Using a Simulated Patient to Train Healthcare Providers in Screening, Brief Intervention and Referral to Treatment Techniques for Alcohol Abuse

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ABSTRACT

Research shows patients make lasting, healthier choices about drugs and alcohol when healthcare providers use Screening, Brief Intervention and Referral to Treatment (SBIRT). SAMHSA awards training grants to disseminate SBIRT. However, grantees must include skill-building practice and proficiency assessments, which tend to be costly and complex. Simulation represents a cheaper, easier solution.

This paper explains how SIMmersion® developed a computer-based system to 1) provide students with realistic, on-demand role-practice at scale; 2) objectively assess students' SBIRT proficiency pre- and post-intervention; and 3) track participant data over time. The system creates substantial advantages for this behavioral health community's efforts to train the next generation of healthcare providers in a low-cost, low-time intervention proven to help patients lead better, healthier lives.

With funding from the National Institute on Alcohol Abuse and Alcoholism (grant #1R42AA016486-01), SIMmersion developed the *Alcohol Screening and Brief Intervention* system. In this simulation, healthcare providers interact with a patient, portrayed by a professional actor, having variable risk factors and personalities in a conversation driven by an advanced emotional model. Non-Branching Logic™ guarantees that no two conversations will be the same. National standards for SBIRT proficiency provide structure for detailed, objective scoring criteria. Peer-reviewed research found the system effective at building skills that providers maintained over time.

The paper demonstrates how, by using SIMmersion's simulation to comply with the requirement for skill-building practice and assessments, SAMHSA grantees reduce their logistical burden and free resources for other purposes. Training conversations with simulated patients can have a strong positive impact on public health.

ABOUT THE AUTHORS

Ben Allen-Kingsland is the Business Development Director for Health and Corporate Programs for SIMmersion and has authored three simulations on the topics of substance abuse and suicide intervention. He graduated Phi Beta Kappa from Johns Hopkins University.

Chip Trimmier, Esq., PMP is SIMmersion's Capture Manager and General Counsel. He plays an integral role in SIMmersion's five-year plan by identifying and executing win strategies for Department of Defense, civilian and commercial proposal opportunities. He is an experienced attorney, sales professional and entrepreneur with international business experience. A member of the Florida Bar and the Association of Corporate Counsel, Chip graduated from Birmingham-Southern College and the University of Alabama School of Law.

Laura Humm is Chief Operating Officer for SIMmersion with expertise in project management, client relations, content development, software design, software integration, and quality assurance. She has worked as Co-Investigator or Program Manager on more than a dozen funded SBIR and STTR grants and led SIMmersion's team

in the successful development of programs for the U.S. Army, U.S. Air Force, U.S. Navy, Federal Bureau of Investigation, the Department of Defense, and the Intelligence Community. She has a BS in Psychology and Sociology from Towson University.

Dale E. Olsen, PhD is the founder and President of SIMmersion, LLC. Dr. Olsen holds six U.S. and international patents, has served as the Principal Investigator for more than a dozen research projects, has published over seventeen peer reviewed papers, and presented numerous papers at statistical, polygraph, and training conferences. Dr. Olsen developed the technology base behind SIMmersion, LLC during his career at the Johns Hopkins University Applied Physics Lab (JHU/APL), and spun SIMmersion, LLC out of JHU/APL in 2002. He received the John E. Reid Memorial Award for Distinguished Achievement in Polygraph Research, Teaching and Writing in 1994. A native of Chico, California, Dr. Olsen earned a B.A. in Mathematics from California State University, Chico, a M.A. in Statistics from Oregon State University and a Ph.D. in Statistics from Oregon State University.

Michael Fleming, MD, MPH, is a Professor in the Psychiatry and Behavioral Sciences and Family and Community Medicine Departments of Northwestern University's Feinberg School of Medicine. Dr. Fleming's research and training programs have focused on testing behavioral interventions in community-based primary care practices. He has also published dozens of studies on phospholipids, alcohol biomarkers, chronic pain, fetal alcohol spectrum disorder, pharmacotherapy trials, epidemiological studies and educational interventions. Dr. Fleming has been the PI on over a dozen NIH grants and contracts, and he serves as the director of the pain consult service and the inpatient addiction medicine consult service at the University of Wisconsin Hospital and Clinics. More recently, he has taken a leadership in the UW Institute for Clinical and Translational Research as the Director of Research Education and Career Development programs. In 2005 he was notably elected as a member of the prestigious National Academy of Sciences Institute of Medicine. He holds an MD from Wayne State University and an MPH in Epidemiology from the University of North Carolina.

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BACKGROUND

In 1990, the Institute of Medicine formalized a fresh approach to the way healthcare providers approached alcohol use disorders (IoM, 1990). Instead of restricting interventions to the small percentage of alcohol consumers who met clinical criteria for dependence and proactively sought out rehabilitation (SAMHSA, 2010), the Institute recommended that the healthcare field address alcohol use with all patients, conceiving the model in a treatment pyramid: 1) Universal **Screening** for all patients; 2) a **Brief Intervention** for the quarter of the population estimated to be engaged in harmful or risky use (e.g. binge drinking) (SAMHSA, 2010), and; 3) **Referral to Treatment** for the small share of the public that classifies as dependent. (see Figure 1)

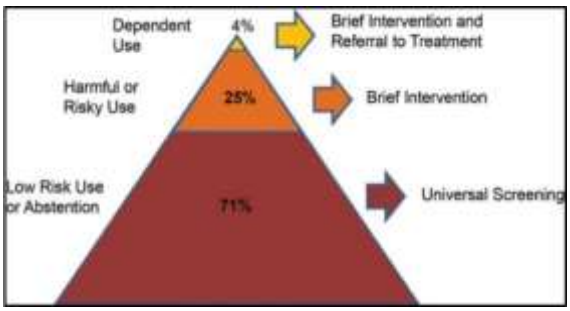

Figure 1. SBIRT Treatment Pyramid for Alcohol Use Disorders (ONDCP, 2012)

In randomized controlled trials, investigators explored whether or not this communication-based approach, involving a few minutes of a provider's time during an appointment with a patient on another topic, would improve outcomes. **Screening, Brief Intervention, and Referral to Treatment (SBIRT)** was proven to significantly reduce alcohol consumption and binge drinking episodes for men and women in the short term and at twelve-month follow-up (Fleming, 1997; Whitlock, 2004; Bertholet, 2005). Moreover, SBIRT was demonstrated to be exceptionally cost-effective relative to other alcohol treatments (Miller, 2002).

The Substance Abuse and Mental Health Services Administration (SAMHSA) launched an SBIRT initiative in 2003 that screened nearly 500,000 patients in a range of settings (ERs, primary care settings, community clinics) over five years, identifying nearly 100,000 problem or risky drinkers and leading to significant decreases in consumption at six-month follow-up (Madras, 2009). Today, SAMHSA's grant-making with SBIRT focuses on disseminating and scaling SBIRT throughout the nation's healthcare system, building the base of the treatment pyramid in an effort to identify and support as many of the nation's alcohol consumers as possible.

Barriers to Widespread Adoption

Despite its effectiveness, SBIRT is not widely practiced for a range of reasons, including inconsistent reimbursement and providers' perceptions that it is time- and resource-intensive (Aira, 2003; Anderson, 2004; Fussell, 2011).

The most critical barrier to widespread adoption may by the finding, replicated in many studies, that providers don't employ SBIRT because they have limited training and lack confidence in their ability to conduct the intervention effectively (Kaner, 1999; Agerwala, 2013). Many SBIRT trainings consist of a few hours of workshop or lecture-based instruction, with or without an interactive component, such as described in Agley et al. (2014). The impact on

clinical practice from one-day workshops or lectures is unclear; programs demonstrated to improve patient outcomes have generally paired weeks of training with regular clinical supervision and mentorship (Gonzales, 2012). SAMHSA awards millions of dollars in grants each year to help train medical residents and community health partners in SBIRT, but even grantee institutions share significant concerns about the sustainability of their training efforts in the absence of federal funding (Pringle, 2012). There is a pressing need for new strategies to disseminate SBIRT at scale and close the confidence gap that keeps providers from employing this cost-effective, evidence-based protocol.

Web-based Distribution

By delivering SBIRT training material online, educators have the potential to quickly and inexpensively reach a global audience with their content. However, different strategies for online dissemination vary considerably in the rigor and measurable impact they can be expected to have. Pringle et al. (2012) wrote that many SAMHSA grantee institutions reported they would disseminate SBIRT post-award primarily by posting curricular materials on their websites; as the authors dryly noted, "the success of this approach remains to be demonstrated." (p. 62)

Conventional e-learning materials that involve reading sample cases or watching video examples about SBIRT (e.g. Ahadpour et al., 2015; Stoner, 2014) are more sophisticated than re-posting of classroom-based curricula. However, while the patient cases and multimedia content (ex. video modeling) in e-learning has been shown to improve users' subjective enjoyment of material, Stoner et al. (2014) found no difference in pre-post knowledge or reported self-efficacy between an e-learning group and a control group who simply read a selection of materials about SBIRT.

Passive e-learning, though relatively quick to create and disseminate, in many cases does not represent a meaningful departure from 20th-century modes of increasing knowledge, let alone driving changes the in clinical practice that proponents of SBIRT need.

The Role of Simulation

Simulation represents a more promising direction for web-based SBIRT instruction. Researchers have demonstrated several elements common to computer-based training systems that increase real-world skills: e.g., **interactivity**, **feedback**, **repetition** and the potential for **repeat practice** (Cook, 2010). According to Boehle (2005), "interactive computerized simulations are one of the most effective ways to learn tasks." (para. 2)

One SBIRT simulation described in Tanner et al. (2012) involved several of the elements associated with effective simulated training. As they read through and watched video clips of a simulated case, students were periodically "polled" on what they would do next **(interactivity)** and, after making their choice, were shown the correct answer and a breakdown of how other users had answered **(feedback)**. The simulation also involved a branching logic exercise, where students could make their own choices for what to do in a brief case and try different paths. Finally, the simulation allowed students to practice an SBIRT conversation via internet chat with a human standardized patient (pending availability of the live role-player). The simulation was found to yield modest increases in comprehension of SBIRT concepts and reported self-efficacy.

Interactivity and feedback are key components of learning, but the simulation in Tanner et al. did not activate other critical elements of learning, i.e. repetition and repeat practice. Just as one-day, in-person workshops do not yield the same outcomes as weeks of training and coaching, a simulation without the capability for repetition and repeat practice may not realize the medium's full potential to drive skill-building.

SIMmersion, in collaboration with Dr. Michael Fleming of the University of Wisconsin-Madison, joined together to create a simulation that would bring together all the critical elements necessary to help trainees improve their SBIRT skills without an instructor in the room. With funding from the National Institute on Alcohol Abuse and Alcoholism (NIAAA, grant # R42 AA016486) the team created the *Alcohol Screening and Brief Intervention System with Christy Johnson.*

THE SIMULATION: *ALCOHOL SCREENING AND BRIEF INTERVENTION WITH CHRISTY JOHNSON*

In *Alcohol Screening and Brief Intervention*, providers learn about SBIRT through self-driven educational materials, then put their knowledge into practice in a conversation with the virtual patient Christy Johnson. An on-screen coach provides feedback to providers throughout the conversation, and rigorous scoring screens based on the NIAAA Clinician's Guide (NIAAA, 2005) help them identify strengths and areas for improvement.

The conversation is powered by SIMmersion's PeopleSim® Conversation Engine, a patented technology uniquely well-suited to help trainees develop communication skills.

PeopleSim® Technology Profile

The PeopleSim® Conversation Engine meets all six criteria identified by Issenberg et al. (2005) as characteristic of high-fidelity medical simulations that lead to effective learning (see Table 1).

Table 1. PeopleSim Integrates All Features for High-Fidelity Medical Simulations

1) Trainees Actively Participate
2) Consistent Feedback is Provided
3) Multiple Practice Opportunities are Afforded
4) Trainees Apply Multiple Learning Strategies
5) Trainees Can Make, Detect and Correct Errors Without Adverse Consequences
6) Situations, Principles and Tasks are Accurately Represented

1) *Trainees Actively Participate* by speaking directly to realistic virtual patients, choosing what to say from an expansive script with either voice, mouse or touchscreen controls. Each patient has a realistic emotional model which makes him or her more engaged and open over time if providers consistently make positive choices, and more cold or disengaged if providers make authoritative or judgmental choices.

2) *Consistent Feedback is Provided* through several channels. Every time providers make a choice in line with the teaching points, 1) the patient (e.g., Christy) is likely to react with a positive, realistic response; 2) an on-screen coach gives an encouraging non-verbal gesture, (e.g., thumbs-up); 3) a color-coded meter illustrating how the patient is feeling at that moment shifts to green (positive); and 4) dynamic help text connects the choice to the teaching points (e.g., "Reflecting Christy's words demonstrates that you're listening.") These immediate rewards build direct associations between positive choices and positive results, activating the neural mechanisms that drive learning (Middleton, 1995; Vinogradov, 2012).

   If providers use authoritative language or make other errors, they receive constructive negative feedback from all the same channels, e.g. 1) the patient may take offense or be confused; 2) The coach may give a "so-so" or thumbs-down gesture; 3) the colored meter shifts to red; and 4) the help text relates the error to the teaching points (e.g. "Dictating a plan to Christy makes the conversation less collaborative.")

3) *Multiple Practice Opportunities are Afforded* because of the Non-Branching™ logic behind PeopleSim. In more common branching logic systems, such as Tanner et al. (2012), trainees choose from a list of typically 3-5 options at any decision point. Even when multiple paths are possible, because Choice A always leads to Result A such systems quickly becomes predictable to trainees, diminishing their repeat practice value.

   In contrast, each choice in SIMmersion's Non-Branching systems can have many possible results, each of which is consistent with the conversation at that moment. Non-Branching logic lets SIMmersion offer dozens of choices at any time, letting users freely follow up, change topics, or backtrack as desired, just like in a real conversation. This expansive variety forces trainees to think about what has happened and what they should do next, as opposed to judging which of a handful of options is best.

4) *Trainees Apply Multiple Learning Strategies*, from searching through the options at each exchange for the ideal answer, to deliberately making mistakes to learn from them, to challenging themselves with the help coach and help text disabled. The Non-Branching structure and large number of potential choices at each step virtually guarantees that trainees will have a different experience every time they utilize the simulation. This variation not only keeps trainees interested, but also makes it impossible for them to memorize the "right" path to score well. Instead, trainees must think and respond to the dynamic problems presented. They must think about what they should do next, given the learning objectives and evolving situation in the simulation.

5) *Trainees Can Make, Detect and Correct Errors Without Adverse Consequences*, which is not the case in public workshop role-plays (which can be embarrassing, unrealistic, or inconsistent in flagging errors) or "on-the-job" practice with real patients (which is a highly stressful and risky way to learn). Trainees who use a PeopleSim simulation have many opportunities to make mistakes in the conversation, and will always receive consistent, objective supportive feedback when they do. They then have the opportunity to rewind and make a different choice, restart the conversation entirely, or simply play through to the end and see how their score reflects the full range of their choices, positive and negative. The freedom to make errors, have them identified in a clear and non-judgmental fashion, and learn from them gives simulation a significant advantage over in-person role-playing or on-the-job practice.

6) *Situations, Principles and Tasks are Accurately Represented* in SIMmersion's simulations, which are crafted with the support of leading Subject Matter Experts (SMEs) in the appropriate field. Introductory e-learning materials accompany each SIMmersion simulation so trainees can familiarize themselves with the teaching points before talking to the patient. The teaching points and simulation dialogue are developed with regular review from SMEs and modifications to ensure they map on to clinical practice.

   To increase the realism of our simulations, SIMmersion's virtual characters are portrayed in HD video by professional actors (see Figure 2), who can capture all the nuances of non-verbal communication and facial expressions critical to realistic social encounters. This format gives SIMmersion's characters a very high degree of social presence, relative to 3D avatars in other virtual interventions (see Figure 3)

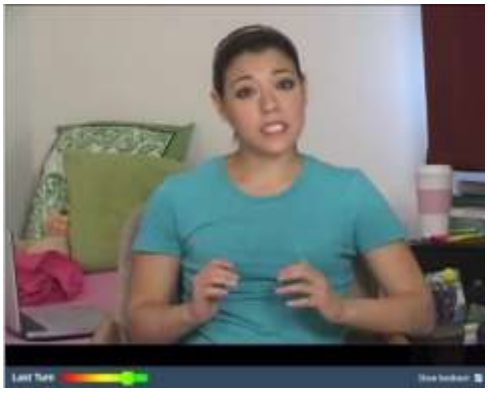

Figure 2. Typical SIMmersion Character, Portrayed By Actor in HD Video

Figure 3: 3D Character from "Virtual Reality Social Cognition Training" Intervention, Kandalaft et al. (2012)

These elements of PeopleSim led SIMmersion and Dr. Fleming's team at the University of Wisconsin-Madison to believe that the *Alcohol Screening and Brief Intervention System with Christy Johnson* would represent an innovative, high-value addition to the SBIRT field.

***Alcohol Screening and Brief Intervention* Scenario**

Providers who launch *Alcohol Screening and Brief Intervention* role-play the following scenario:

"You are a healthcare practitioner in a suburban health clinic. Christy Johnson was in a minor car accident and is complaining of headaches. Take the opportunity to assess her risk level for potential alcohol misuse, and use her responses to guide your decision for whether or not to offer a brief intervention or referral."

Christy Johnson has three different possible risk levels, randomly selected at the start of the conversation, which map onto the categories in the Institute of Medicine's Treatment Pyramid, e.g. Low-Risk, At-Risk, and Problem-Dependent. In addition, each of the characters can shift to one of three attitudes when her alcohol use is discussed, e.g. Cooperative, Ambivalent, or Resistant. The many combinations of risk levels and moods available create substantial clinical variety from conversation to conversation, preparing users to speak to many different types of real-world patients.

Even if a provider speaks to the "same" version of Christy Johnson (i.e. same risk level and attitude) from one conversation to the next, the expansive script contains more than 1,200 possible responses that she can offer. With so much variety possible at every exchange, providers are virtually certain to have a fresh encounter each time.

THE RESEARCH: DEMONSTRATING CLINICAL EFFECTIVENESS

On completing *Alcohol Screening and Brief Intervention with Christy Johnson*, SIMmersion and Dr. Fleming sought to investigate its effectiveness as a training tool. A randomized clinical trial at the University of Wisconsin-Madison explored whether using the simulation would improve providers' skills at employing SBIRT with live standardized patients.

Study Design

102 participants from various healthcare professions were recruited at the University of Wisconsin-Madison (see Figure 4) and randomized to the experimental simulation group (who would use *Alcohol Screening*) or a no-training control group. Only 5% of participants reported any prior training in SBIRT.

Figure 4. Study Participants (n=102)

The primary outcome observed was performance in SBIRT role-plays with standardized patients specifically trained for this study. During a six-week period, all 102 participants completed three pre-test role-plays that assessed their Screening, Brief Intervention and Referral to Treatment skills independently (see Figure 5). Role-plays were video-taped and scored by trained raters, with 20% of the sessions reviewed by a panel of research team members; the degree of agreement between raters and the research team was very high (Kappa = .95).

Over the next four months, the control group received no additional training in SBIRT. The simulation group was given access to the *Alcohol Screening and Brief Intervention Training System* and instructed to conduct 10 virtual conversations with Christy Johnson on their home computers.

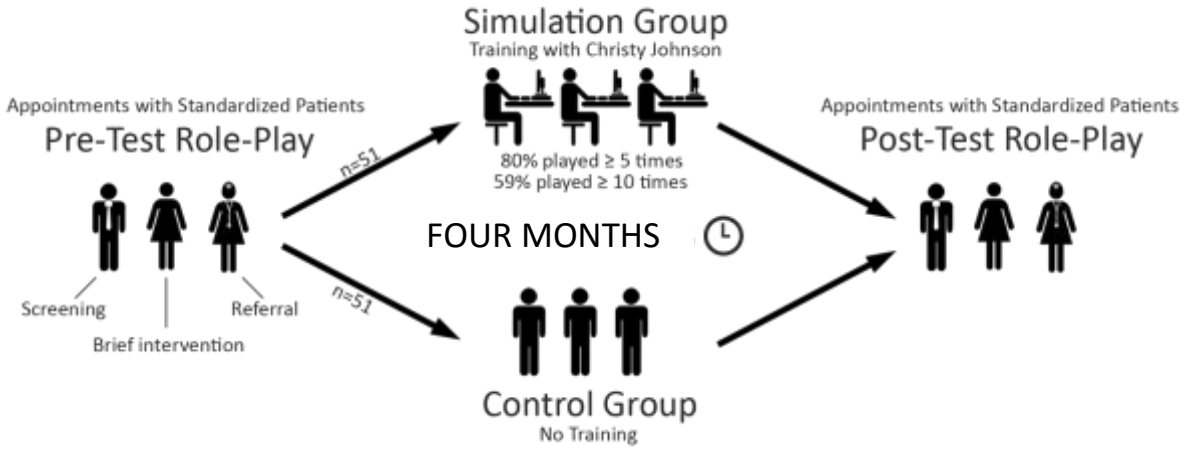

Figure 5. Study Progression

For a population of busy healthcare providers with many demands on their time, compliance with the independent training requirement was relatively high, with 59% of the simulation group completing *more than* the required 10 conversations and a strong majority (80%) completing 5 or more. Scores were logged anonymously and captured online by SIMmersion's learning management system.

After the months of training, post-test role-plays with three different standardized patients in fresh scenarios were conducted over a period of roughly eight weeks. There was an acceptable attrition rate of roughly 11% between pre- and post-test due to external factors (e.g., participant illness, relocation). 91 participants completed the post-test

role-plays, with scores rated by trained raters as before. Pre-test scores for the 11 participants who left the study were imputed into the outcome data.

Study Results

Mean score values for the simulation and control groups were compared using t-tests, executed separately for all items on the screening, intervention, and referral scales.

On average, the control group's skills (as measured by their performance in six standardized patient role-plays) improved by 6.8% in the screening domain and actually declined by 3.8% in the brief intervention domain between pre- and post-test.

In sharp contrast, the simulation group's skills improved by 27.1% in screening activities and 11.1% in conducting brief interventions. (See Figure 6) There were significant differences demonstrated between the control and simulation groups in screening ($p<.001$) and brief intervention ($p<.04$) skills.

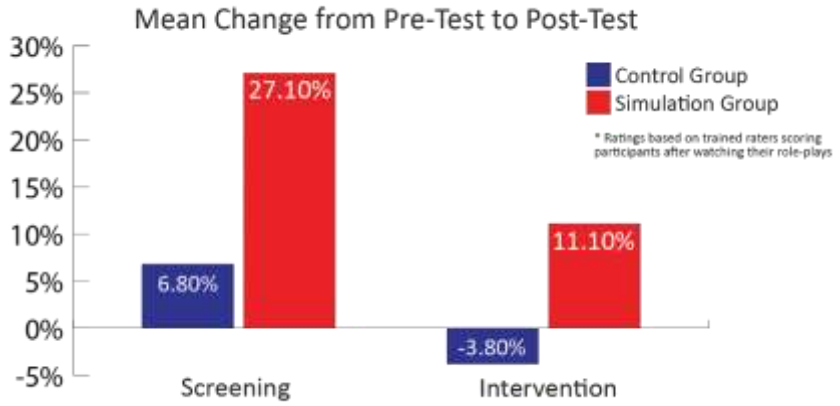

Figure 6. Study Results (n=102)

This research was published in the Journal of the American Board of Family Medicine. The authors concluded that "The technology successfully tested in this study offers great promise… Virtual-reality simulation offers learners the opportunity to practice and develop skills before trying to apply these skills with real patients." (Fleming, 2009, p. 397)

FROM LAB TO MARKETPLACE: *ALCOHOL SCREENING* TODAY

After successfully developing and demonstrating the effectiveness of *Alcohol Screening and Brief Intervention with Christy Johnson*, SIMmersion and Dr. Fleming brought the simulation into the healthcare marketplace as an evidence-based supplement to conventional SBIRT training.

While robust simulation-based *training* serves a role in the field, Pringle et al. (2012) point out another critical need in SBIRT instruction and dissemination: "There are no validated assessment tools for evaluating SBIRT competency… this is an area of active investigation and is needed for SBIRT training to integrate successfully into increasingly competency-based curricula." (p. 62)

Alcohol Screening, with its high realism, objectivity, scalability, and detailed scoring screens based on authoritative standards like the NIAAA Clinician's Guide, represented a tool ripe for validation as an assessment instrument. To support SAMHSA's SBIRT Training Grantee institutions and other researchers, SIMmersion invested in new software capabilities to reshape the PeopleSim Conversation Engine for the construction of assessment simulations, currently deployed in the field to explore their validity to meet the field's need for competency-based tools.

Training to Assessment

Converting *Alcohol Screening* from a training tool to an assessment tool involved going back to the core of SIMmersion's design.

SIMmersion' training products are conceived as a union of three integrated elements: *1) Knowledge Building* (i.e., multimedia e-learning screens); *2) Skill-Building* (i.e., realistic patient simulations with Non-Branching™ logic); and *3) Feedback* (e.g., on-screen coach, color-coded transcript, detailed score.) The elements form a mutually reinforcing loop, where knowledge drives success in the simulation, performance in the simulation yields feedback, and feedback helps users know whether to return to the knowledge building elements to shore up gaps in comprehension or to try the simulation again for repetition and clinical variety. Over the course of many conversations, these elements join together to support learning.

For assessment purposes, however, only one element matters: how well a provider performs at a given skill at a given moment in time. Pre-simulation learning screens and immediate feedback on how to score higher could represent confounding variables for an assessment. The ability to rewind or restart a conversation that is progressing badly, however supportive it may be in training, could distort assessment data. Even the vast variety that PeopleSim simulations provide, with multiple characters and moods from play to play, represents a complication instead of a benefit for assessment, where a degree of standardization between providers is important for the authenticity and fairness of the data.

Over the course of several months, SIMmersion's developers went back to the heart of the product design and interface for *Alcohol Screening and Brief Intervention*. They created a new, fully customizable version of the software with the ability to hide all the features related to training (see Table 2). The new assessment product also allowed institutions to customize the conversation to their needs, deliberately restricting the PeopleSim engine to only display certain characters or moods.

Table 2. Training Features Hidden from Assessment Version of *Alcohol Screening*

1) Full e-learning screens about SBIRT
2) Color-coding in Transcript
3) Written Insights and Advice on Each Exchange
4) Ability to Rewind, Restart, Save/Load
5) On-screen Coach
6) Final Scoring Pages

The adapted product features a high-fidelity role-play with a realistic virtual standardized patient, Christy Johnson, whose risk level and moods can be standardized by research teams but unknown to participants. All scoring data—even if hidden from participants—is captured in fine detail and recorded in the cloud either anonymously or with personally identifying information, per the requirements of the relevant Institutional Review Board. This data can be gathered and exported in flexible reports to facilitate easy analysis by institutions and research teams.

The Assessment version of *Alcohol Screening and Brief Intervention* is currently being deployed by a number of SAMHSA SBIRT Training Grant Recipients.

Profile: Catholic University of America, Washington DC

In "Launching SBIRT into the Community: A Multidisciplinary Approach" (# 5U79TI025411-02), Primary Investigator Dr. Karlynn BrintzenhofeSzoc is spearheading a joint project between the Catholic University of America's Schools of Social Work and Nursing. Masters' of Social Work students and Nurse Practitioners in training will experience a combination of didactic and clinical instruction to increase their capacity to effect positive behavioral change among individuals with substance use disorders. The project also includes community training sessions with clinics and health centers in the Washington, DC metro area to advocate for the incorporation of SBIRT into new settings.

SIMmersion's assessment technology will be used to gather post-test data on the MSW and Nursing students completing the curriculum. Their performance in *Alcohol Screening and Brief Intervention with Christy Johnson* and another assessment product, SIMmersion's *Motivational Interviewing with Jack Grant*, will be used as data

points to assess their competence in SBIRT and Motivational Interviewing (MI), a related patient-centered domain often incorporated into SBIRT conversations.

For Dr. BrintzenhofeSzoc's team, SIMmersion created a version of *Alcohol Screening* with all training features removed; only the At-Risk version of Christy Johnson available; anonymous user identifiers for confidentiality purposes; and customized scoring screens with only desired information displayed to providers.

Profile: University of Mississippi Medical Center, Jackson, MS

Primary Investigator Dr. Julie Schumacher-Coffey received a SBIRT Health Professions Student Training grant from SAMHSA (#1 TI026047-01) to train nearly 400 3rd-year medical students in SBIRT over the course of three years in collaboration with the University of Southern Mississippi. SIMmersion's technology will be among the tools used to capture students' baseline competence in SBIRT and Motivational Interviewing. At the conclusion of the curriculum, students will use the assessment tools again, with their performance analyzed for changes from the baseline (indicating the effectiveness of the curriculum between pre-post, not training effects from the simulation itself.)

For Dr. Schumacher-Coffey's team, SIMmersion created a version of *Alcohol Screening* with all training features removed; only the Problem-Dependent version of Christy Johnson available (pre-test) and only the At-Risk Christy available (post-test); anonymous user identifiers for confidentiality purposes; and customized scoring screens. Since students will be assessed with two simulations, the software is programmed to randomize students into groups to control for order effects (i.e. one group assessed with *Alcohol* followed by *MI*, and the other group experiencing the reverse order).

Profile: University of Central Florida, Orlando, FL

Dr. Shawn Lawrence of the University of Central Florida School of Social Work received over $900,000 in three years of SAMHSA funding for "Expanding SBIRT Workforce Capacity in Central Florida: SBIRT Training for Graduate Social Work Students and Community Professionals." (1 TI025943-01) In excess of 1,500 individuals, including MSW students and local health care practitioners, will be trained in SBIRT in an effort to deliver a meaningful public health impact to Central Florida.

Alcohol Screening and Brief Intervention is being employed both as a training *and* assessment tool for Dr. Lawrence's team, making heavy use of SIMmersion's improved capacity to customize our simulations to customers' needs. Per the team's specifications, SIMmersion developed a custom difficulty progression for *Alcohol Screening* to ensure that the first time participants train, they will have an easier experience, ramping up in difficulty to the fourth play-through, where participants speak to the most difficult version of Christy (in terms of risk level and personality) and must receive a score of 80/100 or greater in order to advance. All subsequent plays will have the regular training features reset, so the full variety of characters, moods, and feedback features will be available.

For these SAMHSA grantees, using SIMmersion's virtual standardized patients represents a tremendous time and cost savings relative to conducting, recording and manually coding live standardized patient encounters for these hundreds and hundreds of study participants. The fact that participants can conduct their assessments during flexible windows of time from their home computers or tablets, and that all scoring data will be captured in fine detail and reported back with powerful, flexible cloud-based tools, makes SIMmersion's technology a critical asset for research institutions. Publications that result from these SAMHSA grants and others to follow will begin to establish an evidence base for the validity of SIMmersion's simulations as assessment tools.

CONCLUSION: EMPOWERING THE COMMUNITY

Evidence-based practices like SBIRT have tremendous potential to improve patient outcomes nationwide, but their impact will remain limited without scalable methods to disseminate them and reliably assess providers' competence at putting them into practice.

SIMmersion's *Alcohol Screening and Brief Intervention Training System* is one of the field's most robust evidence-based simulations for building SBIRT skills in an array of populations. The recent augmentations to the technology—and all of SIMmersion's other systems—to enable them to function as assessment tools gives SIMmersion even more to value offer the healthcare community, empowering institutions with flexible, customizable, high-fidelity tools to achieve their objectives.

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