Bridging Gaps in HIV Care: Usability Evaluation of a mHealth App for Identifying and Retaining Individuals with Non-Viral Suppression

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Background

- Despite improved health outcomes for people with HIV (PWH) across the United States, geographic disparities persist, with higher rates of PWH who have not achieved viral suppression in the Deep South.[1]
- **Drive to Zero:** a mobile application designed to support study engagement and retain PWH who have not achieved or sustained viral suppression (Figure 1).
- **Aim:** Evaluate the usability of the Drive to Zero, aligning with the 2022-2025 National HIV/AIDS Strategy Goals.

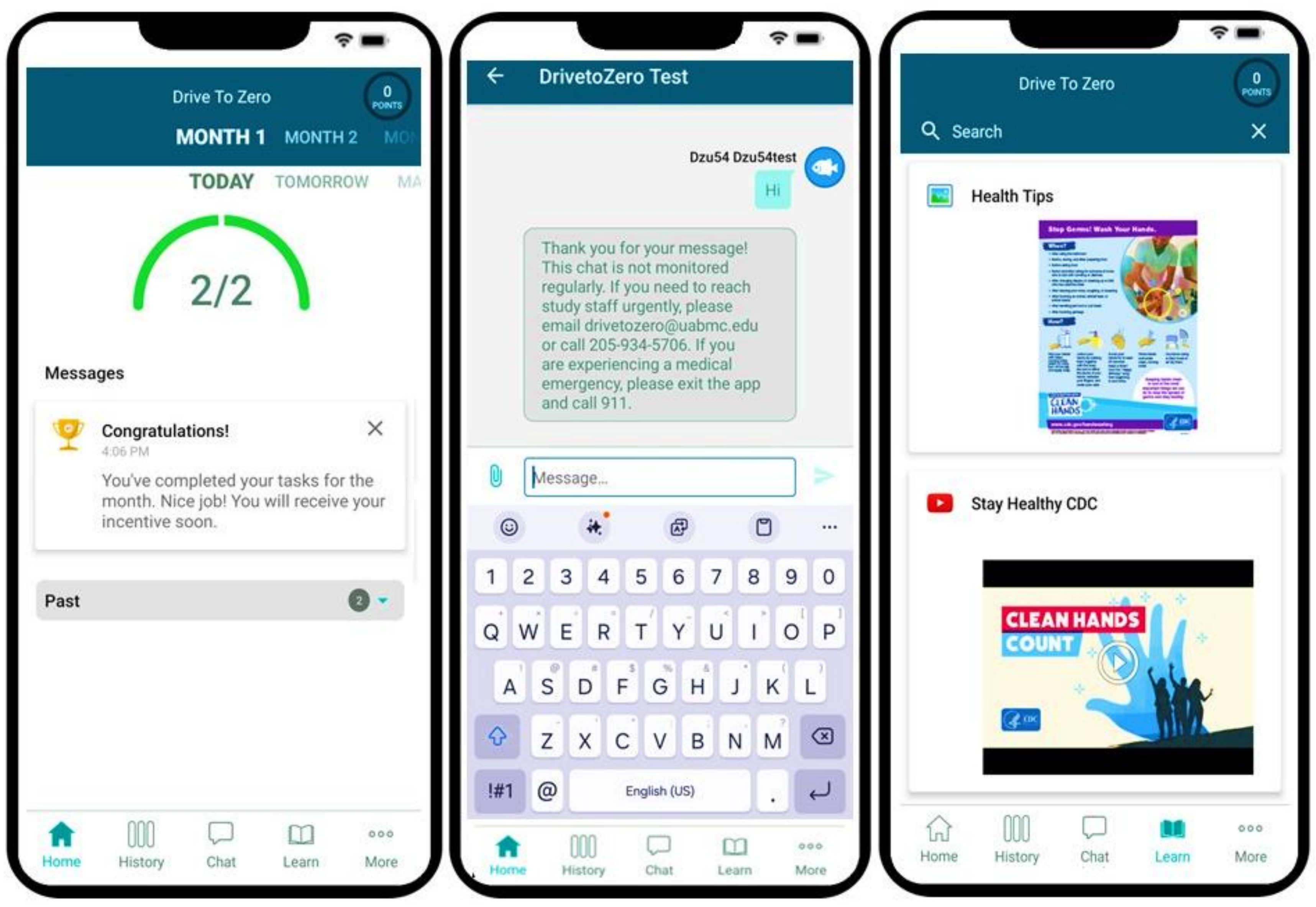

Figure 1. Through the Drive to Zero app, end-users complete health surveys to track their general health status, communicate directly with the study team via personalized chat, access educational resources, and visualize charts illustrating their progress and completed tasks.

Method

- **Two-Phase Usability Evaluation:**

Heuristic Evaluation
- Usability violations using Nielsen's 10 heuristics
- From 0 (no problem) to 4 (usability catastrophe)
- Five health informatics experts

End-User Testing
- Post-Study System Usability Questionnaire (PSSUQ)
- 16 items, 7-point Likert scale. Lower scores indicated higher usefulness
- Twenty PWH evaluated the app

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Results

Table 1. Usability Measures of the Drive to Zero App

Nielsen's 10 Usability Heuristics	Mean (SD)
Visibility of System Status	1.2 (1.1)
Match Between the System and the Real World	1.2 (1.3)
User Control and Freedom	1.4 (1.3)
Consistency and Standards	1.0 (1.0)
Help Users Recognize and Recover from Errors	0.4 (0.9)
Error Prevention	1.2 (1.1)
Recognition Rather than Recall	0.2 (0.5)
Flexibility and Efficiency of Use	1.2 (1.6)
Help and Documentation	1.4 (1.1)
Aesthetic and Minimalist Design	1.2 (1.1)
Post-Study System Usability Questionnaire	**Mean (SD)**
System Usefulness	1.4 (0.5)
Information Quality	2.0 (0.8)
Interface Quality	1.9 (1.2)
Overall PSSUQ	1.7 (0.6)

"I think this app will play a pivotal role in ending HIV. It is informative, user-friendly, and modern, exceeding the standard of the apps I use daily. This app becomes customizable and is designed to support and empower you in managing your health." End-User11

"Congratulations on having completed a task. I think it is good and motivates me. I feel good that what I do, what I respond to, and my activity with the app are recognized." End-User31

"The chat is nice and simple. I like that. It does not have complicated features, and it is even for me, I am visually impaired, and I find it accessible and easy to use. I like the fact that it is different, and different is good. Different keeps people engaged." End-User4

Figure 2. Selected end-user comments.

Conclusions

- The findings indicated that the app has a simple, user-friendly interface and optimal functionality, demonstrating its potential to influence end-user engagement and behavior change to support HIV care efforts.
- The usability and acceptability of the Drive to Zero were overall favorable, but with key recommendations to improve the applicability of the app.

References

1. Gant Z, Dailey A, Wang S, et al. Trends in HIV care outcomes among adults and adolescents in the U.S. South, 2015–2019. Annals of Epidemiology. 2022;71:15-22. doi:10.1016/j.annepidem.2022.04.011