



Published in final edited form as:

Res Soc Work Pract. 2023 July ; 33(5): 562–570. doi:10.1177/10497315221120605.

Intervention Adaptation and Implementation Method for Real-World Constraints and Using New Technologies

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Abstract

Purpose: Rigorous adaptation methods are needed to revise existing evidence-based behavioral interventions for implementation for new target populations, revised/updated outcomes, new delivery modalities, recent advances, and new technologies. We describe an adaptation method designed to overcome the real-world challenges of having very limited existing expertise, resources, and time.

Method: This adaptation method and accompanying visualization tool (“Deconstruction/Reconstruction Matrix”) preserves theoretical mechanisms of behavior change, accounts for challenges in utilizing new technologies, and strengthens clinical processes, with an emphasis on safety.

Results: The adaptation of an in-person HIV behavioral intervention for sexual and gender diverse men in Kazakhstan to one delivered remotely via telecommunication and social media technologies exemplifies the process and strengths of the method, concomitantly resulting in recommendations for adaptation and implementation of mobile health (mHealth) and digital health interventions.

Discussion: This method allows researchers and clinicians to adapt interventions rapidly and rigorously and to benefit from new technologies.

Keywords

adaptation; implementation; intervention; technology; mHealth

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Author Note

This paper was submitted as a contribution to the special issue of *Research on Social Work Practice*. It consists of research originating within the Social Intervention Group, School of Social Work, Columbia University, guest edited by Nabila El-Bassel and Louisa Gilbert. In addition to the co-authors, this work was only made possible by the research staff and allies who showed tremendous dedication, skill, and sensitivity: Karina Alipova, Dilara Belkesheva, Daniyar Bekishev, Valeria Davydova, L. Donald McVinney, Guakhar Mergenova, Emily A. Paine, Kelsey Reeder, and Gulnara Zhakupova.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Best practice by service providers in health and social service settings involve the use of evidence-based interventions. For example, with respect to HIV, the *HIV National Strategic Plan for the United States* (U.S. Department of Health and Human Services, 2021) relies on the use of evidence-based interventions, and the Centers for Disease Control and Prevention (CDC) supports this plan with its *Compendium of Evidence-based Interventions and Best Practices for HIV Prevention* (HIV Prevention Research Synthesis Project, 2021). However, the applicability and actual use of the evidence-based interventions as originally designed are hampered when there is a need or desire to use that intervention with the following: a new target population (e.g., those who are currently underserved); a revised or different outcome (e.g., a different or additional points in the HIV care continuum); a different modality and technologies for delivery (e.g., from in-person to remote delivery via digital services and devices); rapidly emerging new problems/challenges (e.g., COVID-19 mitigation measures); and/or biomedical advances (e.g., injectable pre-exposure prophylaxis [PrEP]).

Service providers often encounter the aforementioned challenges as they consider or seek to implement existing evidence-based interventions. That is, the challenges described above pertain to common domains/constructs that cut across prominent implementation science frameworks, such as the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009, 2022; Kirk et al., 2015); Integrated-Promoting Action on Research Implementation in Health Services (i-PARIHS) (Harvey & Kitson, 2015); and the more recent Health Equity Implementation Framework (Woodward et al., 2019). Thus, clinicians are faced with a mismatch between the characteristics of the original intervention (e.g., modality) with the outer setting/context (e.g., external pressures and constraints to provide the intervention); inner setting/context (e.g., available resources, compatibility with agency culture and standard operating procedures); need or opportunity to innovate (e.g., leverage recent technology advances and popularity); and individuals/recipients (i.e., client/target population characteristics).

New interventions can be designed and tested, yet multiple studies have estimated that it takes about 17 years on average for the translation of biomedical discovery to implementation in clinical care (Morris et al., 2011). Adaptation—defined as revising an existing evidence-based intervention while preserving its core elements or internal logic (McKleroy et al., 2006; Wingood & DiClemente, 2008)—represents an attractive mechanism to jump start and accelerate the development and delivery of an intervention that is efficacious or effective for new target populations, outcomes, modalities, technologies, and advances in prevention and treatment. Indeed, numerous HIV interventions have been adapted (Budhwani et al., 2022; Escoffery et al., 2018), yet HIV disparities—particularly for historically marginalized populations (e.g., Black and Latino/a/e individuals, sexual and gender diverse individuals, sex workers, and those involved in the criminal-legal systems)—seem entrenched, suggesting either additional adaptations are needed and/or existing adaptation methods are not significantly reducing the translational lag.

Several systematic methods for adaptation have been offered and used in these prior adaptations. For example, adaptation approaches for HIV behavior interventions have utilized McKleroy et al.'s 5-step procedure (2006), ADAPT-ITT (Wingood & DiClemente,

2008), or Intervention Mapping (Highfield et al., 2016). However, these adaptation procedures are both resource and time intensive. Resources needed by these adaptation methods include but are not limited to the existence of prior intervention or basic research with the different target populations and/or outcomes; topical experts—including those with lived experience—among researchers, service providers, and/or members of the target population in the community (e.g., that would often be essential to a Community Advisory Board); and funding, staff, and materials for foundational work conducted at various points in these methods (e.g., needs assessment, theater testing, pilot testing). These are multistage/multi-step procedures that—while shorter than the 17-year translational gap for de novo intervention development—require considerable time as well. Swifter adaptation saves lives, especially with unexpected but unavoidable large-scale factors (e.g., COVID-19) that disrupt and/or magnify disparities. In other words, there is a need for an adaptation method that can accommodate the following “real world” constraints and challenges:

- Limited time to perform the adaptation.
- Manualized/standardized interventions cannot include content or focus on advances in prevention and treatment that occur after the original intervention was developed.
- A paucity of descriptive and basic behavioral research on the experiences and worldviews of the population and the issues prompted the need for adaptation.
- A concomitant lack of topical experts among researchers and service providers, which may limit the availability or validity of community feedback.
- Researchers and service providers often do not have lived experience (i.e., limitations stemming from positionality).
- Increases in the availability, accessibility, and popularity of new technology not used or in existence at the time of development of the original intervention.
- New/additional threats to safety not considered/prioritized in existing interventions (e.g., more salient for new target population).

Evidence-based interventions have been adapted for many issues, with sexual risk reduction, substance use, mental health, and the desire/need to leverage technology being the focus of many in the published scientific knowledge base (Escoffery et al., 2018; Movsisyan et al., 2019). This article describes a method for adapting existing HIV/AIDS-focused evidence-based behavioral interventions for delivery to new target populations, with updated content/focus on contemporary advances in prevention and treatment, via new modalities, and/or using new technologies (e.g., mobile health [mHealth] and/or digital health interventions). We also developed and present an accompanying visualization tool—the Deconstruction/Reconstruction Matrix—that helps researchers and practitioners ensure that the adaptation process is systematic, reproducible, and upholds rigor.

Method

Overview of Adaptation Method

This adaptation method focuses on three critical domains: theory, modality of intervention delivery, and clinical processes. **Theory** is focused on the factors targeted by the original intervention that have been posited or shown to drive behavior change. For example, the intervention that is the basis for the case example presented draws upon Social Cognitive Theory (SCT) (Bandura, 1986). In intervention science, the malleable theoretical constructs targeted by intervention activities are termed “mediators.” Clinicians may understand and refer to mediators as the “mechanisms” for how an intervention effects change towards the desired behavior(s). For adaptation, the revised intervention needs to address the same mediator(s) as the original intervention. **Modality** is concerned with the means and format for delivery of the intervention. Examples include group sessions held in person, or remotely delivered to individuals using smartphone apps. The goal for the adapted intervention is to ensure that the delivery of the adapted intervention is feasible, the new modality does not undermine the original intervention, and the adapted intervention takes advantage of the new modality if possible. **Clinical considerations** refer to aspects of behavioral intervention delivery that are generally non-specific to the focus on the intervention. For example, logistics (e.g., attendance, communication outside of sessions), engagement, building rapport and trust, and safety. As before, the adapted intervention should preserve—or better yet, enhance whenever possible—all of the activities that, while nonspecific, can shape the effectiveness and impact of an interventionist’s work.

The first step of this adaptation method involves “deconstructing” the original intervention to systematically and rigorously examine and understand each activity in the original intervention. Specifically, for each activity in the original intervention, the mediators being addressed by that activity are identified. Then the activity and associated mediator(s) are considered for applicability for the new target population, modality, and technology being used. Applicability should take into consideration culture, context, and developmental stage. Another consideration is staying up to date with recent developments in the prevention and treatment of diseases, conditions (e.g., psychological distress), and behaviors (e.g., delinquency).

Once the original intervention is fully deconstructed—that is, all of the activities of the original intervention are fully considered and characterized as described above—each activity is revised such that an adapted intervention is “reconstructed” with the goal of preserving the theoretical basis or bases, optimizing for any new differences in modality, and ensuring that clinical processes are preserved or, if possible, strengthened. If an activity needs to be modified to increase/ensure relevance and applicability (or eliminate materials no longer relevant or applicable), in order to maintain rigor, modifications should still address the same mediator(s) targeted by the original activity. Evidence or experts/expertise should be used whenever available to inform revisions (e.g., focus groups, theater testing, expert feedback). Maintaining the theoretical underpinning best mitigates the need to rely on the best available clinical judgment for revisions in the situation when there may be an absence and/or lack of time or resources to accomplish revisions in such a manner.

In addition to being part of the clinical process domain, safety should be highlighted as a consideration throughout the deconstruction and reconstruction process. Further, the final step of the adaptation method constitutes a full review specifically regarding safety. For behavioral interventions, different target populations, modified modalities, and the use of new technologies are likely to have unique threats to privacy and confidentiality, the ability for intervention recipients to provide/demonstrate consent or withdraw consent for each activity, and capability for the interventionist to detect and handle distress and adverse events.

Deconstruction/Reconstruction Matrix Tool

Behavioral interventions often span multiple sessions, with each session comprised of multiple activities. We developed the Deconstruction/Reconstruction Matrix, a two-dimensional visualization tool to support the implementation of this adaptation method (see Figure 1 for an example used in this manuscript). One dimension of the tool's matrix is the session number. The other dimension covers theory-driven mediators of the intervention and clinical processes of the intervention and intervention delivery. Each activity in a session is then placed in the matrix based on its session as well as the mediator/clinical process targeted by that activity. Creating and completing a Deconstruction/Reconstruction Matrix of an intervention (either the original and/or adapted intervention) allows for a compact yet comprehensive visual presentation of a deconstructed intervention, allowing one to quickly identify the purpose of each activity as well as track that activities have been preserved or strengthened between the original and adapted intervention.

Results

This adaptation method was built upon the method used to successfully adapt an evidence-based intervention originally for heterosexual couples at risk for HIV (El-Bassel et al., 2003, 2005) to a new target population of methamphetamine-involved Black men who have sex with men (MSM) and their same/similar sex partner (referred to as "Black MSM couples" for brevity) (Wu et al., 2010). The use of existing adaptation methods was prohibitive for the following reasons: an acutely accelerating methamphetamine crisis that needed a rapid response, a dearth of the evidence base on interventions with Black MSM couples, and worldviews among the target population, and a concomitant lack of topical experts. The emphasis at that time was on adhering to and preserving the theoretical rigor while ensuring and improving contextual and cultural appropriateness and relevance.

Based on experience from that study as well as subsequent work presented herein, the method has added specific additional consideration for the domains of modality (especially the use of new technologies) and clinical processes. As a case study of the adaptation method, we present the adaptation of the *Peer Reach and Influencer-Driven Engagement in HIV Care Continuum (PRIDE in HIV Care)* intervention. Briefly, we were conducting a clinical trial of a behavioral intervention designed to increase the number of sexual and gender diverse (SGD) men in Kazakhstan who are engaged in the HIV care continuum (i.e., getting tested for HIV, initiating HIV medication treatment, and adherence among those living with HIV to achieve viral suppression) (Paine et al., 2021; Wu et al., 2020). The

PRIDE in HIV Care was conceptualized as a crowdsourcing and peer-actuated network intervention. It was originally designed to be five sessions delivered in person/in a face-to-face manner as follows: an initial orientation session held with an individual MSM followed by four group sessions (target group size of four to six individuals, and group membership is fixed). *PRIDE in HIV Care* intervention activities collectively sought to increase SGD men in Kazakhstan to both engage in the HIV care continuums (e.g., HIV testing and treatment) and serve as effective social “influencers” to motivate other networks and larger numbers of SGD men to engage in HIV testing and treatment in Kazakhstan. The *PRIDE in HIV Care* intervention’s theory of behavior targeted the following SCT constructs: knowledge, outcome expectancies, intention, self-efficacy, and social supports. Activities focused on these mediators as they relate to HIV prevention as well as social marketing (Storey et al., 2015) to engage networks of SGD men in HIV testing and treatment in Kazakhstan. Figure 1 presents a Deconstruction/Reconstruction Matrix of the original *PRIDE in HIV Care* intervention.

The Deconstruction/Reconstruction Matrix allows one to quickly determine that every theoretical mediator is addressed at some point in the intervention, and the total number of activities that appear in a row can serve as a rough proxy of the amount of attention each mediator receives. Thus, the Deconstruction/Reconstruction Matrix aids in ensuring mediators are addressed and balanced more appropriately amongst all the other mediators.

In the example Deconstruction/Reconstruction Matrix of the *PRIDE in HIV Care* intervention shown in Figure 1, one can observe that some activities may appear multiple times in the same column of the matrix; this reflects that an activity can target multiple mediators. Also, the Deconstruction/Reconstruction Matrix will reveal that some sessions do not have activities that target certain mediators; this is often by design due to time constraints or the need to sequence or scaffold recipients’ knowledge, skill, etc. (e.g., a particular skill may rely on pre-existing knowledge or skill targeted in a prior session).

The original *PRIDE in HIV Care* intervention was launched in 2018, but implementation was halted in 2020 due to the COVID-19 pandemic. Not only did transmission mitigation measures pose problems for the original *PRIDE in HIV Care* intervention (e.g., prohibition of in-person and group activities, public transportation was impossible or difficult to access/use), but the COVID-19 pandemic presented new contextual challenges (e.g., discomfort/anxiety about medical settings/services, competing concerns between HIV and SARS-CoV-2 infection/transmission). This prompted the adaptation of the original *PRIDE in HIV Care* intervention into one that could be delivered remotely using new technologies (e.g., telecommunications apps that can be run on a variety of common platforms and hardware such as Zoom and WhatsApp) as well as updated for subsequent technological and structural advances in HIV prevention in Kazakhstan (PrEP availability, home self-testing). Safety considerations (described in more detail further in this manuscript) were the main consideration for our decision to change the original group modality to an individual modality for the remotely-delivered intervention.

Theory

The first step in deconstructing the original *PRIDE in HIV Care* intervention involved identifying the mediators targeted by each activity. For example, the “HIV Quiz” activity in Session 0 was an interactive game that “tested” respondents’ knowledge of the basics of HIV transmission and treatment, with a game format that validated a respondent’s accurate existing knowledge as well as providing information—or correcting misinformation—as needed. Revisions from the in-person group format to the remote format included switching to a platform(s) that could deliver the questions and answers via shared video screen or SMS/MMS or direct message exchange between interventionist and recipient. In addition, the content was updated to include more information on PrEP and home self-testing. While remote delivery via exchange of messages could take longer than a streamlined presentation in the face-to-face modality, time was saved by not having to spend time on a “group voting” process, thus preserving the time the activity took between the original and adapted version.

As more transgender individuals engaged with the *PRIDE in HIV Care* project, the adaptation process provided an opportunity to enhance the intervention to be more applicable to this target population. The “Crowdsourcing Solutions to Substance Use Treatment” in Session 3 was designed to support recipients in both sharing their challenges and solutions to receiving substance use treatment in Kazakhstan, as well as to solicit and elicit such information from wider networks of SGD men in Kazakhstan, that is, social support. During the adaptation process, the activity included a role-play exercise, which was revised to include a gender nonconforming individual; thus, this activity now prompts recipients to gain self-efficacy in overcoming challenges experienced by trans and gender nonconforming/nonbinary individuals in Kazakhstan (e.g., transphobia, misgendering). Altogether, the adapted intervention maintained/enhanced the effort to increase knowledge, self-efficacy, and social support to engage in crowdsourcing for noncisgender recipients.

Modality: Adapting for Technology Advancements

Technological advances in the availability, ease of use, and functionality of digital communication apps and services (e.g., Zoom, WhatsApp, FaceTime) and social media (e.g., Facebook, VKontakte, Twitter, Instagram) offer many opportunities for intervention delivery as well as content and activities.

With respect to adapting an in-person intervention to a remotely delivered intervention, the ability to stream live video—typically of the faces of the interventionist and recipient—is crucial for behavioral interventions that deal with sensitive topics and issues (e.g., sex, sexuality, and substance use) and/or with marginalized populations (e.g., SGD individuals). In these scenarios, text-only exchanges lack sufficient tone and nuance (or they run the risk of being misinterpreted). While audio-only can facilitate tone, video better allows for the interventionist to gauge the reactions of the recipient as well as monitor for distress and/or safety concerns. However, an approach/platform that allows for both video/audio and text exchange (e.g., a chat feature, simultaneously using a video app/service while exchanging SMS) can be ideal as it allows the respondent to type in responses/reactions in instances where speaking is not permissible, safe, less comfortable than writing via text, or easy (e.g., low bandwidth). This underscores the value of using technology or combining technologies

to allow multimodal means of communicating between interventionist and intervention recipient

A related point in adapting an intervention to utilize new/different modalities is the necessity for a priori contingency planning, especially if the new modality includes technology that is subject to unpredictable and/or unavoidable real-time disruptions. Across participants, contingency planning for using technology involves intervention design and interventionists to be able to utilize different telecommunication platforms (e.g., Zoom, WhatsApp, Skype, FaceTime), all of which have varying availability, accessibility, features, and ease of use, which leads to varied use and preference across users; the capability and orientation to design for multiple platforms. Alternatives such as designing for the “least common denominator,” most popular, or custom solutions are likely to limit the scope and reach (one of the large advantages of technology) and may exclude some of the more vulnerable members of the target population who would benefit from the intervention. We also note that an orientation that prompts one to be adept at using multiple platforms/services also facilitates the ability to utilize newly developed or newly popular platforms and services. For example, *PRIDE in HIV Care* facilitators were able to easily incorporate and work with respondents to strengthen their role as influencers via TikTok, which emerged in popularity during the study timeframe. When it comes to revising electronic or multimedia content, digitally created objects (e.g., large format text, rendered characters/avatars, emojis) rather than video/images of real people and scenes make revisions much easier to preserve continuity in format, style, tone, lighting, volume, etc. in subsequent revisions. For an individual participant, contingency planning includes addressing and involving the intervention recipient to handle technological difficulties (e.g., sudden loss of internet service, low bandwidth, device malfunction, or shutting down due to low battery or power interruption). Thus, in addition to sharing videos by screen sharing, we were prepared to send URLs for the recipient to watch videos in real time on their local device if screen sharing was not possible. Enabling recipients to respond with numbers (e.g., by numbering answer choices or visual elements) allows for communication by text that is easy, quick, and safe. Reducing the burden of technology use from the perspective of the end user combined with recognizing the importance of social context (e.g., safety and privacy of sensitive information) is a hallmark of human-centered design (Gasson, 2003). Furthermore, creating intervention content and processes that are flexible, simple, and intuitive, have tolerance for technology difficulties/limitations, and require low effort to use are consistent with universal design (Story, 2010), which promotes accessibility across a greater spectrum of abilities/disabilities. We believe that for all remote interventions, a contingency plan that involves a quick touching base via phone call or SMS as a “secondary” or “fallback communication channel” is generally very helpful (especially for unexpected interruptions). As such, we have adapted Session 0 “Logistics” activity to elicit and mutually plan for such contingencies.

Clinical Considerations

Logistics & Skill.—Adapting activities for new target populations, different modalities, and/or new technologies requires that intervention recipients have the knowledge and skills needed to attend and participate. Revisions may include adjusting or incorporating

contingencies to handle different reading levels, abilities/disabilities, capabilities, and available resources likely or possibly to be encountered in the target population. The “Communication Plan: Development & Practice” activity in Session 0 not only involves review and mutual contingency planning, but also live practice—and installation of apps/services if need be—of communicating via the secondary/fallback mechanism. This has the added advantage of on-the-spot troubleshooting technical issues if necessary.

Clinical Processes.—We recognize that the intervention may have activities that are less focused on mediators of behavior change and more focused on nurturing processes that increase the impact and, hence, the effectiveness of interventions. This includes engagement, gaining trust, and establishing/maintaining appropriate boundaries. The prior adaptation work described by Wu et al. (2010) described revisions to activities to enhance rapport and trust when the interventionist differs phenotypically (e.g., race) from the intervention recipient(s), with similar considerations/approaches to revisions if there might be differences between interventions and recipients with respect to age, sex, gender, ability/disability, and other salient identities or characteristics.

Safety.—Each activity and modality should be assessed for threats to privacy and confidentiality, concerns that are heightened with highly stigmatized and oppressed populations such as SGD individuals in Kazakhstan. As in our study with Black MSM, many of the SGD men in Kazakhstan were married to women, leading a life (“passing”) and/or identifying as heterosexual despite having sex with same/similar sex partners (“on the down low”). With remote intervention delivery, the initial introduction activity and each “Welcome” activity begin with a quick check in to ensure or verify (e.g., by rotating the camera 360°) that the participant is in a private setting. While privacy and confidentiality were components of the “Pledge/Commitment to Safety, Privacy, & Confidentiality” activity in Session 0 of the original intervention, this activity was revised for the remote intervention to include the participant choosing a “safe word” and/or “stop signal”—that is, a word/phrase the participant can say (or type) and/or a gesture they make towards the camera—that sounds and looks neutral and indicates that the interventionist should wrap up the session immediately without saying anything that could reveal sensitive information or aspects about the participant (e.g., their sexuality, sexual behaviors, HIV status, substance use). The “Role-Play: Influencer for HIV Prevention & Care (Digital)” activity in Session 3 introduced participants to social marketing via social media; we made revisions to better address safety, including mitigating and role-playing handling of concerns around homophobic and transphobic responses, being outed, etc. on social media. Finally, after all the intended revisions have been made and before the first implementation of the adapted intervention, we believe it would be a best practice to conclude with a dedicated comprehensive safety review.

Discussion and Applications to Practice

The adaptation method described can be used to revise existing interventions for unaddressed or rapidly emerging problems with new target populations, outcomes, delivery modalities, and technology. The method was developed in recognition of prominent and prevalent challenges to many prior multistep adaptation methods: limited time and

resources, a paucity in the existing research knowledge base, and limited or nonexistent experts from the research or target population communities. We also note that this approach draws upon theory and clinical considerations (and safety) rather than focusing on “core components” or “active ingredients” of an intervention, which are sometimes unspecified and rarely empirically tested or validated among published evidence-based interventions.

While this method can be used by researchers to systematically and rigorously adapt an intervention that can undergo efficacy or effectiveness trials—indeed it was developed for this purpose—we note that practitioners without this existing knowledge base can use the adaptation method to implement the intervention in settings and/or with client populations that are different from or more heterogeneous than those used in the clinical trials used to establish the evidence of efficacy or effectiveness. The shift toward remote delivery and telemedicine in the face of COVID-19 concerns and mitigation efforts is an example where clinicians need to act rather than wait for the clinical research field to design, study, and disseminate results. Remote delivery is useful for clinicians and agencies to reach clients in more remote or transportation-challenged locales (e.g., rural/remote geographies). Other real-world needs that may prompt clinicians to make necessary adaptations for their current clients arise because progress in the prevention and treatment often outpaces behavioral intervention research. For example, injectable PrEP has been published as an efficacious biomedical prevention tool (Landovitz et al., 2021; Moretlwe et al., 2021) but has not been incorporated into any published behavioral interventions at the time of this writing.

In addition to rapid adaptation under real-world constraints, the adaptation from an in-person to a remotely-delivered modality and our subsequent experience using technology for intervention delivery generated several lessons learned. Table 1 presents recommendations that may be useful for practitioners seeking to adapt and implement mHealth and/or digital health interventions.

As an approach to enhancing implementation of evidence-based interventions, it is obvious that the set of characteristics of clients/target populations, inner and outer settings, resources, and constraints that shape innovation and modality will be unique in *every* situation. One could argue that this method and accompanying tool should be considered each time it is used, structurally prompting the social work practitioner to attend to the ethical principle of respecting the inherent dignity and worth of the person. Accompanying these considerations is the realization that every provider is also unique in strengths as well as limitations, including unintentional bias. The Deconstruction/Reconstruction matrix partializes the intervention along theoretical constructs, clinical considerations, and activities. Feedback from clients—and guidance from supervisors and community members if they are indeed available—and critical self-reflection along each deconstructed dimension/component should be pursued to attend to how a practitioner’s (and researcher’s) positionality may present additional supervision and/or training needs to improve practice and delivery of an evidence-based intervention. Altogether, adaptation for each client by each provider is the truest practice of “person in environment” social work and promotes greater contextual/cultural appropriateness.

In summary, this adaptation method provides both researcher and clinician alike a process to revise interventions to respond to the conditions that shape implementation, respond to new advances in prevention and treatment, leverage newly available and/or prominent technology advances and trends, and prompt consideration of positionality with respect to each client/target population. It is hoped that this adaptation method and accompanying visualization tool will prove valuable in prompting researchers and clinicians alike to remain guided by theory, attend to important clinical processes that amplify impact, and pay particular attention to the safety of intervention recipients. We believe this is likely to increase the effectiveness of adaptation and implementation of evidence-based interventions. Furthermore, by prompting attention to positionality and concretely focusing on safety, we believe this adaptation approach more importantly increases the accountability of social work researchers and practitioners to those we serve.

Funding

This research was supported by grants UR6PS000300 from the Centers for Disease Control and Prevention and R01DA030296 and R01DA040513 from the National Institute on Drug Abuse.

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Adaptation Domain	Construct	Session 0 (Orientation)	Session 1	Session 2	Session 3	Session 4
Theory ("Mediators")	Knowledge	<ul style="list-style-type: none"> Terminology Exercise HIV Quiz Social Media Game Recap Current Session & Q&A 	<ul style="list-style-type: none"> Review Past Session Social Media Game Poll Activity: HIV & SGD men Poll Activity: HIV Prevention & Care BLAST-OFF: Introduction to Social Marketing Recap Current Session & Q&A 	<ul style="list-style-type: none"> Review Past Session(s) Game: My Sex Life is a Movie Title Poll: HIV Risk Reduction Crowdsourcing HIV Prevention & Care Becoming an Influencer in HIV Prevention & Care Recap Current Session & Q&A 	<ul style="list-style-type: none"> Review Past Session(s) Game: Guess the Substance Poll/Discussion: Substance Use and HIV Crowdsourcing Substance Use Treatment Recap Current Session & Q&A 	<ul style="list-style-type: none"> Review Past Session(s) Lesson: Digital Content Creation Poll/Discussion: Overcoming Challenges to Homework (Becoming/Being an Influencer) Recap Current Session & Q&A
	Outcome Expectancies	<ul style="list-style-type: none"> Self-Care Discussion 	<ul style="list-style-type: none"> Poll Activity: HIV Prevention & Care 	<ul style="list-style-type: none"> Game: My Sex Life is a Movie Title Poll: HIV Risk Reduction Becoming an Influencer in HIV Prevention & Care 	<ul style="list-style-type: none"> Poll/Discussion: Substance Use and HIV Role-Play: Influencer for HIV Prevention & Care (Digital) Role-Play: Influencer for HIV Prevention & Care (Analog) 	<ul style="list-style-type: none"> Poll/Discussion: Overcoming Challenges to Homework (Becoming/Being an Influencer) Discussion: Building Social Support
	Intention		<ul style="list-style-type: none"> Level-Up Badge Homework: Analyzing Public Health Promotion Items Session 2 Preview 	<ul style="list-style-type: none"> Becoming an Influencer in HIV Prevention & Care Homework: Extend Crowdsourcing HIV Prevention & Care Session 3 Preview 	<ul style="list-style-type: none"> Role-Play: Influencer for HIV Prevention & Care (Digital) Role-Play: Influencer for HIV Prevention & Care (Analog) Homework: Practice Becoming/Being an Influencer 	<ul style="list-style-type: none"> Discussion: Building Social Support Mind, Heart, Body Activity Legacy Wall
	Self Efficacy		<ul style="list-style-type: none"> Lifehacking 	<ul style="list-style-type: none"> Crowdsourcing HIV Prevention & Care Becoming an Influencer in HIV Prevention & Care 	<ul style="list-style-type: none"> Crowdsourcing Substance Use Treatment Role-Play: Influencer for HIV Prevention & Care (Digital) 	<ul style="list-style-type: none"> Poll/Discussion: Overcoming Challenges to Homework (Becoming/Being an Influencer)
				<ul style="list-style-type: none"> Homework: Extend Crowdsourcing HIV Prevention & Care 	<ul style="list-style-type: none"> Role-Play: Influencer for HIV Prevention & Care (Analog) 	
	Social Support			<ul style="list-style-type: none"> Crowdsourcing HIV Prevention & Care 	<ul style="list-style-type: none"> Crowdsourcing Substance Use Treatment Role-Play: Influencer for HIV Prevention & Care (Digital) Role-Play: Influencer for HIV Prevention & Care (Analog) 	<ul style="list-style-type: none"> Icebreaker: Team Tower Building Poll/Discussion: Overcoming Challenges to Homework (Becoming/Being an Influencer) Discussion: Building Social Support Legacy Wall
Clinical Processes	Technical Capacity & Skills	<ul style="list-style-type: none"> Communication Plan: Development & Practice 		<ul style="list-style-type: none"> Crowdsourcing HIV Prevention & Care Homework: Extend Crowdsourcing HIV Prevention & Care 	<ul style="list-style-type: none"> Crowdsourcing Substance Use Treatment Role-Play: Influencer for HIV Prevention & Care (Digital) Role-Play: Influencer for HIV Prevention & Care (Analog) 	<ul style="list-style-type: none"> Lesson: Digital Content Creation
	Engagement	<ul style="list-style-type: none"> Introductions Program Overview Terminology Exercise 	<ul style="list-style-type: none"> Welcome/Opening Icebreaker: Birth Order Game Ground Rules Parking Lot Level-Up Badge Session 2 Preview Satisfaction Survey 	<ul style="list-style-type: none"> Welcome/Opening Icebreaker: Theme Word Game Parking Lot Level-Up Badge Session 3 Preview 	<ul style="list-style-type: none"> Welcome/Opening Icebreaker: Emoji Storytelling Parking Lot Level-Up Badge Session 4 Preview 	<ul style="list-style-type: none"> Welcome/Opening Icebreaker: Team Tower Building Legacy Wall Parking Lot Graduation Certificate & Ceremony
	Safety	<ul style="list-style-type: none"> Pledge/Commitment to Safety, Privacy, & Confidentiality 	<ul style="list-style-type: none"> Safety Check-In/Review Ground Rules 	<ul style="list-style-type: none"> Safety Check-In/Review 	<ul style="list-style-type: none"> Safety Check-In/Review 	<ul style="list-style-type: none"> Safety Check-In/Review

Figure 1.

Deconstruction-Reconstruction Matrix of a five-session behavioral HIV preventive intervention for sexual and gender diverse men in Kazakhstan.

Table 1.**Recommendations for Technology-Enabled/Facilitated Behavioral Interventions.**

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- Use video-enabled communication (vs. audio and text only) for intervention sessions that are live/synchronous.
 - Provide multiple mechanisms of communication during live sessions (e.g., enable an app's chat and/or direct message features, have separate SMS message threads).
 - Contingency plan to overcome or respond to the following:
 - Limited bandwidth (e.g., be able to send URLs for intervention materials to be viewed locally on the recipient's device).
 - Service interruptions.
 - Changes in privacy levels in the recipient's viewing environment during sessions.
 - Design the intervention to be able to be delivered via multiple, prevalent, and popular platforms and services.
 - Use digitally created/animated objects rather than videos/photos of actual people and scenes because this makes future revisions much easier to accomplish while preserving continuity (e.g., tone, lighting, appearance, etc.).
 - Adhere to human-centered design to increase usability and—especially for stigmatized topics and/or marginalized populations—safety.
 - Implement universal design to increase accessibility and reduce exclusion.
 - Initial session activities should involve live practice (and troubleshooting with the interventionist) of any skills/features to be used in subsequent intervention activities and sessions, including the safety step below.
 - Utilize “safe words” and “stop signs” to allow an intervention recipient to end the current activity/session quickly and discreetly.
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