MEDITATION, MEDIATED: INTEGRATING TECHNOLOGICAL AFFORDANCES AND THE UTAUT MODEL IN STUDYING DIGITAL MENTAL HEALTH APPLICATIONS

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Introduction

In recent years, the mobile Health(mHealth) field has gained popularity for addressing depression and anxiety (Leong et al., 2022). As of 2023, approximately 60% of adults in the United States used apps to track or manage their health (Stewart, 2025). Practicing mindfulness has shown effective treatment for depression, including relapse prevention (Hofmann & Gómez, 2017). The rising public interest and awareness of mindfulness benefits have since led many people to experiment with apps (Clarke & Draper, 2019; Market Research Intellect, 2025). Using mechanisms such as self-compassion, decentering, acceptance, and attention monitoring, these apps present tools such as breathing exercises and mindfulness practices (Chan & Honey, 2022; Gavrilova & Zawadzki, 2023). One such popular app, launched in 2012, is Headspace, showcasing guided meditation, sleep assistance, mental health coaching, etc. (Leong et al., 2022).

Headspace has over 60 million members, offering a free trial period, followed by a paid subscription. Presenting convenient and accessible means to practice mindfulness, the app aims to become an integral part of an individual's daily routines. However, limited studies have evaluated the efficiency and effectiveness of such commercially advertised and popular apps (Bardus et al., 2016; Lau et al., 2021). Some studies have established links between the characteristics of mental health apps and their usage patterns (Hentati et al., 2021; Taylor et al., 2025), but little attention has been paid to the role of interface design and the specific ways that the apps facilitate (or hinder) users' interactions.

User experience and engagement studies have shown wide variations (Baumel et al.,

2019; Borghouts et al., 2025). Given the reach and scale of Headspace's users, there is an opportunity to study the impact of a widely popular app and its design to inform user centric app complexity. Using robust theories such as 'Affordances' and the Unified Theory of Acceptance and Use of Technology (UTAUT), we seek to answer the following research question: *How do the characteristics of the Headspace mobile app enable or constrain different aspects of the user's mental health journey?* The following sections outline an approach that examines the everyday use of the app and evaluates the potential impact of its features on users, drawing on a cross-disciplinary theoretical foundation through a Science and Technology Studies (STS) lens.

Integrating Use Behavior with Affordances

Amongst a variety of theoretical models that explain the influence of app acceptance, the UTAUT provides a holistic approach to explain user intentions to use an information system and subsequent usage behavior. The authors formulated that technology use and behavior intention are influenced by four constructs, i.e., *'Performance Expectancy', 'Effort Expectancy', 'Social Influence',* and *'Facilitating Conditions'* (Venkatesh et al., 2003). Use Behavior, as conceptualized in UTAUT, explains individuals' intention to continue using technology systems by focusing on psychological and behavioral constructs associated with users' environments. Later, to better align with the consumer market, the model was extended to include *'Price', 'Hedonic Motivation',* and *'Habit'*, with 'Gender', 'Age', and 'Experience' as moderators (Venkatesh et al., 2012).

UTAUT-2 literature shows good predictive capabilities for initial technology adoption; however, due to the behavioral and cognitive orientations of the model, discussions about digital mental health apps in extant research tend to focus on the user's mental state instead of examining the app's use in situ by interrogating the specific actions being enabled or constrained through its technical design. This created a need to integrate UTAUT with other theoretical foundations to achieve a more comprehensive understanding of technology use across diverse user groups. This study complements UTAUT-2 with *'Technological Affordances'* to effectively analyze the interplay between human factors and the sociotechnical arrangements of the app.

Affordances were conceptualized by J.J. Gibson (1979) and later extended to technology studies (Gibson, 2014). This study specifically adopts Jenny Davis's (2020) expanded concept of 'affordances' to study the user experience of the Headspace app, exploring mechanisms such as how the app *'requests', 'demands', 'encourages', 'discourages', 'refuses',* and *'allows'* specific user actions to happen (Davis, 2020). With the amalgamation of Gibson's and Davis's work, UX research can be furthered, particularly in understanding how users interact with products and interfaces. Thus, this study adopts a comprehensive sociotechnical approach to understanding user engagement and examining the interactions between app features and users.

Method

Developed upon insights from STS and cultural studies, the research uses the walkthrough method to systematically analyze Headspace from entry to closure (Light et al., 2018). By navigating the user journey through Headspace's interface, features and

comprehensively understanding the app's affordances, we investigated the sociotechnical processes shaping barriers and facilitators that may instigate continued use. Each affordance was analyzed through the lens of UTAUT-2 constructs, mapping the interactions between technical prompts and potential user behavior responses. This method emphasized the role of design, revealing the specific affordance mechanisms that condition how users navigate, interpret, and sustain their mental health practices.

Key Findings and Discussion

The Headspace app's vision showed an intentional personalized design structure for users seeking mindfulness tools. It is a multifaceted app that ensures content relevance, thus maintaining users' individuality and community engagement. With a multi-modal and layered content distribution strategy, the app consistently employed a user-centric care model relying on feedback, evidence-based practices, and measurement-based care. This aligns with a personalized digital experience promoting accessibility and adherence through features that seamlessly integrate with users' daily routines.

Features	Affordance	Affordances Type	UTAUT-2 Construct
Multi-media access, intuitive user interface, mental health coach access,	Accessibility	Allows	Facilitating Conditions, Effort expectancy
Progress tracker, customizable notifications, multimedia access, privacy	Progress tracking, notifications, privacy and trust	Encourages	Habit, Performance expectancy, Hedonic Motivation
Community forums, sharing progress, subscription	Social Sharing	Requests	Social Influence
Daily prompts, registration	Progress updates, notifications	Demands	Habit, Performance expectancy
Content-heavy explore page,	User Interface	Discourages	Effort Expectancy, Price value
Locked content for non-subscribed users	Pricing	Refuses	Price Value

Table 1: Alignment of the findings with the affordance type and UTAUT-2 constructs

The app's intuitive navigation granted users autonomy and control over their activities, highlighting its focus on flexibility and ease of use. Features such as streak counter, goal setting, and daily reminders served as a visual reinforcement for growth and encouragement. However, while the navigation was consistent, the high volume of content may contribute to user decision fatigue and content saturation. Although the app offered time-bound, cost-free access, the pricing structure and subscription-gated features can discourage users from choosing value over usability.

Conclusion

This study offers an innovative and robust design for understanding the sociotechnical dynamics of using digital mental health tools. It reveals that affordances play a crucial role in shaping user acceptance and the usability of technology, thereby enhancing and extending UTAUT-focused research. Thus, this study examines the relationship between design elements and user perception to inform iterative design processes and paves the way for a nuanced assessment of mindfulness apps, one that goes beyond analyses of the promotional corporate materials about such apps.

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