

**A Pilot Study: A Virtual Reality-Based Peer Support Community for Individuals with  
Substance Abuse Disorders**

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Spring 2021

### **Abstract**

Substance abuse often occurs as a way to cope with negative affect and life stressors in an unsupportive social context. As a result, affective regulation and social support play a key role in relapse prevention and recovery. The purpose of this study was to test the feasibility of a novel virtual reality (VR)-based peer support community. The objectives for this intervention were to provide affective regulation and social support to individuals seeking substance abuse recovery. Seventeen participants in recovery attended virtual peer-support meetings for at least two months. All participants completed questionnaires to assess perceived online social support, group therapy alliance, and changes in affect from attending VR sessions. Structured qualitative interviews with eleven participants revealed the psychological benefits and social support offered by sessions along with various challenges in navigating VR and the user interface. Quantitative data showed that improvement in mood, perceived online social support, and satisfaction with group-therapy alliance were associated with VR meeting attendance. With further research and improvements, this virtual intervention may be an effective tool to teach cognitive-behavioral skills, regulate affect, and provide social support to individuals who are at risk for relapse or in long-term recovery.

## Introduction

Drug addiction is a prevalent health problem in the U.S. that takes a tremendous toll on the quality of life and wellbeing of those suffering from it. The rates of drug overdose deaths in the U.S. have been increasing since 1999, causing over 67,000 deaths in 2018 alone (Hedegaard et al., 2020). Drug addiction is not only physically and emotionally debilitating for the affected individual, but often leads to crime, violence, child abuse, and increased healthcare costs in the community. As a result, substance abuse has an estimated yearly economic impact of approximately 442 billion dollars in the U.S. (Sacks et al., 2015; NDIC, 2011). It has even been found that the cost of imprisoning an individual for methadone abuse costs about \$24,000 per year, whereas one year of methadone maintenance treatment is about \$4,700 per patient (NIDA, 2018). This shows that drug addiction treatments are not only important for improving individual health outcomes, but also for reducing the associated social and infrastructural costs.

One of the most influential models of addiction proposes that individuals use substances to cope with negative affect and life stressors (Kassel et al., 2007). Individuals often struggle to cope with negative emotions and stressful events once they finish recovery programs and transition back into their previous lives. In fact, over 85% of individuals relapse and return to drug use within 1 year of treatment (Brandon et al., 2007). During early recovery stages, intense behavioral distress contributes to overwhelming levels of drug seeking (cravings) and relapse risk in abstinent previously addicted individuals (Sinha, 2007). Therefore, tools and interventions that can effectively regulate affect among individuals in long-term recovery are important for preventing relapse and improving recovery outcomes.

One such intervention may be cognitive behavioral therapy (CBT), which looks at the interactions between emotions, thoughts, behaviors, and physiology to help individuals change

impulsive cognitive distortions, improve emotional regulation, and develop coping strategies for personal problems. Therefore, CBT-based exercises can be useful in lifting an individual's mood when they experience a stressful or triggering life event. This can be important in the context of addiction treatment, where individuals who are facing constant life stressors and consequential negative affect can benefit from CBT by improving emotional-regulation and reducing coping tendencies that lead to substance abuse. A meta-analysis of trials with adults in recovery showed the effectiveness of CBT (Magill & Ray, 2009).

Addiction is also characterized as a behavioral byproduct of an individual in a specific social context. Social context acts as both a protective factor and risk factor for substance abuse, playing a key role in addiction's initiation, maintenance, relapse, as well as its prevention, treatment, and long-term resolution (Gifford & Humphreys, 2007). As a result, social support is an important aspect of addiction recovery along with formal treatment. One way that individuals in recovery can find social support is through peer support, or the process of giving and receiving non-clinical, non-professional assistance from individuals with similar conditions to achieve long-term recovery from drug-related problems (Tracy & Wallace, 2016). In fact, active engagement in peer-support groups has shown to be a key predictor of recovery and sustaining recovery (Tracy & Wallace, 2016). Being frequently surrounded and supported by a community of individuals who have first-hand experience with substance abuse can be powerful for a person who is seeking recovery. Peer-support based communities can be a means of continued recovery for individuals to stay abstinent from substance use long after their treatment is over, increasing the sustainability of their recovery.

Peer support communities can take form in various modalities, one being online social networks. Online social media forums can be a fulfilling outlet for individuals to openly share

their experiences, questions, and seek social support. Specifically, online peer support communities allow individuals struggling with addiction to anonymously engage in an open discussion while minimizing perceived barriers and stigma (De Choudhury & De, 2014). Due to the stigma and shame often associated with substance abuse, the ability to freely disclose personal struggles and find social support within online peer support communities can be a powerful positive resource for those in early recovery. In fact, a study on an online Reddit community focused on helping individuals with opioid use disorder (OUD) found that this forum served as a significant source of social support (D'Agostino et al., 2017). The anonymity provided in these online communities may facilitate more honest and open conversations that create stronger social support, relative to traditional in-person therapeutic models.

#### *Virtual reality as addiction treatment*

Technological interventions may be useful in building and maintaining the affective regulation and social support that are crucial to long-term addiction recovery. Virtual reality (VR) may be one such technology. VR is a technological interface that allows users to experience a realistic, immersive computer-generated environment through a headset and hand controllers. VR is distinct from other 2D platforms because it allows the user to behave, feel, and think as if the virtual environment they are in is real (Slater, 1999). VR has great potential for therapeutic use since it allows for the user to experience an environment precisely controlled by a healthcare provider, in a safe and cost-effective environment.

In the context of addiction, VR has been used to deliver cue exposure therapy (CET), through showing a virtual syringe or needle to substance abuse patients (Maples-Keller et al., 2017). Members of Alcoholics Anonymous have used VR-delivered CET to reduce cravings through exposure to replicated environments, such as a Japanese-style or Western pub

(Wiederhold & Wiederhold, 2008). In this type of therapy, individuals are taught to reduce their fear response to the negative affect elicited by these environments. Essentially, prior research shows that VR can be efficacious as an exposure therapy when treating addiction. However, the application of VR in other ways to treat addiction is essentially absent in existing literature.

An unconventional application of VR as a platform for an online peer-support community may provide the affective regulation and social support that are crucial to individuals in recovery. Social VR is an emerging set of multi-user applications, such as VRChat, AltspaceVR, or Rec Room, that allow people to interact with one another in a virtual environment. The diversity in the spatialized experiences and immersive presence that VR affords can have a profound impact on the kinds of social interactions that emerge in social VR (McVeigh-Schultz et al., 2019). Additionally, the hyper-realistic environment of VR creates a transformative experience that requires individuals to critically examine and modify negative core assumptions and beliefs, often creating sudden reorienting insight (Riva et al., 2016). Moreover, immersing individuals in realistic, soothing virtual environments may help regulate their affect. Finally, individuals at risk for relapse are able to immediately access these benefits from a VR-based intervention at any time from any place.

### *The Current Study*

We propose that a VR-based peer-support community can help individuals in recovery regulate their affect and gain social support, ultimately serving as a useful behavioral resource in the realm of addiction treatment. Very Real Help LLC has established a social VR application called “Help Club”, in which individuals can interact with one another within a variety of immersive, soothing virtual environments, such as a campfire, beach, or ski lodge. Users depict themselves through customizable avatars with anonymous usernames. They can view each

other's avatars and body movements, while communicating through their actual voices. Individuals can also use 3D drawing and text features to communicate and visually express themselves or share experiences. Within the app, peers who are trained facilitators host meetings and teach a combination of Self-Management and Recovery Training (SMART)- and CBT-based concepts to participants to educate them on how to change impulsive cognitive distortions, improve emotional regulation, and develop coping strategies for personal problems. Meetings begin with a "check-in" during which each participant shares a recent challenge and success, followed by an overarching discussion on a common issue or a relevant tool. Individuals are encouraged to be open and mold the topic of the meeting to their preference.

The basis for this intervention is the understanding that 1) the maintenance of addiction recovery outcomes is often short-lived or unstable, and 2) affective regulation and social support are key components of recovery. The larger goal is for this VR intervention to grow into a broader online social world in which recovering individuals can find social support by anonymously sharing deeply personal experiences, provide peer support, and cope with intense emotions. This behavioral intervention aims to support individuals seeking recovery from addiction and help improve their long-term outcomes. In order to investigate the feasibility and benefits of such an intervention, we conducted a pilot study to explore whether virtual meetings provide a baseline level of support and benefits for those in recovery. In doing so, we explored four specific research questions:

- 1) How do VR meetings affect the mood of individuals in recovery?
- 2) Do individuals in recovery perceive a significant amount of social support from the virtual community, and does this change over time?

3) What level of group therapy alliance (the interrelationships of the group members and the degree to which the members are able to work together constructively to further the therapeutic work) do individuals in recovery perceive from virtual meetings?

4) What are recovering individuals' unique qualitative experiences virtual meetings?

We predicted that virtual meetings would be associated with significant increases in positive affect and decreases in negative affect for individuals with substance abuse disorders.

Furthermore, we predicted that individuals would perceive a significant amount of social support from the virtual community, and that this would grow over time. We also predicted that individuals would perceive a significant level of group therapy alliance from virtual meetings. Ultimately, we hypothesized that the virtual community and its meetings would be a feasible source of support and a positive experience for those seeking substance abuse recovery.

## **Methods**

### *Participants*

Participants consisted of 17 individuals in recovery. Since the platform was anonymous, we did not have access to demographic data such as the age and gender of participants. These individuals were members of the virtual community in the Help Club application developed by Very Real Help LLC. Data were de-identified and passed to Vanderbilt University by Very Real Help LLC through an NIH grant. Participants had access to an internet connection and were provided with an Oculus Quest VR headset and hand-held controllers and trained in their use. Each headset had the Help Club app installed, through which participants accessed virtual recovery sessions.

### *Measures*



In a mixed methods design, participants completed three different questionnaires to quantitatively assess the feasibility and efficacy of virtual recovery sessions. Then, participants were interviewed to qualitatively assess their unique experiences with virtual recovery sessions.

### **Positive and Negative Affect Schedule (PANAS)**

Participants completed the 20-item Positive and Negative Affect Schedule (PANAS) self-reported questionnaire to assess change in affect across the course of VR sessions. The PANAS (Watson et al., 1988) consists of two subscales comprised of 10 emotions: positive affect (active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong) and negative affect (afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset and distressed). Each emotion is rated with a five-point Likert scale. The total score was calculated by finding the sum of the 10 positive items, and then the 10 negative items. Possible scores ranged from 10 to 50 for both sets of items. For the total positive score, a higher score indicated more of a positive affect. For the total negative score, a lower score indicated less of a negative affect. This questionnaire measured the change in affect for each participant as they attended VR sessions. This was a relevant measure since individuals with increased positive or decreased negative affect are less likely to turn to coping behaviors of substance use, according to the stress and coping theory that CBT is based on.

### **Group Session Rating Scale (GSRS)**

Participants also completed the Group Session Rating Scale (GSRS) to assess group-therapy alliance and the quality of individual sessions and helper skill (Quirk et al., 2013). Group therapy alliance describes the interrelationships of the group members and the degree to which the members are able to work together constructively to further the therapeutic work (Johnson, 2007). The GSRS is a 4-item scale that rates the relationship, goals and topics, approach, and

overall experiences with a counselor on a ten-point Likert scale. Specifically, group members rate the ‘relationship’ aspect of the group, whether their ‘goals and topics’ were addressed, the facilitators ‘approach and method’ and their ‘overall’ view of the group. Scores were summed, with the total possible score ranging from 0 to 40. A higher score indicated a greater perceived group-therapy alliance.

### **Online Social Support Scale (OSS)**

Participants also complete the Online Social Support Scale (OSS) to assess the level of online social support they received from the virtual recovery sessions. The OSS is a 40-item scale that measures the online occurrence of the four dimensions of social support: esteem/emotional support, social companionship, informational support, and instrumental support (Nick et al., 2018). Esteem/emotional support (EE) reflects communications with others that conveyed acceptance, intimacy, validation, caring, and being held in high esteem. Social companionship support (SC) conveys a sense of belonging, through expressions of inclusivity or by simply spending time together. Informational support (INF) conveys receiving help in defining, understanding, and coping with problems through the form of advice or sharing new perspectives. Lastly, instrumental support (INS) reflects provision of financial aid, material resources, and needed services. We decided to remove the INS subscale, since this type of support was likely not possible nor relevant due to the anonymity of the intervention. Therefore, participants completed a 30-item version of this survey, measuring subscales of esteem/emotional support, social companionship, and informational support on a five-point Likert scale with ratings for each item on a scale of 0 to 4. Each subscale consisted of 10 items. Scores were summed, with the total possible score ranging from 0 to 120. Higher scores reflected greater online social support.

## **Qualitative Interviews**

Structured interviews were conducted with a subset (n=11) of the participants (not all were available for the interview). We contacted every participant, and only eleven responded or reported having availability for interviews. Some individuals reported not feeling comfortable having an in-depth interview about their experiences. Each participant completed a set of two different interviews that were approximately three weeks apart. The first interview (Appendix A) explored the individuals' prior personal experience with VR and other recovery-based behavioral interventions. This interview also explored individuals' initial impressions of the virtual recovery sessions. The second interview (Appendix B) inquired about individuals' experiences after having attended more virtual recovery sessions. This interview explored individuals' desire to continue attending, any negative experiences with the virtual meetings, and their comparison of these sessions to other behavioral interventions and telehealth platforms. While the interviews were based on a structured list of questions, participants also were encouraged to bring up anything they desired to discuss, letting them create their own narrative of their experiences. Interviews were conducted on behalf of Very Real Help LLC and then passed to Vanderbilt University. Once completed, the interviews were transcribed and all identifying information removed.

## *Design and Procedure*

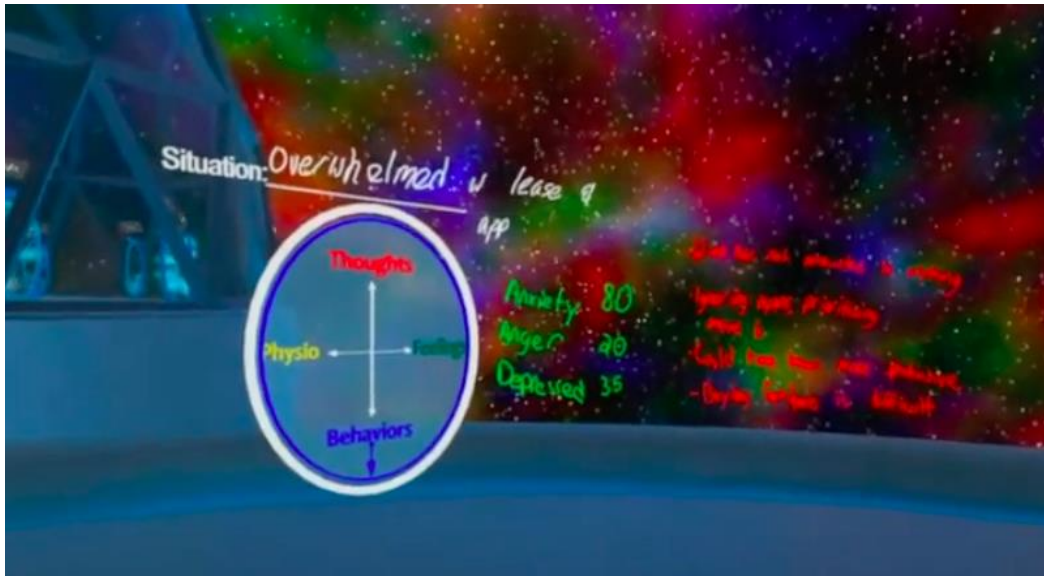
All participants were members of the broader Help Club community and had been attending virtual sessions whenever they liked, for at least two months. When participants logged in to the Very Real Help app, they were able to select an anonymous username and avatar to represent themselves. Users were able to interact with and view each other through body movements of their avatars and communicate through their actual voices in an immersive,

soothing virtual environment (see Figure 1). Each virtual session consisted of a group of participants led by a trained facilitator. Each session taught CBT-based concepts to participants to educate them on how to change impulsive cognitive distortions, improve emotional regulation, and develop coping strategies for personal problems. An array of CBT-based psychoeducational exercises such as completing a worksheet to challenge negative thoughts or constructing an action plan for change in one's life, were taught and carried out over the course of these sessions. The virtual environment in the app included 3D drawing and text features through which these exercises were visually explained (see Figure 2). The app itself and its features were developed and maintained by Very Real Help LLC.

**Figure 1.** An image of what a VR session looked like and how users were visually represented. This meeting took place in the “Campfire” world.



**Figure 2.** An visual depiction of how the cognitive-behavioral model was explained using the draw tool in a virtual meeting. In this instance, the model was being used to help a participant deal with distress from being overwhelmed with finding a new lease and applying for jobs.



Participants completed the PANAS before and after every VR session. They also completed the GSRS at the end of every VR session. The 30-item OSS was completed monthly. Participants were contacted for participation in the interview and 11 of the 17 agreed to do so. Participation was voluntary and no incentive was provided. All interviews were conducted at a time that was most convenient for participants, through Zoom audio. Each interview lasted approximately 20 minutes. Data from the interviews were transcribed and made anonymous.

#### *Data analyses*

The interview transcripts were analyzed using thematic analysis. This widely used method was chosen due to its ability to concisely identify, analyze, and report patterns in a large amount of qualitative data (Braun & Clarke, 2006). Additionally, the flexibility offered through thematic analysis allowed our team to establish a wide range of themes from a diverse range of interview answers. Our team conducted a thematic analysis using an inductive approach, in which the entire process was data-driven without any attempt to fit themes into a pre-existing coding framework or prior findings in the literature (Braun & Clarke, 2006). Using this approach allowed us to identify unexpected themes and grasp the entirety of participants' diverse

experiences with VR recovery sessions. First, our qualitative analysis team of four individuals read through all transcripts, familiarizing ourselves with the content. Through various discussions, we generated relevant themes together and identified their occurrences in each interview transcript. In doing so, we created clear definitions for each theme. Under each theme, we jointly developed sub-themes that emerged from the data and identified their occurrences in the data. After this process was finished, our team met and jointly decided which themes were most relevant to and reflective of the data. This decision was partly made by the amount of times a theme occurred in the data, as well as our own agreement on which were most important. A general consensus on these themes was important to establish inter-rater reliability in our qualitative findings.

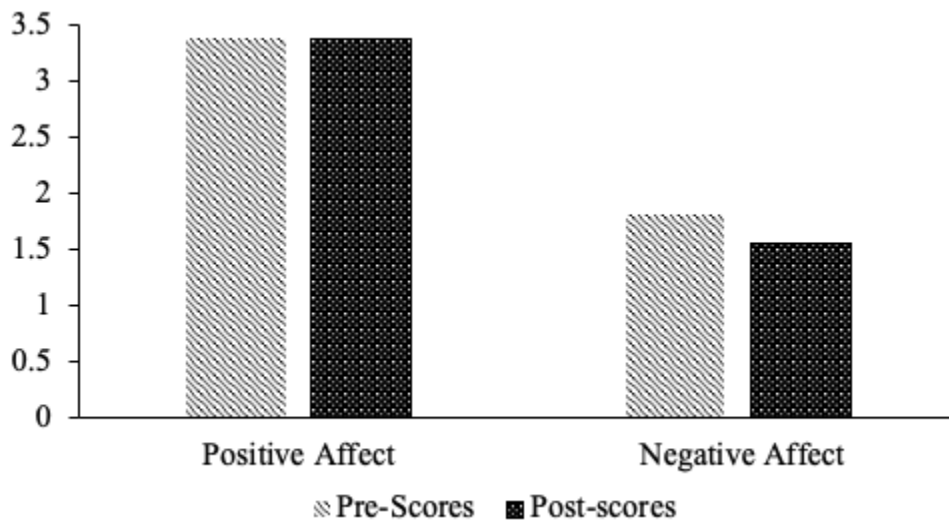
Since each participant attended as many VR meetings as they liked, they each completed the PANAS a different amount of times. As a result, we were not able to conduct a repeated-measures ANOVA test on all of the PANAS data. Instead, we looked at participants' first and most recent PANAS scores during their total time of attending virtual sessions. Paired-sample t-tests were conducted to compare changes in affect from pre- to post- VR sessions for both positive and negative affect. Paired-sample-tests were also conducted to compare change in perceived online social support from VR sessions. Similarly, we looked at participants' first and most recent OSS scores during their total time of attending virtual sessions. GSRS scores were averaged to assess perceived group-session ratings from participants. We calculated effect sizes using Hedges'  $g$  due to a small sample size ( $<20$ ).

## **Results**

Due to unavailability, only some participants ( $n=11$ ) were interviewed. Due to attrition and missing surveys during the study, only some ( $n=15$ ) participants' PANAS and GSRs scores were included in the analyses. All participants ( $n=17$ ) completed the OSS.

When looking at participants' first PANAS scores (see Figure 3), we did not find a significant difference in positive affect from PRE ( $M=3.39$ ,  $SD=0.76$ ) to POST ( $M=3.37$ ,  $SD=0.88$ );  $t(15)=0.13$ ,  $p=0.89$ ,  $g=0.02$ . However, we found a small significant difference in negative affect with a moderate effect size from PRE ( $M=0.27$ ,  $SD=0.65$ ) to POST ( $M=1.55$ ,  $SD=0.49$ );  $t(15)=1.73$ ,  $p=0.05$ ,  $g=0.48$ .

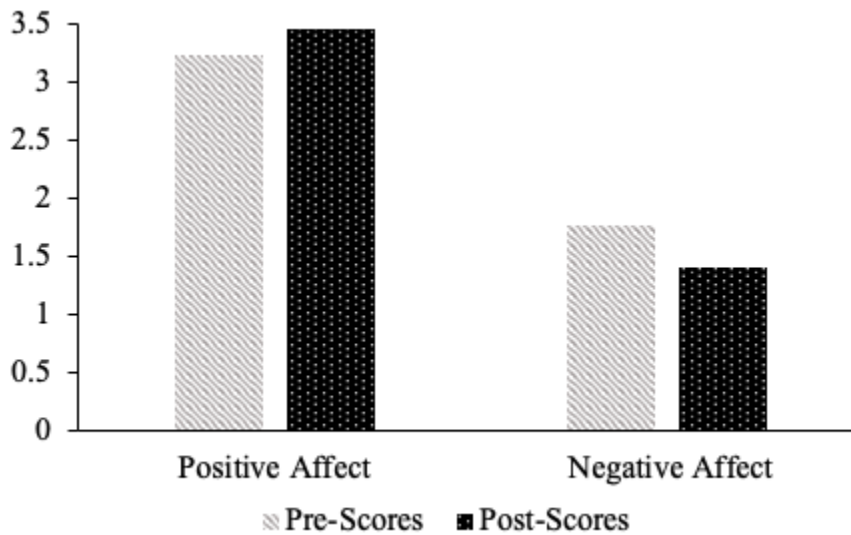
**Figure 3.** Changes in affect from attending first VR meeting



When looking at participants' most recent PANAS scores (see Figure 4), we found a significant difference in positive affect with a small effect size from PRE ( $M=3.24$ ,  $SD=0.87$ ) to POST ( $M=3.47$ ,  $SD=0.64$ );  $t(15)=2.34$ ,  $p<0.05$ ,  $g=0.31$ . We also found a significant difference in negative affect with a medium effect size from PRE ( $M=1.77$ ,  $SD=0.58$ ) to POST ( $M=1.40$ ,  $SD=0.50$ );  $t(15)=-2.25$ ,  $p<0.05$ ,  $g=0.69$ . It is notable that these effect sizes ( $g=0.31$ ,  $g=0.69$ ) are considerably larger than those from the first set of PANAS scores ( $g=0.02$ ,  $g=0.48$ ). We found a

larger significant decrease in the emotions: distressed, hostile, irritable, nervous, and afraid. We found a significant increase in the emotions: interested, inspired, attentive, and active. Effect sizes and mean differences for all emotions are reported in Table 1.

**Figure 4.** Changes in affect from attending most recent VR meeting



**Table 1.** Change in Most Recent PANAS Self-Reported Affect, By Individual Emotion, after attending VR meetings

Valence	Emotion	M (diff)	T-value	Df	Hedges' g
+	Pos Affect	.23*	2.32	14	.31
-	Neg Affect	-.37*	-2.25	14	.69
+	Inspired	.60*	2.55	14	.58
+	Attentive	.40*	3.06	14	.43
+	Interested	.40*	2.10	14	.46
+	Active	.33*	2.09	14	.32



+	Determined	.33	1.43	14	.35
+	Proud	.20	1.15	14	.18
+	Alert	.13	0.70	14	.14
+	Strong	.13	0.69	14	.16
+	Excited	.07	0.27	14	.07
+	Enthusiastic	0	0	14	0
-	Irritable	-.60*	-2.07	14	.76
-	Distressed	-.53*	-1.66	14	.56
-	Hostile	-.53*	-2.48	14	.80
-	Nervous	-.47*	-1.97	14	.57
-	Scared	-.40	-1.57	14	.52
-	Guilty	-.33	-1.58	14	.41
-	Upset	-.33	-0.96	14	.36
-	Afraid	-.27*	-1.74	14	.55
-	Jittery	-.27	-1.47	14	.34
-	Ashamed	0	0	14	0

\*p < 0.05

**Perceived Online Social Support:** On a scale of 0-120, participants, on average, rated perceived online social support as 81.65 with a standard deviation of 18.6. This is comparable to mean individual OSS ratings of (M=97.25 on a scale of 0-160) found in members of massively

multiplayer online role-playing games (MMORPGs) (Cole et al., 2020). Contrary to our predictions, we did not find a significant increase in total perceived online social support from PRE (M=81.65, SD=18.60) to POST (M=73.33, SD=18.06);  $t(9)=1.27$ ,  $p>0.05$ ,  $g=0.28$ . Out of the three subscales (esteem/emotional support, social companionship, and informational support), there were no significant differences found except for a significant decrease in perceived social companionship from PRE (M=24.29, SD=8.54) to POST (M=19.11, SD=8.89);  $t(9)=1.98$ ,  $p<0.05$ ,  $g=0.61$ .

**Group Session Rating Scale:** On a scale of 0 to 40, participants rated group sessions with a mean score of 32.53 with a standard deviation of 5.08. This is comparable to GSRS ratings in other psychotherapeutic interventions such as (M=36.69) for a psychological group treatment integrated with yoga for anxiety and depression, (M=35.40) for group CBT in adults with anxiety and depression, and (M=38.70) in a support group for melanoma patients and their families (Jonsson et al., 2020; Bains et al., 2014; Lazor et al., 2017).

**Qualitative Analysis:** Eight major themes (see Table 2) emerged from the qualitative interviews: technological usability, community, comparison to other behavioral interventions, psychological/psychoeducational impact, challenges, immersion, anonymity, and pandemic. We decided to present them in the order of the number of times mentioned (n).

**Table 2.** Major themes that emerged from qualitative analysis. \*Frequency values are reported as the number of times mentioned; number of people who mentioned (out of n=11 participants).

Theme	Definition & subthemes	Frequency*	Examples
Technological Usability	How the use of a VR headset and controllers impacts participants' experiences	55; 11	"I'm still trying to figure it all out. I'm still trying to get comfortable with the technology."

			<p>“I really like that you can join anywhere...it was two weeks ago I just got off work and I ran to the store...my husband had picked me up and I was doing a class in my car...I really like that.”</p>
<b>Community</b>	A feeling of fellowship with others, as a result of sharing common attitudes, interests, and goals	53; 11	<p>“My mom got a diagnosis of Alzheimer’s’ ...being able to talk about it and knowing that people have also experienced it and worked through it has been helpful, but more it’s really having a place to bring it.”</p> <p>“That is one of the really fun things about VR... that there's this huge cultural and geographic mix of people, which I really enjoy that a lot.”</p>
<b>Comparison to other interventions or platforms</b>	Comparisons of VR recovery sessions to any mental health intervention or telehealth platform	41; 11	<p>“I love the immersion factor of it, just being in the actual app as opposed to a Zoom kind of meeting”</p> <p>“So, if [Help Club] can move beyond just meetings to recreating, you know building a broader social world for myself then it can be a much bigger part of my life. Right now it’s a replacement for the group meetings I’m doing several times a week, but it could move up from that.”</p>
<b>Psychological/ Psychoeducational impact</b>	The impact of VR recovery sessions on participants’ mental wellbeing and ability to retain psychoeducational tools	34; 11	<p>“For the first time outside of Help Club, I took the cognitive behavioral model and put it up on a white board and took a thing I was dealing with and worked it through the model on my own...I was like oh that was super helpful!”</p> <p>“What happens for me is I always feel more motivated, more engaged, less frustrated, less anxious, less distressed.”</p>
<b>Challenges</b>	Negative experiences and difficulties with VR recovery sessions	32; 10	<p>“I’ll have like some glitch tech issue stuff where I’ll get locked into that spawning room.”</p> <p>“Like accidentally grabbing someone else’s chair and moving it when I’m not even looking at it... and I’m like ‘oh I didn’t want to do that’...when I was in early recovery, you know attention and things are sort of harder to direct...that [may] be problematic for people.”</p>
<b>Immersion</b>	The feeling of being placed in a different, alternate environment	27; 8	<p>“When I’m in those meetings I don’t feel like I’m where I am like if I’m in a bedroom or a living room; I feel very transported.”</p>

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			“I do get the sense that I am in a physical space with somebody else.”
<b>Anonymity</b>	The impact of being completely unidentifiable in recovery sessions	21; 10	“I literally don’t need to hold back on anything... I don’t even have to stay focused on the “am I actually being honest right now” - I can just let stuff out.”
			“Nobody makes an immediate judgement just based on age or where you come from.”
<b>Pandemic</b>	Mentioning the COVID-19 pandemic in relation to VR recovery sessions	8; 6	“It was nice to be able to hear that other people were having similar issues and... what worked with them... which I needed a lot, especially during this pandemic.”
			“I’m currently feeling the effects of this long standing shelter in place, so the connection is welcome.”

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Detailed descriptions of subthemes and an abundance of relevant quotes can be found in Appendix C.

### **Theme 1: Technological usability (n=55; 11 people)**

All eleven participants commented on how the technological usability of the VR headset and controllers impacted their experience (for a total of 55 comments). The concept of technological usability was the most mentioned theme. Eight participants interviewed mentioned difficulty learning how to navigate VR technology for the first time (for a total of 18 comments). Five participants interviewed experienced negative physiological impacts such as nausea and headaches associated with using VR for the first time (for a total of 7 comments). Apart from this, four participants interviewed reported that a desktop (2D) experience allowed them to understand what a virtual meeting looked like, while a VR (3D) experience gave them a much more immersive, engaging experience (for a total of 8 comments). Eight participants mentioned how aspects of the user interface experience, such as a lack of seeing social cues, impacted the virtual experience (for a total of 11 comments). Lastly, four participants interviewed described

how the ability to access the app from any location or device allowed them to attend meetings more (for a total of 6 comments).

**Theme 2: Community (n=53, 11 people)**

All eleven participants also commented on having experienced a feeling of fellowship with others, as a result of sharing common attitudes, interests, and goals during virtual recovery sessions. This was the second most frequently expressed theme (with a total of 53 comments). All eleven participants interviewed described how they valued the sense of community in Help Club through the shared experiences and emotional connections they built with others (for a total of 30 comments). Six of the participants also reported that they valued the Help Club community due to the rich diversity of members in geographical location, experience, and age (for a total of 23 comments).

**Theme 3: Comparison to other interventions/platforms (n=41, 11 people)**

All eleven participants made a total of forty-one comments in which they compared VR recovery sessions to any other behavioral mental health intervention or telehealth platform. Nine participants reported virtual recovery sessions as being a novel, unique platform completely different from any other platform or intervention they had experienced before (for a total of 17 comments). Five participants also described Help Club as a recovery intervention that could be part of their own or someone else's recovery process from substance abuse (for a total of 9 comments). The general consensus among participants was that Help Club could be helpful as a supplemental resource to someone's recovery journey. Apart from this, six participants made a total of six comments about the several similarities between VR recovery sessions and traditional in-person SMART meetings as well as other substance abuse support groups. Four

participants made a total of 9 comments mentioning differences between VR sessions and telehealth platforms like Zoom.

#### **Theme 4: Psychological and psychoeducational impact (n=34, 11 people)**

All eleven participants mentioned the impact of virtual meetings on their own psychological well-being (for a total of 34 comments). Seven participants reported experiencing positive emotions from virtual meetings (for a total 18 comments), while three participants reported experiencing a negative psychological impact from virtual meetings (for a total of 3 comments). For example, negative emotions arose out of hearing others' struggles.

Participant 2: "The only negative feelings I might have if there is somebody who is either in crisis or in some kind of distress and you know they are struggling...so if there's somebody and you can tell they're still in turmoil, I'm just like 'ahh I wish I could've helped them more.' I wish I could have said something that would've made them more at ease."

Aside from this, four participants reported experiencing psychoeducational benefits, such as real-life applications of CBT-based tools, from attending virtual meetings (for a total of 6 comments). Lastly, five participants reported the value of being able to interact with psychoeducational tools through drawing and typing abilities offered in virtual meetings (for a total of 6 comments).

#### **Theme 5: Challenges (n=32, 10 people)**

All interviewees except for one mentioned negative experiences with virtual meetings (for a total of 32 comments). Eight participants reported experiencing time conflicts with obligations like work and other support group meetings that limited their ability to attend virtual meetings (for a total of 10 comments). Four participants mentioned shortcomings of the structure of virtual meetings, such as timing issues and frustrations with the initial check-in format (n=8, 4

people). Four participants mentioned technological challenges, such as general glitches and having to troubleshoot the program (for a total of 5 comments). Lastly, two participants mentioned challenges specific to the VR user interface, such as accidentally grabbing things and the visual complexity of tools and text features (for a total of 3 comments).

#### **Theme 6: Immersion (n=27, 8 people)**

Eight interviewees mentioned the feeling of being placed in a different, alternate environment and how this affects the virtual experience (for a total of 27 comments). Nine participants reported feeling their own physical presence along with others, which facilitated an experience of virtual interaction (for a total of 9 comments). Four participants described feeling like they were escaping to an alternate reality when entering the virtual app, which was helpful for them (for a total of 10 comments). Lastly, five participants reported the immersive environments of VR as a source of engagement during meetings (for a total of 9 comments).

#### **Theme 7: Anonymity (n=21, 10 people)**

All interviewees except for one brought up how being completely unidentifiable positively impacted the virtual experience (for a total of 21 comments). Participants frequently mentioned how they appreciated anonymity due to the freedom of self-expression and lack of judgement it provided.

#### **Theme 8: Pandemic (n=8, 6 people)**

Six interviewees mentioned the COVID-19 pandemic in relation to their experiences with virtual meetings (for a total of 8 comments). Participants reported especially valuing the community in the app during a period of isolation.

### **Discussion**

Through a mixed-methods approach, this pilot study provided detailed insight into the experiences of recovering participants attending virtual meetings. While we observed no significant differences in positive emotions and only a slight difference in negative emotions from the first set of PANAS data, we saw a significant difference in both positive and negative emotions in the most recent set of PANAS data. The increase in effect sizes from the first set of PANAS scores to the most recent set suggests profound improvements in mood may be associated with attending subsequent VR meetings. Additionally, finding moderate effect sizes but no significance in the first set of PANAS scores suggests possible mood improvement, but represents the difficulty of finding significance with such a small sample size. In conjunction, more than half of participants interviewed reported feeling a positive psychological impact from attending VR meetings. Reports of individuals feeling more relaxed and motivated while being less anxious and distressed after attending meetings indicated that this intervention may help combat affective states that elicit substance cravings. Both effect sizes and individual testimonials suggest that virtual meetings may be an efficacious way to regulate affect. This is especially important for individuals in recovery who are at greater-risk for relapsing due to affective changes.

Our results also suggest that attendance of virtual meetings was associated with a significant level of perceived social support in participants. Participants perceived online social support at a level that is comparable to massively multiplayer online role-playing games (MMORPGs), a common form of an online community (Cole et al., 2020). Additionally, the mean score from the GSRS indicated that participants felt a moderate to high level of satisfaction with group members in their virtual meetings. In conjunction, every participant interviewed reported experiencing and valuing a strong sense of community from virtual meetings. Almost



every interviewee mentioned the ability to engage in open and honest discourse while being completely unidentifiable; this allowed for emotional connections and a deep sense of community to spontaneously grow. Additionally, participants valued being able to form strong social connections with virtually anyone from any place. These findings suggest that involvement in the virtual community is associated with a perceived level of social support for participants.

However, we did not find any significant differences in total perceived online social support or its subscales over time, except for a slight decrease in social companionship. This suggests that continued involvement in the virtual community did not result in perceived increased social support. However, interviewees reported feeling a stronger sense of community as they continued to attend meetings. This discrepancy in our results may have occurred from participants immediately feeling a high level of online social support during their first VR meetings, and subsequently reaching a ceiling effect with the OSS scale. For a broader study in the future, a larger community of individuals, more frequent meetings, and increased community-building events within the app may potentially increase the levels of social support people feel over time.

The qualitative data from the interviews provided an in-depth lens on the unique experiences of participants within the virtual intervention. All of the interviewees mentioned aspects of technological usability, such as difficulty learning to use the device, physiological symptoms from wearing the headset, or general unfamiliarity with VR that served as obstacles in navigating and fully utilizing virtual meetings. Along with this, technological challenges such as glitches and the complexity of the user interface hindered participants as they attempted to get acclimated with the app. Therefore, we recommend an in-depth tutorial that helps new members

learn and adapt to using VR regularly in the broader study for this intervention. Additionally, it may be useful to have a weekly virtual meeting that is solely designated for new members so that they can begin to utilize meetings while not feeling pressured to immediately have a detailed understanding of VR use. While we believe that many of these obstacles can be overcome, we recommend further exploration of how the use of VR hinders the intervention experience.

The qualitative data also revealed many specific social benefits that participants gained from this intervention. Most notably, every interviewee mentioned feeling a strong sense of community within the app, due to being able to anonymously share experiences and connect with others. Additionally, interviewees reported greatly valuing the diversity of the global community that the app allows; the ability to anonymously engage with a variety of people from any part of the world fostered the connection and curiosity that are crucial to forming social bonds. Frequent reports of this are important because active engagement in a peer-support community and a strong sense of social support are key factors in sustaining long-term recovery. This indicates that this intervention shows preliminary feasibility in being a significant source of social support for recovering individuals.

Aside from social support, this pilot study indicated that virtual meetings provided a wide range of mental benefits to recovering individuals. Every interviewee mentioned experiencing psychological benefits, such as increased positive emotions and an ability to address negative thoughts or intense emotions, from attending virtual meetings. Specifically, participants experienced psychoeducational benefits from attending virtual meetings which taught them to apply CBT-based concepts to cope with distressing events in their own lives outside of meetings. Additionally, the interviews convey that the immersive quality of VR may allow individuals to literally escape a distressing, relapse-inducing situation by putting a headset on and entering the

app. Lastly, participants viewed our app as a comparable intervention to other platforms/peer support communities, reporting our app as a useful resource in their journey of recovery. These qualitative findings suggest that this intervention also shows preliminary feasibility as a significant source of affective regulation for recovering individuals.

A variety of challenges with the intervention were revealed in this pilot study. The ability to see people's actual faces, the easier technological usability, and the accessibility that come with more commonly-used platforms like Zoom, traditional in-person support groups, and in-person therapy seemed to make them preferable to our intervention. Very specific issues with the CBT-based structure of VR meetings, time conflicts with VR meetings, and the complexity of using VR technology were revealed. This indicates that our intervention may need to change the specific content of meetings, increase the frequency of meetings to accommodate peoples' different time zones, and create ways to simplify the complexity of VR technology for newer users. These issues allow us to understand the changes that need to be made before we conduct a broader study on the effectiveness of this intervention.

#### *Limitations and future research*

It is important to note the various limitations in our pilot study design, which may have influenced the internal and external validity of our findings. The lack of a control group precludes drawing any causal inferences about the changes we observed. Additionally, the self-selected recruitment of participants may have influenced the range of qualitative experiences reported. For example, it is likely that most self-selected participants had some prior interest in learning to use VR and it is not clear that others would share that motivation. The small sample size and method of recruitment also call the external validity of our findings into question.

Additionally, we witnessed some attrition across survey and interview completion which reveals the difficulty of retaining participants long enough to experience effects from the intervention.

While this pilot study showed the promise of this intervention, it also revealed some necessary changes we must make within the app as well as the research design before we continue with the broader study. We recommend that future studies conduct randomized control trials to strengthen the internal and external validity of its findings. In doing so, a much larger and more diverse group of participants should be recruited to strengthen the external validity of the design. Aside from this, we focused our pilot study on the levels of social support and affective regulation that participants experienced. While our current measures were useful and should continue to be observed, it will be useful to include more quantitative measures of how virtual meetings can support someone in recovery, such as their direct impact on substance cravings and relapse occurrences. Therefore, we recommend exploring cohorts of participants recovering from a specific type of substance abuse, such as alcoholism, to see if effects differ based on type of substance abuse. Essentially, further research is needed to understand if this intervention can truly be a significant source of support for individuals in recovery.

### *Conclusion*

This pilot study showed preliminary promise in the intervention. We observed precursory levels of social support, affective regulation, and general psychological/psychoeducational benefits in recovering participants who attended virtual meetings. It appears that these benefits stem from the anonymity, diversity, and immersion afforded in virtual experiences. This feasibility study also highlighted several limitations of our study design as well as challenges to using the intervention itself, stemming from the complexity of learning to use VR. We have gained deep insight into how to improve virtual meetings and the app itself while also observing

that this intervention may be feasible on a larger scale. In a future study, we hope to find more evidence that this intervention helps break the cycle of addiction by serving as an alternative behavioral outlet to substance abuse.

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## **Appendix A**

### **Interview A Questions**

1. What has been your impression of VR prior to joining Help Club?
2. What are you hoping to gain from Help Club meetings?
3. What behavioral interventions (such as therapy, support group meetings, etc.) have you personally experienced in the past?
4. Think back to your first time using Help Club and getting involved in our meetings. What were your first impressions?
5. How have Help Club meetings from the past two weeks addressed any distressing situations, feelings, or tough times in your life, if at all?
6. What are some emotions you felt at the end of your Help Club meetings?
7. How often would you say you attend Help Club meetings?
8. How does the Help Club application compare to other telehealth video platforms such as Zoom?

## **Appendix B**

### **Interview B Questions**

1. How do you feel about continuing to attend Help Club meetings in the future?
2. How do Help Club meetings compare to other behavioral interventions you have experienced in the past such as therapy or in-person support groups?
3. How and did Help Club meetings meet your expectations for what you were hoping to gain out of them?
4. What do you think are some limitations of Help Club meetings, if any?
5. What have you enjoyed most about your experience in Help Club?

6. What did you least enjoy about the Help Club experience?
7. How much would you be willing to pay for a monthly or yearly subscription for Help Club, if available?
8. How do you feel Help Club could fit into your recovery process?
9. Before we finish the interview today, do you have anything additional you'd like to add or provide feedback on?

## **Appendix C**

### **Detailed Quotes from Qualitative Interviews**

#### **Theme 1: Technological usability (n=55; 11 people)**

This theme consisted of various subthemes: the learning curve/adaptability of VR, physiological impacts of VR, the 2D versus 3D experience, the user interface experience, and increased accessibility through the use of VR and other devices. Many participants experienced a “learning curve” while entering the app for the first time (n=18, 8 people).

Participant 4: “ I’m still getting used to the controls and how to turn and so you know I’m still learning my way, still working on gaining VR competency.”

Some attributed this to having no experience with VR prior to the study (n=9, 7 people).

Participants felt that age and prior experience with technology impacted one’s ability to adapt to using VR with ease.

Participant 7: “I have a co-worker that’s 23 and he’s on VR every night gaming and he lives in that space, so for him it would be nothing. I think about my mother’s boyfriend trying to do it and I’m like no... no that’s never going to happen.”

Additionally, participants reported the negative physiological impacts of wearing a VR headset for the first few times (n=7, 5 people). Common symptoms included nausea (motion sickness), headaches, dizziness, fatigue, and general discomfort. Apart from this, participants described how the ability to access the app from any location or device allowed them to attend meetings more (n=6, 4 people).

Participant 5: “ I can do it on my phone, and tablet, and stuff like that. I really like that you can join anywhere...it was two weeks ago I just got off work and I ran to the store...my husband had picked me up and I was doing a class in my car...I really like that.”

Apart from this, participants reported a significant difference between attending recovery sessions in the app on a 2D versus 3D interface (n=8, 4 people). Accessing the app from a desktop computer, laptop, tablet, or phone gave users a 2D experience, whereas using a VR headset gave users a 3D experience. Lastly, participants frequently mentioned how the user interface experience (n=11, 8 people) impacted the virtual experience.

Participant 10: “In the virtual world, you don’t have those natural human cues, just because you’re dealing with animated objects that you don't get to see a lot of that stuff you know, as far as [if] someone’s fidgeting in their seat, if their face is turning bright red, if, you know, all these things, all these different cues that give you insight in terms of someone if they are responding or withdrawing...”

Participant 2: “But having an avatar, being able to move around, look at people...I had somebody shake my hand, virtually, which was kind of nice after rather little interaction.”

## **Theme 2: Community (n=53, 11 people)**

Participants described how they valued the sense of community in Help Club through the shared experiences and emotional connections they built with others (n=30, 11 people).

Participant 9: “My mom got a diagnosis of Alzheimer’s’...being able to talk about it and knowing that people have also experienced it and worked through it has been helpful, but more it’s really having a place to bring it.”

Participant 1: “I think as a connecting app...that to me is important - which is the emotional connection, being able to have support...somebody who gets it and listens, and that feedback is really important.”

Participants also reported that they valued the Help Club community due to the rich diversity of members in geographical location, experience, and age (n=23, 6 people).

Participant 7: “I think Help Club is just a reflection of that same sort of lack of geographic constraints and that diversity is very enriching to the meetings...that is one of the really fun things about VR... that there's this huge cultural and geographic mix of people, which I really enjoy that a lot.”

### **Theme 3: Comparison to other interventions/platforms (n=41, 11 people)**

This theme consisted of various subthemes: VR as a unique novel platform, Help Club as a recovery intervention, similarities to other interventions/platforms, and differences to other interventions/platforms. Participants reported virtual recovery sessions as a novel, unique platform completely different from any other platform or intervention they had experienced before (n=17, 9 people).

Participant 3: “It’s very different, its unique...it’s a fresh interesting experience to have, and certainly the environments that we do our meetings in are more

refreshing than... you know a stale meeting room with beige walls, fluorescent lights, and a pot of coffee in the corner, sort of more visually interesting to be in.”

Participant 2: “I had never experienced anything like that before. You know, I did the tutorial where you’re hitting balls and setting off rockets and I couldn’t believe it, I really couldn’t. It was quite an eye-opener for me.”

Participants also described Help Club as a recovery intervention that could be part of their or someone else’s recovery process from substance abuse (n=9, 5 people). The general consensus among participants was that Help Club could be helpful as a supplemental resource to someone’s recovery journey.

Participant 3: “But in the future I can see it much more than that, because I think if you’re someone who’s coming from a drug— substance abuse angle, you’re looking to rebuild a social world. So, if [Help Club] can move beyond just meetings to recreating, you know building a broader social world for myself then it can be a much bigger part of my life. Right now it’s a replacement for the group meetings I’m doing several times a week, but it could move up from that.”

Apart from this, participants noted several similarities (n=6, 5 unique people) and differences (n=9, 4 people) to other interventions like traditional in-person SMART recovery meetings and telehealth platforms like Zoom.

Participant 2: “They’re very similar... they’re exactly like a regular SMART meeting. Especially, you do the check in, then you get some feedback, which is nice.”

Participant 9: “It’s different from Zoom meetings...I love connecting with people with Zoom, but there’s a presence that isn’t the same...in VR, its very

counterintuitive, because you can turn your head at someone who's just chimed in and it's different than Zoom where the Zoom screen changes to guest speaker, it's not the same as turning your head and feeling like you're in a space together, so I love that...I'm one of those kinesthetic people [with] high spatial awareness, so for me that works better than Zoom.”

#### **Theme 4: Psychological and psychoeducational impact (n=34, 11 people)**

This theme consisted of various subthemes: positive psychological impact, negative psychological impact, psychoeducational benefits, and the value of interactive tools. Participants reported experiencing a positive psychological impact (n=18, 7 people) from virtual meetings.

Participant 1: “I think I’ve gotten there not interested, low, am I fired up? No. But at the end of the meeting...it’s like yeah! I’m pumped up now. I’m excited. I connected.”

Participant 6: “What happens for me is I always feel more motivated, more engaged, less frustrated, less anxious, less distressed.”

Participant 4: “During highly stressful times, going through an acute anxiety attack or something like that [where] you’re very agitated and ungrounded and going into that environment, I could see it actually being extremely helpful to just get someone grounded and then having these other people, these other avatars, being very supportive and stuff. I could see that being a very powerful tool.”

Participants also reported, less frequently, experiencing a negative psychological impact (n=3, 3 people) from virtual meetings.

Participant 2: “The only negative feelings I might have if there is somebody who is either in crisis or in some kind of distress and you know they are struggling.

And you want to solve problems - you want to be like “do this and everything’s gonna be good.” But you’re not always - with SMART - you’re not supposed to be giving advice. You’re supposed to be sharing your experience and how it helped you and how it might help somebody else who’s got something going on. So if there’s somebody and you can tell they’re still a little bit in turmoil, let’s say, I’m just like ‘ahh I wish I could’ve helped them more.’ I wish I could have said something that would’ve made them more at ease. But you know you can’t change the world and you can only do so much. I’ve had to learn that over time. I can’t solve everybody’s problems.”

Participant 7: “There’s always personalities involved [that] I’ve occasionally been irritated with... someone running the meeting because my style and their style don’t mesh and I felt like you’re repeating back what they’re saying but you’re not really listening to them and that’s irritating to me.”

Participant 11: “I think there might have been a night or two, where it’s just kind of a layer of disappointment, whether it was the content of the meeting, or in the fact that I wasn’t sharing or something like that. It’s hard to say that I would come out of a meeting feeling excited because it’s something that I only ever do like once a week, and there’s not too much in the ways of connection.”

Aside from this, participants reported experiencing psychoeducational benefits, such as real-life applications of learning tools, from attending virtual meetings (n=6, 4 people).

Participant 3: “For the first time outside of Help Club, I took the [cognitive-behavioral] model and put it up on a white board and took a thing I was dealing with and worked it through the model on my own. And I was like oh that was



super helpful! So, yeah, I needed that repetition to actually get into a habit that I could use in my own life.”

Lastly, participants reported the value of interactive psychoeducational tools offered in virtual meetings (n=6, 5 people).

Participant 8: “I’m amazed about... how much detail there is in the environment and being able to put words up and grab [them] and move them and stuff. It’s very interactive. It actually makes you feel like you’re a part of the meeting as opposed to just being like a spectator.”

### **Theme 5: Challenges (n=32, 10 people)**

Various sub-themes were brought up under the topic of challenges: time conflicts, technological challenges, meeting structure challenges, and user-interface challenges. Participants also mentioned shortcomings of the structure of virtual meetings, such as timing issues and frustrations with the initial check-in format (n=8, 4 people).

Participant 6: “it’s a little bit difficult to get wrapped up into the meeting ‘cause by the time you join, you go through your portal, all of that... in check-ins, everyone is figuring out the technology stuff, so you really sort of limit the amount of time...”

Participant 11: “I kind of adopted the stance that everyone checks in first and then we do follow ups, that it tends to be ‘you’re checking in, ok now you’ve checked in, lets deal with your thing for the next 5 minutes’ and I made the mistake of doing that once - we spent 20 minutes with this person processing getting cut off in traffic and how absolutely horrible all that was, and then ‘alright so you’re up

next what happened with you', brother died in a car accident today... well, poo.  
So, make sure we're catching everybody first."

Participants also mentioned technological challenges, such as general glitches and having to troubleshoot the program (n=5, 4 people). Additionally, some challenges specific to the VR user interface were brought up (n=3, 2 people), such as accidentally grabbing things and the visual complexity of tools and text features.

Participant 7: "Like accidentally grabbing someone else's chair and moving it when I'm not even looking at it... and I'm like 'oh I didn't want to do that'. I think that's just a matter of familiarity and I think that will change. It is sort of a question in my mind of people joining that especially when I think about myself when I was in early recovery like the patients... you know attention and things are sort of harder to direct...whether that will be problematic for people or not..."

Participant 4: "The visual aids where you can create lists and do cost benefit analysis... we're kind of using that feature right now where it kind of just appears in the ethers, that's a little too clunky...it needs to be a little more simple, that's what I struggle with now."

### **Theme 6: Immersion (n=27, 8 people)**

Three sub-themes appeared under this theme: a feeling of physical presence/virtual interaction, escape to an alternate reality, and engagement. Participants reported feeling their own physical presence along with others, which facilitated an experience of virtual interaction (n=9, 5 people).

Participant 3: "I do get the sense that I am in a physical space with somebody else."

Participant 5: “I really liked how everything is - you can just reach out and touch it and stuff.”

Participants also mentioned feeling like they were escaping to an alternate reality when entering the virtual app (n=10, 4 people).

Participant 6: “When I’m in those meetings I don’t feel like I am where I am like in a bedroom or in a living room... I feel very transported.”

Participant 4: “You have choices of different environments, you know, it’s giving you [an] escape, like really taking you out of your environment and putting you in this immersive, placid environment, whether it’s a campfire or somewhere out in the galaxy or somewhere that looks like the Jetsons.”

Lastly, participants reported the immersion factor being a source of engagement during meetings (n=9, 5 people).

Participant 9: “I feel like it’s going to be much easier to gain participation.

Especially giving some choice, I feel like that’s really good, like ‘Where do you want to meet today? Campfire, beach’... great ways to engage.”

### **Theme 7: Anonymity (n=21, 10 people)**

Participants frequently mentioned how they valued anonymity due to the freedom of self-expression and lack of judgement it provided.

Participant 11: “I literally don’t need to hold back on anything. I try not to, but I don’t even have to stay focused on the ‘am I actually being honest right now’ - I can just let stuff out...that layer of knowing that physically we are all in very different spaces but also there’s like avatars attached to it so I don’t know what any of these people look like.”

Participant 1: “Nobody makes an immediate judgement just based on age or where you come from or anything like that so that was really cool.”

Participant 8: “It’s nice to be able to talk about what’s going on in my life especially even if it’s around my work life and not have that judgement or know it’s gonna get back to somebody...it’s been an outlet for me to process and vent with people that - well they know me but they don’t know me.”

**Theme 8: Pandemic (n=8, 6 people)**

Participants reported especially valuing the community in the app during a period of isolation.

Participant 8: “It was nice to be able to hear that other people were having similar issues and... what worked with them... which I needed a lot, especially during this pandemic.”

Participant 9: “I’m currently feeling the effects of this long standing shelter in place, so the connection is welcome.”