positive results in the present study along with improvement in addictive symptoms and mental health.

Single addiction versus co-addiction

The AUD-only group showed significantly better primary outcomes of addiction, psychiatric symptoms, and couple adjustment compared with the co-addicted AUD-GD group (27%). A more positive overall trend for secondary outcomes was also evidenced for AUD-only group. Studies indicated that poly-substance users have more severe problems along several dimensions with higher frequencies of comorbid mental disorders; they also have poorer treatment outcomes and are heavier users of services than those with a single SUD (Bhalla et al., 2017; Salom et al., 2016). The better outcomes for single addiction versus co-addiction in the present study are consistent with the more challenging nature of concurrent addiction and earlier findings of their poorer outcomes.

Mechanisms of change and CCT's four-dimensional systemic interventions

In CCT, the addiction is not the primary treatment focus but is viewed as the outcome of an underlying system dysfunction due to the incongruence in and among the four intrapsychic, interpersonal, intergenerational, and universal-spiritual dimensions. The four dimensions are interrelated in real-life; therefore, their compartmentalization in treatment is artificial and limiting. The important contribution of CCT is that it brings together the four dimensions that have not been combined within a single model before in addiction treatment. CCT shifts the view of gambling and alcohol use as an individual problem to an outcome of distressed relational interactions resulting from childhood family dysfunction and trauma, emotional dysregulation, and thwarted needs for connection, safety, and worth. In this study, 50% of primary clients and 46% of their partners presented with a history of ACE. Encouraging functional and productive relational patterns can result in a reduction of internal and external stress, thus interrupting the turn to addictive substances and behaviors with their psychoactive properties as a way to emotionally regulate. Contrasting with CCT, TAU interventions are targeted at the individual level that lack cohesive and integrated targets of change. Hence, TAU effects are diffused compared with CCT effects in producing synergistic and concurrent changes. We will follow up with an exploration of these putative mechanisms of change in Part II (Lee et al., 2022).

Severity, stability, retention, and completion of treatment

We know from this trial that abstinence in itself is not a necessary condition for clients to benefit from CCT, corroborating with earlier CCT studies (Lee, 2002c; Lee & Awosoga, 2015; Lee & Rovers, 2008). Addicted clients were in the severe range of AUD and GD, 27% had comorbid AUD and GD and 63% were still using alcohol and gambling at the start of treatment. A large majority (65%) of this sample cited their partners as their mainstay of social support, hence making couple therapy available to those who seek it is essential.

As a real-world randomized effectiveness study, this sample reflected the systemic instability faced by a population experiencing addiction and concurrent mental health concerns. About 22% reported household income not meeting living needs, 11% reported housing instability, and 35% were not working at the start of the trial. Unemployment posed additional stress to the couple's relationship and increased use of alcohol and/or gambling (Lee & Merali, 2022; Lee & Ofori Dei, 2022). Housing and financial instability were deemed to be negative indicators for engagement in CCT (Shi, 2021). These findings are consistent with the literature, reporting higher dropout rates associated with lower income (Lappan et al., 2020; Mertens & Weisner, 2000) and unemployment (Mertens & Weisner, 2000).

Triangulating with counselors' reports, CCT couples experienced multiple life stressors and crises during treatment. The pileup of multiple and often intertwining stressors placed a high demand on the client's and partner's focus, energy, and resources to sustain treatment. CCT required a 12-week commitment with considerable emotional investment of both clients and partners while TAU was ad hoc for their attendance in individual and group programs. All of the above factors could have played into the high dropout rates recorded at 46% for CCT compared 20% for TAU in the trial.

The dropout rate for CCT is not entirely surprising compared with the literature. The average dropout rate for in-person SUD treatment across a meta-analysis of 150 studies was 30% with a wide variability (Lappan et al., 2020). Programs consisting of more treatment sessions and greater average session length are associated with higher dropout rates, although more sessions are purported to produce better outcomes (Lappan et al., 2020). For pathological gambling treatment, a systematic review reported premature termination of treatment ranging from 14% to 50% with a weighted average of 31% (Melville et al., 2007). A study of PTSD with comorbid SUD that used integrated, exposure-based therapy reported a dropout rate of 43% (Szafranski et al., 2017).

CCT places a higher demand on the couple's commitment with 12 structured sessions that are trauma-informed compared to TAU with an unspecified number of sessions that are not necessarily trauma-informed. Furthermore, CCT requires the commitment of two people who have sufficient stability to tolerate the emotional and relational intensity of the work. Hence, CCT could be challenging for a population prone to crises, instability of employment and housing, health concerns, impulsivity, and emotional dysregulation. The results of this RCT realistically reflected its effects on those seeking couple work in the severe end of the addiction spectrum with concurrent mental health symptoms. Future studies are needed to identify the characteristics of candidates who are most likely to complete CCT treatment and whether it is possible to segmentalize CCT with different dosage levels to achieve comparable results.

External validity and transferability

Effectiveness studies of substance use interventions in real-world settings are lacking (McCrady et al., 2016; Schumm & Renno, 2022). Conducted in two publicly funded addiction outpatient clinics, this clinical trial offers also pragmatic evidence (Ford & Norrie, 2016), thereby increasing the feasibility of applying CCT in real-world clinical practice. The primary outcome measures used in the trial are directly relevant to the users of the health system and could be adopted in the ongoing routine evaluation of clinical effectiveness of their services.

The newly CCT-trained counselors were able to work effectively with their couples while supported by an ongoing weekly group for clinical consultation and feedback. However, substance use and addictive disorders are a field with a shortage of systemically trained couple therapists which limits the transferability and routine adoption of CCT. Hence, expanding counselors' systemic training in addiction is an important priority for continuing professional development and education programs.

Clinical and statistical significance

Clinical significance that reflects the practical value and importance of an intervention in everyday life is arguably a highly important criterion to evaluate intervention effects but one that is not routinely reported in psychotherapy outcome studies (Kazdin, 1999). Although more commonly used, tests of statistical significance and magnitude of effects do not necessarily indicate clinical significance (Campbell, 2005; Kazdin, 1999). Clinical significance is described as an indication that a high percentage of clients shows change from a symptomatic range to a normal nonsymptomatic range of functioning with significantly reduced risk to health problems (Jacobson & Truax, 1991). In addition, these changes are based on the converging judgments of clients, others who interact with clients, clinicians, and researchers (Jacobson & Truax, 1991; Kazdin, 1999).

The value of reporting clinical change as a performance indicator is that it is meaningful in real-world and easily interpretable by clinicians, managers, and patients (de Beurs et al., 2016). The proportional change from symptomatic to nonsymptomatic categories reported in this trial based on normed cut-off scores was one type of indicator of clinical effectiveness. The triangulation of symptomatic outcomes with those of parametric analysis showed close agreement between the two.

Acceptability of CCT to counselors and clients

An evidence-based practice requires not only clinical outcomes from an RCT but also should consider clients' values and preferences as well as counselors' judgment and feedback (Sackett

et al., 1996). Significant differences were shown in couples' evaluations of the two interventions in favor of CCT. The trial results were triangulated with counselors' clinical observations and ratings. Counselors' engagement, commitment, routine adoption, and participation in knowledge translation of CCT post-RCT will be reported in a forthcoming publication (Lee et al., in preparation). Clients rated their satisfaction with CCT at the highest level at post and follow-point points in this trial, compared with TAU's moderate ratings. This level of client satisfaction corroborates with that of previous studies (Lee & Awosoga, 2015; Lee & Rovers, 2008).

Similarly, counselors in this research reported high levels of acceptance and satisfaction with CCT for working with addiction, mental health, and couple adjustment. On their own initiative, the research counselors continued with provision of a couple therapy program beyond the trial at their sites after they obtained administrative approval. However, wider adoption of a systemic intervention at an organization-wide level is still met with barriers in organizational culture, programming and training that will require future knowledge translation efforts.

Limitations and future direction

A number of limitations of this study must be mentioned. Our sample size fell short of the projected sample size calculation based in the pilot study ($N = 280$) (Lee & Awosoga, 2015). The absence of additional funding for staffing and delivery of the counseling sessions and weekly consultations in the busy real-world setting of addiction service provision limited the size of the final sample even after running the trial for 22 months. We achieved adequate post hoc power for within-group effects for CCT and for most of the between-group differences. Parametric results followed a similar trend but were underpowered for some variables, hence must be cautiously interpreted. For transparency and triangulation, we provided both non-parametric and parametric results.

A larger sample size in the RCT will be ideal to verify the current results of this study; practically, similar results in equivalent samples of independent replication studies will also be confirmatory. In relation to client diversity, this study was limited to a predominantly homogeneous Caucasian sample that does not represent the extent of indigenous and other ethnic groups in the treatment-seeking population at these two sites.

Blinding was not possible given the naturalistic context in which the trial was conducted, which meant participants knew the type of treatment they were given. This might have introduced a degree of positive expectancy bias for CCT, as all participants who signed on to the study were seeking couple therapy. Furthermore, clients' and partners' self-reports of their treatment outcomes could be subject to "demand characteristics" in knowing the aims of the study that could alter their responses, posing threats to the study's internal and external validity. Triangulating reports of CCT counselors served to mitigate reliance solely on couples' self-reports.

Retention is a common and serious problem in addiction treatment in general (Lappan et al., 2020; Melville et al., 2007) and the high CCT attrition rate limits its generalizability to all AUD and GD couples, especially those facing higher instability related to housing and financial difficulties, continuing high dependence on substances, and increased suicidality. Identification of those clients who are most ready and suitable for CCT should be pursued in future studies.

Effective treatment models are critically needed for concurrent addiction and mental health conditions because of their higher relapse and suicide rates and greater rates of service utilization (McKee, 2017; Najt et al., 2011). Notwithstanding the above limitations, the results of this trial are important and promising and suggest the potential of CCT to improve couple adjustment, emotion regulation, and reduce life stress in the amelioration of addiction and mental health symptoms.

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