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Purpose

Self-management Applications for Rewarding my Choices (SARC) is a curated multi-level suite of mobile health applications and tools that include links to existing resources/content, off-the-shelf software, custom applications, an artificial intelligence coach (named Mia), and an integrated contingency management tool to reinforce SARC utilization and self-managed change. It is a Progressive Web Application (PWA) with username/password, passkey, and HIPAA/HITECH protections. It has a small local footprint to minimize the impact of changing devices, operating systems, and networks, and optimizes flexibility for the person.

Once enrolled, users are given a temporary username/password and a link to download the app and use across any number of their Android, Apple, or Windows smartphones, tablets, or computers. SARC has integrated Mia, via a partnership with the Remble Health Foundation, which also includes access to hundreds of existing short videos and exercises. Other overarching components of SARC (see the bottom of Table a) are the Self Check-In and Contingency Management (which can be turned on/off for the purposes of each study or project). Table a also shows the multiple levels of SARC, where the

| Table a. Overview of Multi-Level SARC content (Level 1 and 2)  |   |                                   |
|--|---|-----------------------------------|
| 1. Situation   | 2. Type   | 3. Options; and Individualization |
|  <p><b>Get Support</b><br/>for when you're already using or having trouble</p>  |  Support Team<br>List of up to 5 personal contacts, including phone, text, email, can be sponsor, family, friends, professionals.                                  |                                   |
|  |  Get Help Now<br>24hr/7day hotlines for substance use, suicide, crisis, and bulletin board/other services like My Life My Voice; <i>Can add other resources.</i>   |                                   |
|  |  Overdose Prevention<br>Learning about and accessing overdose prevention tools (e.g., naloxone, test strips, body position, not using alone).                      |                                   |
|  |  Professional Help<br>Searchable directories of behavioral, health & other services; <i>Can also add personal counselor or doctors' information.</i>               |                                   |
|  |  Peer Support<br>Directories of both local and virtual mutual aid meetings (e.g., AA, CA, NA, SMART, religious); <i>Can record preferred fellowships/meetings.</i> |                                   |
|  <p><b>Self-Regulation Toolbox</b><br/>for when you're having cravings, emotional or behavioral issues you want to control</p>  |  Music<br>Apple Music, Spotify, Pandora etc.; <i>Can use existing services and playlists (encourage to create a playlist that helps them to feel happy).</i>       |                                   |
|  |  Games<br>Roblox, Subway Surfers, 8 Ball Pool, Clash Royale, Candy Crush Saga, Brawl Stars, PUBG Mobile, Free Fire, Among Us, etc.; <i>Can add others.</i>         |                                   |
|  |  Relaxation<br>Calm, Colorfly, Mind Care, Mindfulness, Meditation, and other exercises; <i>Can save the most useful to favorites.</i>                            |                                   |
|  |  Physical Exercise<br>Daily Workouts, Get Running, Samsung Health, Nike, Zombie Run, etc.; <i>Can add other applications.</i>                                    |                                   |
|  |  Mental Exercise<br>Brain Training, Crosswords, Jigsaw, Sudoku, Unblock Me, Visualizations, etc.; <i>Can add other applications.</i>                             |                                   |
|  |  My Choices<br>List of personal goals, pictures, motivation, and activities to focus on one's choices.   |                                   |
|  |  <p><b>Life Skills</b><br/>for when you're doing well and want to stay on track</p>  |                                   |
|  Simplify Schedule<br>Calendly, Apple Calendar, Google Calendar, Simply Book me etc.; <i>Can be linked to existing tools/ accounts.</i>   |   |                                   |
|  Financial Planning<br>Copilot; Dollarbird, Monarch, NerdWallet, Rockey Money, etc. <i>Can be linked to existing tools/ accounts.</i>   |   |                                   |
|  Health and Nutrition<br>Fabulous, Lose it!, my fitness, Supercook, Yummly, etc.; <i>Can be linked to existing tools/ accounts.</i>   |   |                                   |
|  Take a Moment<br>Daylio, Nituvate Daily Motivation, Headway, Think up; <i>Can be linked to existing tools/ accounts.</i>   |   |                                   |
|  Inspired Reading/ Videos<br>Big book, Inspirations from Hazelden, mental health recovery, TikTok videos from other emerging adults and professionals; <i>Can add additional materials and content.</i>   |   |                                   |
|  <p><b>Mia</b> is a virtual lifecoach to help you access SARC materials, problem solve and cope; <i>Artificial Intelligence (AI) based on Chat GPT, trained to help with empathy, problem solving, and connecting to SARC resources.</i></p>  |   |                                   |
|  <p><b>Self Check-In</b> on your wellness and progress following your choices; <i>Ten question slider type rating of how they are doing relative to following through on their own choices and positive outcomes they are seeking).</i></p>   |   |                                   |
|  <p><b>Contingency Management</b> rewards you for using SARC to follow your own choices; <i>This is an integrated tool to reinforce SARC utilization in terms of consistency over time, trying different types of applications, including Mia and the curated list of videos and skills building tools.</i></p> |   |                                   |

first level focuses on the participant's Situation (their current need); the 2nd on the Type of help desired (or recommended by Mia); and the 3rd on specific Options within each type. For each level 2 Type, SARC will be preloaded with links to widely used apps (level 3 Options). Users can link to their own existing or new accounts for those apps (e.g., music, games), as well as request additional apps be added to the Options menu. The latter requires review for viruses and fit for contingency management eligibility; for example, it will exclude generic social media or things that encourage doom scrolling and those focused on drug use, gambling, pornography, and/or violence.

SARC was redesigned to be more person-centered and customizable in several ways. Users can customize SARC to their existing app accounts or preferences (including favorites). For each of the main categories of resources within SARC, there is a carousel feature that shows the most recently used apps, see Figure b. Mia, the artificial intelligence (AI) coach, is trained on using Motivational Interviewing (MI), Cognitive Behavior Therapy (CBT), and Problem Solving (PS) approaches to help the participant address challenges, identify potentially useful components or content within SARC (including TikTok length videos, mindfulness, and other exercises from the Remble Library), and seek help from their individual support team, hotlines, or professionals. This includes using key words to recognize issues related to substance use, depression, anxiety, trauma, and suicide, and when to connect them to emergency help. The Self-Check In will focus on positive outcomes of pursuing their own goals/choices.



Figure b Carousel

If users are not regularly engaging with the SARC app, the app can reach out to them via push notification to see how they are doing. Although SARC uses the AI-based Mia to make SARC easier to use and more interactive, several guardrails have been put in place to protect users. This includes having Mia alert staff for several keywords (e.g., overdose, suicide, death); having users regularly rate how well Mia is doing and giving them a way to report any requests or problems in real time (including wanting to add apps); and not having Mia make any decisions for or about the users.

## Contingency Management

Another built-in component of the SARC app is the ability to offer contingency management to motivate users and encourage greater utilization by rewarding their use of the app with draws for supportive messages and varying levels of prizes in the companion web-based, virtual fishbowl. Users can earn up to 4 draws per week by completing clearly outlined activities meant to encourage their use of a variety of tools and resources within the app. Users will also be eligible for a bonus draw when they earn all 4 available draws within a week. The number of bonus draws will increase based on the number of weeks in a row that they complete all 4 draws. For example, if they earn all 4 draws 2 weeks in a row, they will earn 2 bonus draws that week. The maximum number of bonus draws that can be earned in a week is 4. Users can view their progress towards earning their weekly draws in real time in the SARC app, and all earned draws are communicated to the virtual fishbowl and loaded in their draw bank. The Contingency Management component can be turned on and off as needed based on the design of the project.

## Features

SARC is designed to be secure, inclusive, personal, and user friendly. This is done through:

- Communicating with a REST API built in .NET 8, which is also secured with Auth0

- Following Web Content Accessibility Guidelines (WCAG)
- Seamlessly resizing to fit any phone or tablet
- Having an option for Dark Mode to help reduce eye strain, increase device battery life, and improve readability based on user preference
- Allowing users to choose favorite apps within SARC, that will appear on Level 1 carousel for easier access
- Permitting users to log into their personal accounts when using SARC apps to keep individualized playlists, app settings, game progress, etc.

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