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## ReACH2Gether: Iterative development of a couples-based intervention to reduce alcohol use among sexual minority men living with HIV and their partners

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### Abstract

Unhealthy alcohol use, which encompasses heavy episodic drinking to alcohol use disorder, has been identified as a modifiable barrier to optimal HIV care continuum outcomes. Despite the demonstrated efficacy of couples-based interventions for addressing unhealthy alcohol use, there are no existing couples-based alcohol interventions designed specifically for people living with HIV. This study presents the development and refinement of a three-session couples-based motivational intervention (ReACH2Gether) to address unhealthy alcohol use among a sample of 17 sexual minority men living with HIV and their partners living in the United States. To increase potential population reach, the intervention was delivered entirely remotely. Throughout an original and a modified version, results indicated that the ReACH2Gether intervention was acceptable and there were no reports of intimate partner violence or adverse events. Session engagement and retention were high. In pre-post-test analyses, the ReACH2Gether intervention

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showed trends in reducing Alcohol Use Disorder Identification Test scores and increasing relationship-promoting dynamics, such as positive support behaviors and goal congruence around alcohol use. Results support the need for continued work to evaluate the ReACH2Gether intervention.

## Resumen

El consumo no saludable de alcohol, que abarca episodios intensos de consumo hasta llegar a causar trastornos de alcohol, se ha identificado como una barrera modificable para los resultados óptimos continuos de la atención del VIH. A pesar de la eficacia demostrada de las intervenciones basadas en parejas para abordar el consumo no saludable de alcohol, no existen intervenciones de alcohol basadas en parejas diseñadas específicamente para personas que viven con el VIH. Este estudio presenta el desarrollo y perfeccionamiento de una intervención motivacional basada en parejas de tres sesiones (ReACH2Gether) para abordar el consumo no saludable de alcohol entre una muestra de 17 hombres de minorías sexuales que viven con el VIH y sus parejas que viven en los Estados Unidos. Para aumentar el alcance de la población potencial, la intervención se realizó de forma totalmente remota. A lo largo de una versión original y modificada, los resultados indicaron que la intervención ReACH2Gether era aceptable y no hubo informes de violencia de pareja o eventos adversos. El compromiso y la retención de la sesión fueron altos. En los análisis previos y posteriores a la prueba, la intervención ReACH2Gether mostró tendencias en la reducción de las puntuaciones de la prueba de identificación del trastorno por consumo de alcohol y en el aumento de las dinámicas que promueven las relaciones, como comportamientos de apoyo positivas y congruencia de objetivos en torno al consumo alcohol. Los resultados respaldan la necesidad de un trabajo continuo para evaluar la intervención ReACH2Gether.

## Keywords

sexual minority men; couples; HIV; alcohol intervention

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## Introduction

In the United States, sexual minority men (i.e., gay, bisexual, and other men who have sex with men) are disproportionately impacted by the HIV epidemic [1]. People living with HIV can live long and healthy lives and prevent onward transmission as a result of advances in antiretroviral therapy (ART) [2, 3]. The success of these advances requires optimal progression through the HIV care continuum in order to reduce HIV-related morbidity and mortality and population-level HIV incidence [3]. However, there are multilevel barriers that impede progression across the HIV care continuum [4].

Unhealthy alcohol use, which encompasses heavy episodic alcohol use to alcohol use disorders, has been identified as a proximal and modifiable barrier to engagement and retention in HIV care [5], ART adherence [6, 7], and sustained viral suppression [6, 8]. Thus, unhealthy alcohol use represents an important area of focus to ensure optimal outcomes across the HIV care continuum [9]. As a result, there have been several individual-level behavioral interventions developed to reduce unhealthy alcohol use among people living with HIV [10, 11], including sexual minority men [12–14]. One systematic review

found that most interventions ( $N = 5$ ) aimed at reducing unhealthy alcohol use among sexual minority men utilized motivational interviewing (MI), cognitive behavioral therapy (CBT), or a combination of both with brief MI yielding the most promising results [15]. Additionally, one randomized clinical trial found that brief MI intervention with personalized feedback, compared to HIV care as usual, resulted in fewer drinks per week and heavy drinking days at 6- and 12-months, as well as reductions in condomless sex with non-steady partners among sexual minority men living with HIV [12]. Although brief MI interventions hold promise in reducing unhealthy alcohol use among sexual minority men, such interventions have primarily focused on the individual without considering the ways in which primary partners influence health behaviors, including unhealthy alcohol use.

Evidence indicates that couples alcohol interventions are more effective than individual approaches to treating substance use problems [16]. Behavioral couples' therapies for alcohol use disorder are guided by the premise that substance use problems and intimate relationships are intertwined, such that substance use impairs relationship functioning, and relationship distress combined with partners' attempts to control substance use may reinforce substance use and trigger relapse [16]. Despite proven efficacy, there has been poor uptake of these couples-based alcohol interventions due to the extensive time, training, and resources demanded [17]. Furthermore, existing couples' therapies often require that only one partner have a substance use disorder and that the identified patient has alcohol abstinence as the treatment goal [18]. However, both partners in a relationship may drink alcohol [19] and many individuals do not wish to seek intensive alcohol treatment or desire to abstain from alcohol [14].

An alternative to behavioral couples therapy for alcohol use disorder is to incorporate a significant other into an MI intervention that does not presume alcohol abstinence or any other change goal [20, 21]. Studies have shown that significant other involved MI produces more sustained reductions in unhealthy alcohol use, compared to individual MI [20]. However, the benefits of couples-based interventions are premised on harnessing social support and dyadic functioning of the couple to change alcohol use behaviors [8, 22–25]. Primary partners can also engage in a number of social control tactics, which may include positive and supportive behaviors (e.g., affirming words) or negative and unwanted social support behaviors (e.g., nagging) [19]. Evidence also suggests that partners are more successful at working together towards a shared health goal when they are more satisfied with, invested in and committed to their relationships [22, 26]. Despite the promise of involving significant others in MI, the majority of alcohol-focused interventions do not address the interpersonal context in which alcohol use behaviors are initiated and sustained [27].

More recently, Starks et al (2022) described and showed the acceptability, feasibility, and preliminary efficacy of couples-based MI intervention designed to address drug use and HIV prevention, which was designed to enhance dyadic functioning by drawing on a couple's strengths, enhancing positive and supportive exchanges between partners, and practicing problem-solving communication [21]. To date, there have been a handful of couples-based interventions delivered remotely through videoconferencing that have utilized MI principles to address HIV prevention among sexual minority men [28, 29]. However, these couples-

based interventions have not had an explicit focus on unhealthy alcohol use [21, 29, 30]. Interventions that address unhealthy alcohol use may be particularly important for sexual minority men and their partners given evidence that interventions that focus on unhealthy alcohol use alone as opposed to more comprehensive interventions focusing other outcomes (e.g., sexual risk behaviors, ART adherence) are more effective at reducing the frequency of drinking [11]. Furthermore, remote delivery has the potential to overcome challenges to in-person delivery such as scheduling, transportation, and finding a culturally competent provider [28, 31].

Building on our promising individual-level brief MI interventions for sexual minority men [12], significant other involved MI interventions [20], and couples-based MI interventions [21], the current study describes the development and preliminary evaluation of “Reducing Alcohol-Related Comorbidities in HIV Care Together (ReACH2Gether),” a remotely-delivered, three-session, couples-based intervention designed to reduce unhealthy alcohol use among sexual minority men living with HIV and their cisgender male partners.

## Method

### Study Procedure

To allow for intervention modification and refinement based on experience in delivering the intervention and on participant feedback, there were two phases of the project. Phase 1 piloted an initial version of ReACH2Gether and used feedback from 7 sexual minority men living with HIV and their partners to refine the intervention. Phase 2 piloted the refined intervention with 10 sexual minority men living with HIV and their partners.

**Phase 1.**—Between January 2020 and August 2020, we enrolled 7 sexual minority men living with HIV and their cisgender male partner ( $n = 14$  individuals). Phase 1 eligibility was dependent upon an index partner meeting specific criteria: (1) 18 years of age or older, (2) current U.S. resident, (3) assigned male sex at birth and currently identifies as male, (4) self-identify that they are in a committed relationship with another cisgender male, (5) confirmed HIV-positive serostatus through a recent prescription for ART medications or recent viral load results, (6) self-reported heavy alcohol use by National Institute on Alcohol Abuse and Alcoholism criteria (<https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking>): consumption of more than 14 drinks per week on average or heavy episodic drinking (i.e., 5 or more drinks) at least once a month over the past 3 months, (7) have access to computer/personal device/smart phone with internet and webcam capability, and (8) speak and read English. Partners needed to meet the following eligibility: (1) 18 years of age or older, (2) current U.S. resident, (3) assigned male sex at birth and currently identifies as a male, (4) self-identify that they were in a committed relationship with the index participant, (5) drinks alcohol at least monthly, (6) have access to computer/personal device/smart phone with internet and webcam capability, (7) speak and read English. Couples were excluded if either partner reported any concerns about their safety or potential coercion to participate.

The index participants were recruited via online ads placed on social media websites (e.g., Facebook, Instagram), which directed the index participant to an eligibility screener. Eligible

participants completed a subsequent Qualtrics survey to collect their contact information and were then contacted by study staff to describe the study and emailed online consent documents. The index partner was sent a baseline survey and then compensated \$40 for completion of this stage in the study. A study staff member scheduled a videoconference meeting with the index participant to confirm their HIV status (e.g., most recent HIV viral load test result or ART pill bottle). Following eligibility confirmation, the index participant was asked to share the link to the study screen with his partner to ensure their eligibility. If eligible, both partners then proceeded to complete informed consent and the baseline survey. The partners were compensated \$40 for completion of the consent process and baseline survey.

After both partners completed the baseline survey, the index partner was scheduled for their first session on their own, which lasted about 45 minutes to one hour. The subsequent two sessions included both partners and also lasted 45 minutes to one hour. The follow-up survey was sent to participants 6 weeks after their baseline survey. Upon completing the follow-up survey, qualitative exit semi-structured qualitative interviews were conducted separately with each partner to obtain feedback on the intervention and study procedures. Qualitative interviews were conducted via Zoom and were audio-recorded and asked about participants' experiences with the intervention, study procedures, and areas for improvement. Participants were compensated \$50 each for completing the follow-up survey and the exit interview.

**Phase 2.**—As described below, we reviewed participant recruitment, retention, and feedback on an ongoing basis during Phase 1 before pausing recruitment to revise the ReACH2Gether protocol and initiating Phase 2. Between February and September 2021, we enrolled 10 sexual minority men living with HIV and their partners ( $n = 20$  individuals) into a one-arm pilot to assess the feasibility and acceptability of this revised ReACH2Gether protocol. Inclusion criteria mirrored Phase 1 except partners did not need to report any alcohol use since our experience with delivering the intervention during Phase 1 did not suggest that it was essential that both partners drink. Recruitment procedures were the same as for Phase 1 except that (a) the initial prospective couple member screening did not have to have HIV and (b) the initial prospective couple member who screened eligible did not go on to informed consent and the baseline until his partner also completed the screener. Once the couple screened eligible, study staff determined the index partner as the participant living with HIV who reported unhealthy alcohol use. If both participants met criteria, the participant who first completed the screener was identified as the index partner. Study staff then conducted one-on-one videoconference calls with each participant separately to review the consent form and describe the study in further detail. The index participant was asked to verify their HIV status.

To increase study engagement, Phase 2 compensation was revised such that both partners were sent separate baseline surveys and compensated \$25 each. The couple was then scheduled for a total of three counseling sessions with both members of the couple attending the sessions. Both partners received \$25 each for completing the first counseling session. Finally, each participant was compensated \$50 after completion of the follow-up survey and

exit interview. The Consolidated Standards of Reporting Trials (CONSORT) flow diagrams for both phases are depicted in Figure 1.

**Phase 1 Intervention.**—Phase 1 consisted of three MI sessions, each lasting approximately 45–60 minutes. Session 1 content and structure followed the brief MI with personalized feedback protocol developed by our prior research with sexual minority men living with HIV [12]. The partner joined the subsequent session one week after Session 1 and then the final session occurred two weeks after Session 2 to give couples time to practice their change plan. The two sessions with the partner focused on identifying couple strengths, discussing, and practicing effective communication and social support, and establishing goals.

One doctoral-level trained clinician who identified as a cisgender, White, sexual minority man served as the interventionist. The interventionist had significant experience working with diverse sexual minority populations in clinical and research contexts. All intervention sessions were audio recorded and one study Principal Investigator, who is a licensed clinical psychologist, provided clinical supervision, which included listening to the audio recordings of intervention sessions. Table 1 presents details on the intervention content.

**Phase 2 Intervention.**—The intervention content and structure was modified based on exit interview feedback from Phase 1, in which index participants and partners alike expressed concern over one partner receiving an individual session. Additionally, the redesign was developed in consultation with established experts in couples-based interventions with sexual minority men. Specifically, the protocol was revised so that all three sessions included both partners. Table 1 presents the revised session content for Phase 2. The substantive changes included focusing on communication and identifying relationship strengths and partners' goals in the first session rather than the second session. Additionally, each session ended with a relationship affirmation exercise for partners to reflect on the strengths of their relationship. These changes reflected feedback from participants in Phase 1 to ensure that both partners were part of the entire intervention. Also, because participants were seen together, we removed personalized normative feedback on alcohol use from the intervention so that concerns about confidentiality of participant reports were avoided. The Phase 1 clinician and another doctoral-level trained clinician who identified as a cisgender, sexual minority man of color served as the Phase 2 interventionists. The second interventionist also had several years of experience working with diverse sexual minority populations in clinical settings. The intervention sessions were also audio recorded and a study Principal Investigator provided clinical supervision.

## Measures

The same measures were used in both Phase 1 and Phase 2.

**Demographics.**—Participants reported their age, HIV status, race/ethnicity, sexual identity, cohabitation status with partner, and income (which we coded as below \$30,000 and \$30,000 or above annually).

**The Alcohol Use Disorder Identification Test (AUDIT).**—The 10-item AUDIT scale was administered to assess alcohol use, alcohol-related problems, and symptoms of alcohol use disorder [32]. The AUDIT has demonstrated good psychometric properties in samples of sexual minority men living with HIV [8]; in the present study, reliability was fair; index participant  $\alpha = 0.67$  and partner  $\alpha = 0.64$ . Items were summed such that higher scores indicate greater alcohol involvement for each participant.

**The Short Inventory of Problems (SIP).**—The 15-item SIP was used to assess negative consequences of drinking across five domains of functioning [33]. The scale demonstrated adequate internal consistency in the sample (index participant  $\alpha = 0.73$ ; partner  $\alpha = 0.77$ ), and higher scores indicate greater negative consequences of drinking.

**Perceptions of Goal Congruence.**—We adapted a measure of perceptions of goal congruence for alcohol use that was validated with sexual minority men [26]. The 4-item scale assesses the extent to which a participant believes they are on the same page with their partner about their alcohol-related goals (example item: “Talking/communicating about reducing alcohol use;” “Limiting the number of drinks in a given day”). Participants responded on a 5-point Likert scale ranging from 1 (Not at all) to 5 (A great deal). Higher scores indicate greater perceptions of goal congruence. The scale demonstrated good internal consistency in the sample (index participant  $\alpha = 0.98$ ; partner  $\alpha = 0.97$ ).

**The Partner Interaction Questionnaire (PIQ).**—We adapted the PIQ to assess partner support for changing drinking [34, 35]. This 20-item scale includes 10 positive and 10 negative behaviors a partner might perform (example items: “Criticizes you about your drinking;” “Celebrates your cutting down or stopping with you”). Participants respond to each item on a scale from 0 (never) to 4 (very often). The scale demonstrated good internal consistency in the sample (index participant negative behaviors  $\alpha = 0.97$ ; partner negative behaviors  $\alpha = 0.89$ ; index partner positive behaviors  $\alpha = 0.92$ ; partner positive behaviors  $\alpha = 0.77$ ). For both subscales, higher scores indicate a participant reporting greater negative or positive support behaviors by their partner.

**Intervention Acceptability.**—Satisfaction with the counseling received was assessed at the follow-up with the following items with response options on a 5-point Likert scale: “Overall, how satisfied were you with the counseling experience?” (Response options: 1=Very dissatisfied to 5=Very satisfied); “Would you recommend the counseling sessions to others?” (Response options: 1=yes, 0=No); “How knowledgeable was the counselor?” (Response options: 1=Very unknowledgeable to 5=Very Knowledgeable); “How friendly was the counselor?” (Response options: 1=Very unfriendly to 5=Very Friendly); “How experienced was the counselor?” (Response options: 1=Very inexperienced to 5=Very experienced); “How professional was the counselor?” (Response options: 1=Very unprofessional to 5=Very professional); “How was the length of the sessions?” (Response Options: 1=Too long, 3=Just right, 5=Too short).

All participants were invited to complete an exit interview via Zoom after their follow-up survey. Participants were asked open-ended question about their reasons for participation, comfort with the intervention components and format, comfort with



privacy and confidentiality, relevance of intervention content, experience with the couples-based component of the intervention including its advantages and disadvantages, and connectedness with the counselor, as well as suggestions for improvements to the program. The interview was completed by a member of the team who did not facilitate the counseling sessions. All interviews were audio-recorded and transcribed verbatim.

## Analysis Plan

**Quantitative Analyses.**—All quantitative analyses were conducted in SPSS version 27. Simple frequency distribution methods (means, mode, ranges, and standard deviations) were used to analyze demographics and survey measures. Given the changes in intervention content and format between Phase 1 and Phase 2, we used *t*-tests to derive effect sizes for differences between phases in participant-reported acceptability of the intervention. We conducted paired *t*-tests to derive effect sizes for pre-post within-person changes in AUDIT, SIP, Perceptions of Goal Congruence, and the PIQ scores. Effect sizes were expressed as Hedges' *g* where effect size  $g = 0.15$  is small,  $g = 0.40$  is medium, and  $g = 0.75$  is large.

**Qualitative Analyses.**—We used an established rapid deductive-inductive qualitative analytic approach designed for intervention development and evaluation [36, 37]. First, a template was developed deductively from the topics in the interview guide. The team member who conducted the interviews used the template and generated summaries for each participant. Another team member then read all the transcripts using the template, and both team members then made refinements to the template to establish consistency of summaries. Next, the entire team reviewed the summaries and generated themes. The findings were then summarized and organized by themes across each group with exemplary quotes.

## Results

### Feasibility

Figure 1 contains the CONSORT flow illustrating enrollment and retention across both Phases. In Phase 1, 467 potential participants completed the initial screen, of whom 54 appeared eligible as the index partner, 51 provided contact, and 25 consented for the study. Of these 25, 22 completed the baseline survey, 13 verified their HIV status, and 7 partners consented and completed the baseline survey. Of these 7 participants who started counseling, only 4 (57.1%) completed session 2. One participant, and thus the couple, was withdrawn from counseling following the initial counseling session; this participant was experiencing significant mental health concerns that investigators determined would interfere with appropriate engagement in the counseling protocol. Another couple broke up, and the final non-completing couple never showed up for their session despite outreach efforts.

In Phase 2, 517 potential participants completed the initial screen, of whom 373 appeared to be in a couple that could be eligible for participation. Of these 373 participants, 95 had a partner also complete screening, resulting in 86 couples that were eligible with at least one partner with HIV who was drinking heavily and with contact information provided by both members of the couple. Of these, ten couples (20 total participants) scheduled and

completed their consent and HIV status confirmation call; all completed baseline assessment and completed the initial session of counseling. Nine of the ten couples (90.0%) who started counseling went on to complete sessions 2 and 3, and one couple was lost after session 1. Follow-up retention was somewhat higher among those in Phase 2 compared to Phase 1 for both index participants (90% versus 85.7%) and their partners (90% versus 71.4%). In Phase 1, six index participants and four partners completed the exit interview. Each couple in Phase 2 who completed all three counseling sessions (9 out of 10; 90%) also completed the exit interview.

### Sample Characteristics

Phase 1 participants included both sero-similar (57.1%) and sero-different (42.9%) couples, whereas all participants in Phase 2 identified as sero-different. In Phase 1, 71.4% of index participants had an undetectable viral load whereas all Phase 2 index participants had an undetectable viral load at baseline. Across both Phases, index participants ranged in age from 26.4 to 72.3 ( $M = 43.5$ ,  $SD = 13.3$ ) and partners age ranged from 23.0 to 72.9 ( $M = 40.5$ ,  $SD = 12.5$ ). For both phases, relationship length varied quite a bit. Phase 1 relationship length ranged from 28.6% in relationship for 7 months to one year, 28.6% in a relationship for 1 to 3 years, and 42.9% in a relationship for more than 3 years. Phase 2 relationship length ranged from 10% in a relationship from 1-3 months, 10% in a relationship for 4 to 6 months, 30% in a relationship for 1 to 3 years, and 50% in a relationship for more than 3 years. The majority of participants in both phases identified as a gay sexual identity and were cohabitating. Phase 1 participants were generally more racially/ethnically diverse and earned lower annual incomes compared to those who participated in Phase 2. See Table 1 for more detailed sample characteristics for Phase 1 and 2.

### Quantitative Indicators of Acceptability

Table 3 presents the differences in intervention satisfaction and effect size differences between Phase 1 and 2. In regard to intervention satisfaction, index participants reported that they were highly satisfied with the counseling experience in Phase 1 ( $M = 4.0$ ,  $SD = 1.5$ ) and Phase 2 ( $M = 4.9$ ,  $SD = 0.4$ ), with satisfaction numerically higher in Phase 2 (Hedges'  $g = 0.72$ ). The partners reported numerically lower satisfaction with the counseling experience in Phase 1 ( $M = 3.6$ ,  $SD = 1.5$ ) compared to those in Phase 2 ( $M = 4.8$ ,  $SD = 0.4$ ; Hedges'  $g = 0.95$ ). The majority of index participants in Phase 1 (85.7%) and Phase 2 (90.0%) reported that they would recommend the counseling sessions to others, whereas slightly more partners in Phase 2 (90.0%) compared to those in Phase 1 (71.4%) reported that they would recommend the counseling sessions to others. Similarly, the counselor was rated as generally high in being knowledgeable, friendly, experienced, and professional among all index participants and partners in both phases (Mean ranged from 3.8-5). On average, index participants in Phase 1 ( $M = 3.2$ ,  $SD = 0.9$ ) and Phase 2 ( $M = 3.3$ ,  $SD = 0.9$ ) reported that the sessions were just the right length. Partners in Phase 2 had numerically similar mean scores on the length of sessions, suggesting that the sessions were on average the right amount for those in Phase 2 ( $M = 3.2$ ,  $SD = 0.4$ ) and Phase 1 ( $M = 2.6$ ,  $SD = 0.9$ ).

## Phase 1 Qualitative Indicators of Acceptability

**Positive Experiences.**—Phase 1 participants described the intervention as novel, generally reported having positive experience, and liked the focus on communication and alcohol use. For example, one Phase 1 participant described how he appreciated sharing their drinking experiences as a couple: *“I think it was good. Not only did [my partner] get to share about his drinking, he got to share how he feels about my drinking. It was an eye opener. It gave me a chance to really pay attention and open my eyes. I think it made us a little closer.”* Similarly, an index participant in Phase 1 expressed their appreciation for a focus on building communication skills, which allowed him and his partner to become closer as a couple. *“If I felt [my partner] was impatient, it gave him skills to be patient. If I didn’t hear something [my partner] said, and he didn’t repeat himself, now he has the skill of asking if I hear and repeating what he said. It made us look at each other differently. It helped us a lot.”*

**Suggestions for Improvement.**—In the qualitative exit interviews, several Phase 1 participants described how they felt that it was *“unfair”* for one partner to receive a one-on-one session, and the other partner not receive the same. For example, a Phase 1 index participant noted: *“I think it’s better doing couples sessions. I don’t think there should be any one-on-one at the beginning. Start with couples.”* Similarly, a Phase 1 partner reported that they would have also liked a one-on-one session: *“I wish I would have been able to discuss these sessions personally first. Because both of the sessions that we had, [partner] was on the other side. So it would have been nice for [counselor] to hear what I had to say before the couples session.”*

**Intervention Characteristics.**—The exit interviews also inquired about intervention characteristics, including the length of the sessions, privacy/confidentiality concerns, comfort, working alliance with counselor, and scheduling/instructions. Index participants and partners alike reported a strong working alliance with their counselor and found the counselor *“trustworthy”* and *“personable.”* Additionally, participants described how scheduling was *“seamless and accommodating.”*

## Phase 2 Qualitative Indicators of Acceptability

**Positive Experiences.**—Phase 2 participants also reported having a positive experience with the intervention and appreciated the focus on communication and alcohol. For example, one partner in Phase 2 stated: *“We really learned a lot about communicating with each other. Making time for your relationship. Also being aware of your alcohol use. That was for me personally. Being aware of triggers and not starting arguments in a buzzed state. The communications and the awareness of alcohol use socially. I learned quite a bit from that.”*

**Suggestions for Improvement.**—In the qualitative exit interviews, some participants in Phase 2 expressed a desire for more discussion on HIV, and specifically on being a gay man with HIV in a romantic relationship. As one Phase 2 index participant in a sero-different relationship stated: *“It would have brought a little more completeness to touch on it ever so briefly. Like ‘do you mind spending 5-10 minutes talking about how HIV affects all of those things within your relationship?’”* Some Phase 2 participants noted that the advertising for the study (e.g., *“ReACH2gether is a research study for gay and bisexual men living with*

HIV and their partners”) was confusing as it implied that the focus was on sero-different couples. As one Phase 2 index participant stated: *“I think the only moment where we were like, we don’t fully get it is that part of this study was that one of the partners needs to have HIV, and we never fully understood through the sessions why that was part of it. Because that was never touched on at all.”*

**Intervention Characteristics.**—Similar to Phase 1, Phase 2 participants reported a strong working alliance with their counselor. Some participants did express a desire for more sessions. As one Phase 2 index participant stated: *“When we were doing our sessions, the time went so fast! The hour was gone before we even knew it. It felt like we had just started. But we wanted to keep going and going. We wanted to keep interacting. ... Me personally, I would have wanted more. I was practically bawling when it was the last one. I wanted us to keep doing them, and [my partner] felt the same way. The sessions were really informative and comforting. We wanted more.”* Participants uniformly felt their privacy and confidentiality were well managed over Zoom, specifically the procedures to audio-record the sessions rather than video-record sessions. Finally, many participants in Phase 2 expressed an appreciation for the cultural tailoring and sense of shared identities with the counselor. One index partner noted: *“I felt – I don’t know if I ever knew this explicitly; maybe I did – I felt like [the counselor] was queer at some level, so that always makes talking from a gay partnership feel a little bit easier.”* Similarly, a partner described their motivation to participate in a study that was specifically designed for *“queer couples and alcohol.”*

### Pre-Post Test Change Evaluation

Table 4 presents the Hedges’ *g* effect sizes derived from the *t*-tests examining pre-post intervention scores on Alcohol Use Disorder Identification Test (AUDIT), Short Inventory of Alcohol Problems (SIP), perceptions of goal congruence around alcohol use, and positive and negative partner support behaviors around alcohol use as assessed by the PIQ. In both Phase 1 and Phase 2, there were medium to large effect sizes for both partners in reductions in AUDIT and SIP scores. In Phase 1, there was a medium effect size for increased perceptions of goal congruence for index partners but a small effect size for reductions in partners’ reported goal congruence. In Phase 2, there were large effect sizes for both partners in increased perceptions of goal congruence. In Phase 1, there was a medium effect size in reductions in positive partner support reported by the index participant and a medium effect size in reductions in negative partner support reported by index partners. In Phase 2, there was a medium effect size increase in positive support reported by both partners and a small effect size in reductions in negative support reported by both partners.

### Discussion

This pilot study describes the development and preliminary evaluation of ReACH2Gether, a three-session couples-based alcohol intervention delivered by videoconferencing to reduce unhealthy alcohol use among sexual minority men living with HIV and their partners. Between the two versions, we found that ReACH2Gether was generally more acceptable when delivered simultaneously to both partners rather than as a sequential significant other

enhanced motivational intervention. The redesign to include both partners in counseling simultaneously instead of focusing on an “identified patient” was due to participant feedback. The redesign was also generally more feasible in terms of recruitment, as well as intervention implementation and completion (Phase 1 = 57.1% session completion versus Phase 2 = 90.0% session completion). Additionally, we found preliminary support for our hypothesized mechanisms of change such that the revised couples-based intervention showed medium to large effect size estimates in improving relationship dynamics, specifically perceptions of goal congruence among both partners and positive support from partners around reductions in alcohol use. These findings indicate that ReACH2Gether as a couples-based intervention may be an effective strategy for reducing unhealthy alcohol use among sexual minority men with HIV and their partners.

In regard to feasibility, we had significant challenges with online recruitment and enrollment. Our first phase required that the partner also report regular alcohol use; however, we removed this eligibility criterion in Phase 2. Additionally, we redesigned the study to ensure that both partners screened for eligibility, consented, and completed the baseline survey before enrolling in the project and receiving compensation. Despite similar recruitment strategies across both phases, Phase 2 participants often assumed that the study was specifically for sero-different couples. Additionally, online recruitment has historically not been a feasible method of reaching people of color [38]; therefore, future research is needed to develop and evaluate couples-based interventions such as ReACH2Gether in local community centers. Finally, we were able to maintain high levels of intervention engagement in both phases. However, there was slightly higher engagement in Phase 2 when both partners attended all sessions together.

Our follow-up survey and exit interview qualitative data also indicated high levels of acceptability of ReACH2Gether as a couples-based intervention. The overall intervention experience received mean scores above four, indicating that the majority of participants found the sessions helpful. In the exit interviews, participants reported appreciating the focus on communication skills, alcohol use, and a culturally tailored intervention designed for sexual minority men. Participants noted this focus increased their motivation to change and brought them closer as a couple, which map onto the hypothesized mechanisms of change of improving shared goals. That is, the ReACH2Gether intervention was designed to increase motivation and dyadic functioning by facilitating shared goals, which in turn would result in reductions in unhealthy alcohol use and potentially HIV outcomes. In addition, exit interviews highlighted the importance of including more content on HIV, which is an important area for future research and may complement other promising couples-based interventions [21].

## Limitations

This is among the first couples-based interventions designed to specifically focus on unhealthy alcohol use for sexual minority men living with HIV and their partners. However, findings must be interpreted in light of several limitations. First, the study was initially designed for couples in which both partners report regular alcohol use. However, there were significant challenges to recruiting couples with these eligibility criteria, and therefore

inclusion criteria for the partner's drinking were dropped in Phase 2 to allow a broader pool of potential participants. Overall, Phase 1 participants reported higher AUDIT and SIP scores at baseline compared to those in Phase 2, which likely reflects this change in partner inclusion criteria. Second, we utilized a one-armed pretest-posttest design for both phases in which all participants received the intervention. Therefore, it is not possible to determine whether the intervention caused the observed changes. Future research is warranted that uses a randomized controlled trial design comparing couples-based intervention to individual intervention. Third, the majority of participants living with HIV had an undetectable viral load, indicating that recruitment efforts primarily reached men who were engaged in HIV care, which was a requirement for participation. Thus, the primary health outcomes likely to be impacted by this intervention are likely to be comorbidities associated with unhealthy alcohol use in people living with HIV rather than viral suppression. Given the small number of partners who were not living with HIV, we were unable to determine whether the intervention had any impact on HIV prevention behaviors. Additionally, the PIQ measure does not capture all aspects of positive and negative support behaviors around alcohol use or measure communication. Thus, future research is warranted to use measures specifically designed to assess couples' communication. Finally, although we were able to recruit a sample of sexual minority men living with HIV and their partners at the peak of the COVID-19 pandemic, the racial/ethnic makeup of the sample does not reflect that of overall HIV incidence among this population [39]. The underrepresentation of Black and Latino/x participants and the fact that few participants with HIV had a detectable viral load suggest that our sample may have lower overall structural vulnerabilities than the general population of sexual minority men living with HIV and their partners most in need of social and behavioral services. Finally, although videoconferencing was feasible and acceptable with no adverse events, it was nonetheless challenging to recruit couples using online recruitment. Therefore, future research may necessitate partnering with HIV care settings to understand the feasibility of delivering ReACH2gether within existing behavioral health services.

## Conclusions

Consistent with prior couples-based MI approaches for drug use [21], this study provides initial evidence of such an approach for unhealthy alcohol use among sexual minority men living with HIV and their partners using remote procedures. Given the role of unhealthy alcohol use in impeding HIV care continua outcomes, it is important to develop a menu of options for sexual minority men living with HIV that can be implemented within local community centers. However, additional research is needed to incorporate additional HIV content to meet the needs of both sero-different and sero-similar couples. Contrary to the scientific premise of this project [11], exit interview participants described how ReACH2Gether has the potential to address other health behaviors beyond alcohol use and HIV for sexual minority men. Overall, the results of this study warrant implementation using a rigorous randomized controlled design in local community settings to understand the acceptability, feasibility, and effectiveness of ReACH2Gether. Although participants reported feeling comfortable with the video-counseling modality, and this modality has great potential population reach and convenience, future research is needed to examine whether an

in-person modality may be more acceptable, feasible, and efficacious for some subgroups of sexual minority men.

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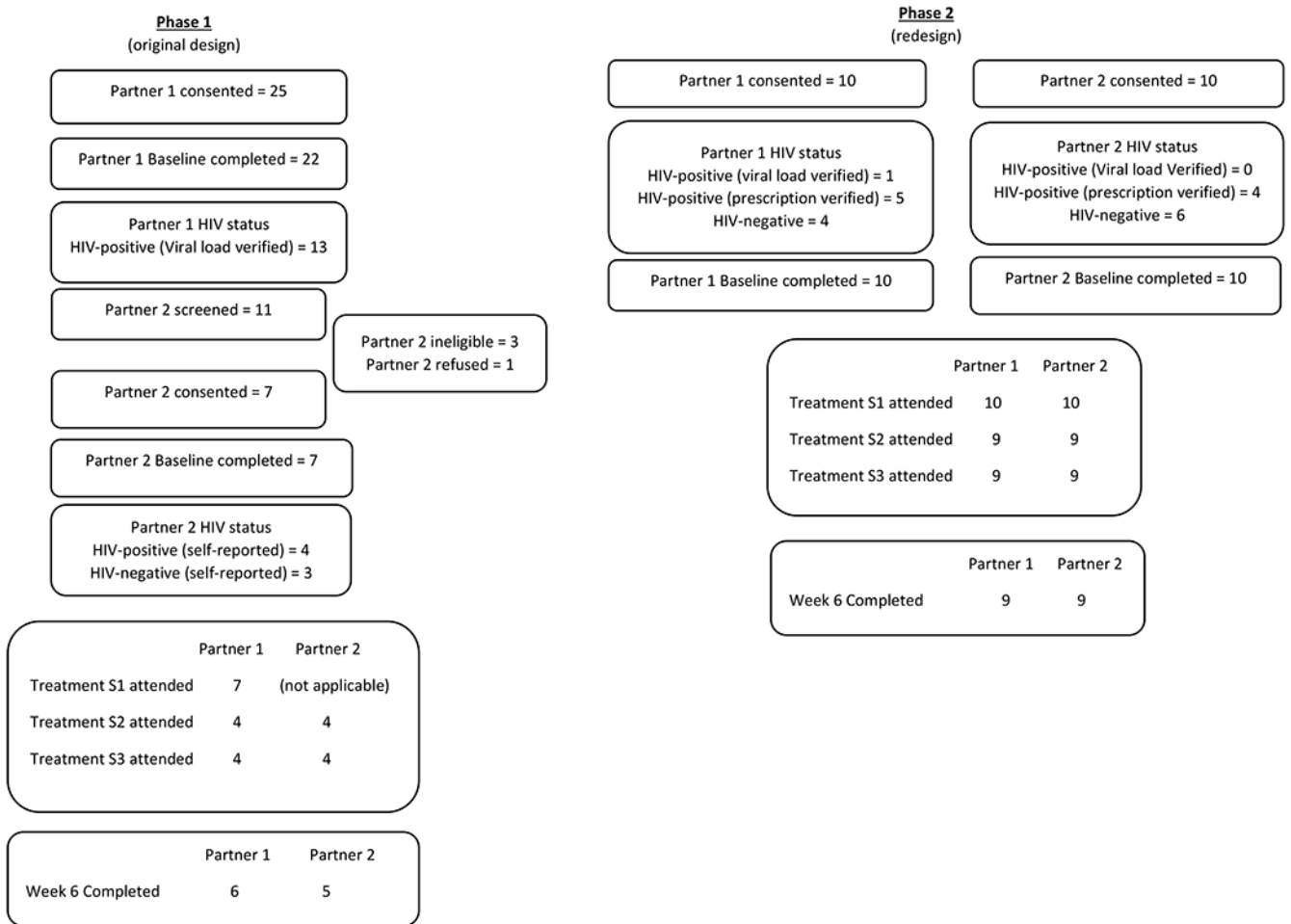
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**Figure 1.** Consolidated standards of reporting trials (CONSORT) study flow

**Table 1.**

**Intervention Content by Study Phase**

	Phase 1	Phase 2
Session 1	<ol style="list-style-type: none"> <li>1. Build rapport and gain better understanding of patient situation</li> <li>2. Build motivation                             <ol style="list-style-type: none"> <li>a. Explore pros and cons of alcohol use; connect alcohol use to their relationship</li> <li>b. Explore goals and values</li> <li>c. Discussion of alcohol and HIV</li> <li>d. Personalized feedback: Normative feedback</li> </ol> </li> <li>3. Assess motivation                             <ol style="list-style-type: none"> <li>a. importance and confidence ruler</li> <li>4. Identify goals and enhance motivation</li> <li>5. Create change plan, if appropriate</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Provide ground rules for communication between partners in session</li> <li>2. Identify underlying strengths and build rapport                             <ol style="list-style-type: none"> <li>a. Relationship strengths</li> <li>b. Communication within the couple</li> </ol> </li> <li>3. Explore both partner's alcohol use                             <ol style="list-style-type: none"> <li>a. Explore pro's and con's of alcohol use</li> <li>b. Explore goals and values of couple</li> <li>c. Explore each partner's motivation for themselves</li> </ol> </li> <li>5. Identify both partners alcohol reduction goals</li> <li>6. Relationship affirmation exercise</li> </ol>
Session 2	<ol style="list-style-type: none"> <li>1. Provide ground rules for communication between partners in session</li> <li>2. Identify underlying strengths and build rapport                             <ol style="list-style-type: none"> <li>a. Relationship strengths</li> <li>b. Communication within the couple</li> </ol> </li> <li>3. Partner Alcohol use                             <ol style="list-style-type: none"> <li>a. Explore partner's alcohol</li> <li>b. Explore pro's and con's of alcohol use for partner</li> </ol> </li> <li>4. Communication                             <ol style="list-style-type: none"> <li>a. Discuss effective communication tips</li> <li>b. Explore partner's motivations for themselves and as a couple</li> </ol> </li> <li>5. Identify both partners alcohol reduction goals</li> </ol>	<ol style="list-style-type: none"> <li>1. Explore each partner's motivation for alcohol reduction                             <ol style="list-style-type: none"> <li>a. Importance and confidence ruler</li> </ol> </li> <li>2. Revisit both partners alcohol reduction goals                             <ol style="list-style-type: none"> <li>a. Assess motivation</li> </ol> </li> <li>3. Identify both partner's non-alcohol goals</li> <li>4. Create a change plan, if appropriate</li> <li>5. Relationship affirmation exercise</li> </ol>
Session 3	<ol style="list-style-type: none"> <li>1. Review previous session                             <ol style="list-style-type: none"> <li>a. Explore each partners alcohol use</li> <li>b. Review content and skills from session 2</li> </ol> </li> <li>2. Partner social support                             <ol style="list-style-type: none"> <li>a. Review support needs, preferred type of support, recognizing support</li> <li>b. Social support and alcohol use</li> </ol> </li> <li>3. Identify outside support</li> </ol>	<ol style="list-style-type: none"> <li>1. Review previous session</li> <li>2. Partner social support                             <ol style="list-style-type: none"> <li>a. Review support needs, preferred type of support, recognizing support</li> <li>b. Social support and alcohol use</li> </ol> </li> <li>3. Identify outside support</li> <li>4. Future relationship vision</li> </ol>

**Table 2.**

## Baseline Characteristics by Study Phase

	<b>Phase 1</b>	<b>Phase 2</b>
	<b>n (%)</b>	<b>n (%)</b>
<b><i>Couple HIV Status</i></b>		
Sero-similar	4 (57.1)	0
Sero-different	3 (42.9)	10 (100)
<b><i>Partner 1 HIV Status</i></b>		
Living with HIV	7 (100)	6 (60.0)
Not living with HIV	0	4 (40.0)
<b><i>Partner 2 HIV Status</i></b>		
Living with HIV	4 (57.1)	4 (40.0)
Not living with HIV	3 (42.9)	6 (60.0)
<b><i>Partner 1 Race Ethnicity</i></b>		
White, non-Hispanic	3 (42.9)	8 (80.0)
Black, non-Hispanic	3 (42.9)	0
Multiracial, non-Hispanic	1 (14.3)	1 (10.0)
White, Hispanic	0	0
Black, Hispanic	0	0
Refuse to answer	0	1 (10.0)
<b><i>Partner 2 Race Ethnicity</i></b>		
White, non-Hispanic	2 (28.6)	5 (50.0)
Black, non-Hispanic	4 (57.1)	3 (30.0)
Multiracial, non-Hispanic	0	0
White, Hispanic	1 (14.3)	1 (10.0)
Black, Hispanic	0	1 (10.0)
Refuse to answer	0	0
<b><i>Partner 1 Sexual Identity</i></b>		
Gay	6 (85.7)	8 (80.0)
Bisexual	0	1 (10.0)
Other	1 (14.3)	1 (10.0)
<b><i>Partner 2 Sexual Identity</i></b>		
Gay	5 (71.4)	8 (80.0)
Bisexual	1 (14.3)	1 (10.0)
Other	0	1 (10.0)
<b><i>Cohabitation</i></b>	5 (71.4)	7 (70.0)
<b><i>Partner 1 Income (Less \$30K/yr.)</i></b>	3 (42.9)	2 (20.0)
<b><i>Partner 2 Income (Less \$30K/yr.)</i></b>	3 (57.1)	1 (10.0)
	<b>M (SD)</b>	<b>M (SD)</b>
<b><i>Partner 1 Age (yrs.)</i></b>	47.2 (14.7)	40.9 (12.4)

	<b>Phase 1</b>	<b>Phase 2</b>
	<b>n (%)</b>	<b>n (%)</b>
<i>Partner 2 Age (yrs.)</i>	47.6 (17.9)	36.9 (7.6)

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**Table 3**

Differences in intervention satisfaction between Phase 1 and Phase 2

	<b>Phase 1</b>	<b>Phase 2</b>	<b>Between phase difference</b>
	<b>M (SD)</b>	<b>M (SD)</b>	<b>Hedges' g</b>
P1 Counselor was friendly	3.7 (2.1)	5.0 (0.0)	0.98
P2 Counselor was friendly	3.2 (2.1)	4.6 (1.3)	0.79
P1 Counselor was knowledgeable	3.5 (1.9)	4.8 (0.4)	0.95
P2 Counselor was knowledgeable	3.8 (1.6)	4.6 (1.3)	0.49
P1 Counselor was experienced	4.3 (1.6)	4.8 (0.4)	0.39
P2 Counselor was experienced	4.8 (0.5)	4.9 (0.3)	0.22
P1 Counselor was professional	5.0 (0.0)	4.9 (0.3)	-0.40
P2 Counselor was professional	4.8 (0.5)	5.0 (0.0)	0.73
P1 Session length the right amount	3.2 (0.9)	3.3 (0.9)	0.17
P2 Session length the right amount	2.6 (0.9)	3.2 (0.4)	0.93
P1 Satisfied with counseling experience	4.0 (1.5)	4.9 (0.4)	0.72
P2 Satisfied with counseling experience	3.6 (1.5)	4.8 (0.4)	0.95

*Note:* P1 = partner 1. P2 = partner 2. Hedges' *g*s represent the between-phase difference effect size for each variable.

**Table 4.**

Pre-Post Comparisons by Study Phase

	Phase 1 (n = 7)			Phase 2 (n = 10)		
	Pre M (SD)	Post M (SD)	Hedges' g	Pre M (SD)	Post M (SD)	Hedges' g
P1 Alcohol Use Disorder Identification Test	18.5 (9.1)	14.9 (11.4)	-0.60	9.2 (5.1)	7.7 (4.1)	-0.68
P2 Alcohol Use Disorder Identification Test	13.4 (13.7)	2.3 (1.7)	-0.81	5.8 (3.2)	4.8 (3.9)	-0.48
P1 Short Inventory of Alcohol Problems	16.0 (7.7)	9.6 (7.9)	-0.61	4.9 (3.7)	2.3 (2.7)	-0.57
P2 Short Inventory of Alcohol Problems	12.3 (13.5)	6.3 (9.2)	-0.58	2.2 (2.7)	1.4 (1.7)	-0.47
P1 Alcohol-related Goal Congruence	3.7 (1.2)	4.3 (0.9)	0.50	3.6 (1.1)	4.2 (0.7)	0.85
P2 Alcohol-related Goal Congruence	3.3 (0.6)	3.1 (1.2)	-0.23	3.4 (0.6)	4.2 (0.3)	0.91
P1 Positive partner support around alcohol use	2.4 (1.1)	1.9 (1.7)	-0.43	1.4 (1.2)	2.0 (1.3)	0.64
P2 Positive partner support around alcohol use	1.3 (1.3)	1.1 (1.3)	-0.15	1.2 (0.7)	3.4 (5.1)	0.40
P1 Negative partner support around alcohol use	1.8 (1.4)	1.2 (1.2)	-0.68	0.5 (0.8)	0.3 (0.3)	-0.25
P2 Negative partner support around alcohol use	1.3 (0.7)	1.3 (1.1)	-0.03	0.4 (0.7)	0.3 (0.7)	-0.34

Note: P1 = partner 1. P2 = partner 2. Hedges' gs represent the within-subjects effects for each variable within each phase.