eHealth services and SDG3: Increasing the Capacity of Care

Abstract

The paper's research objective pertains to explicating the concept of value co-creation of health and social outcomes in an eHealth digital eco-system context that is critical in addressing sustainable development goal (SDG) 3 - good health and well-being. It conceptualises a theoretical framework using the dynamics inherent to the value co-creation process involving a user of eHealth services and considers the influences of all involved actors from an activity theory and dialogic engagement perspectives. A Mental Health, Alcohol and other drug use eHealth service (eCLiPSE) assists as a case to illustrate the proposed theoretical framework where three overarching propositions are advanced to provide managerial guidance and critical research enquiry. This framework clarifies the importance of improving dialogic engagement processes during both synchronous and asynchronous interactions over time as value creation pathways. Managerially, the paper points to the importance of optimising service design processes and role readiness of actors (users and healthcare professionals) to better enable consumers to engage in effective dialogue in eHealth interactions for harnessing value co-creation. Through the introduction of this framework, eHealth services can be better delivered, and scaled to increase the capacity of care and achieve health outcomes pivotal to the success of SDG3.

eHealth services and SDG3: Increasing the Capacity of Care

Introduction

Ensuring healthy lives at all ages is vital for the sustainable development of individual and societal well-being with an increasing focus needed on the profound transformation of the health service system (Patricio et al., 2020). This has led to the establishment of United Nations' Sustainable Development Goal 3 (SDG3) to achieve "good health and well-being" (UN Development Programme, 2021), which seeks to challenge policy makers and practitioners to rethink the design and delivery of healthcare (Asi and Williams, 2018). Consequently, countries continue to seek innovative approaches to health care delivery models including the deployment of technologies in diagnosing and supporting health delivery and treatment (Stephanie and Sharma 2020), including mental health. The nexus of SDG3, technology and health offers significant potential to leverage novel innovations with relatively low-cost platforms that boost global and local capacities for mental health care, and bridges the healthcare gap with vulnerable populations (Asi and Williams 2018; Kay-Lambkin et al., 2017). However, despite the overwhelming evidence of benefits tied to digital health, eHealth services operate largely unintegrated from the health care system, with mental health services a prime example of underutilisation of eHealth technologies and interventions in traditional clinical care delivery (Kip et al., 2019).

Scholars have since proposed frameworks supporting a Digital Health Ecosystems approach to achieve health and well-being goals whereby users and health care professionals (i.e. general practitioner, psychologist, nurse) interact on a digital platform (Stephanie and Sharma 2020). Broadly, for users of digital health services, a number of benefits are offered such as the delivery of quicker access, ability for self-care and decision-making, and development of trust and satisfaction with services that translate to outcomes of improved health and well-

being (Shaw, Hines & Kielly-Carroll 2017). For health care providers and broader society, digital services reduce the economic costs of health care, reduce health care disparities, enables health information exchange whilst simultaneously improving service excellence and productivity (Wirtz and Zeithaml, 2018). As such, designing efficient digital health ecosystems at scale is critical to ensure the development of patient-centred services that maximise user engagement and sustained use of eHealth technologies to achieve improved quality of care.

In the case of services supporting mental health and alcohol and other drug use (MHAOD), the transformative impact of eHealth or digital technologies for fostering interactive user engagement provides unprecedented opportunities for improved well-being and behaviour change (Kay-Lambkin et al., 2017). Yet, in spite of the opportunities afforded by digital technologies, eHealth research highlights the limited success in meaningful and sustained usage by health care professionals and users. For instance, eHealth interventions must overcome varied healthcare governance structures, fragmented funding, professional resistance, limited adoption, engagement, compliance and high attrition rates (Young et al., 2021). Tackling challenges faced in the integration of digital technologies in the management of mental health services has become even more critical in light of the recent impacts of COVID-19 to mental health (e.g. enforced social isolation, economic hardship, death of loved ones, deterioration of existing disorders) and limited access to traditional health service delivery. As such, there is a pressing need to scale-up and decentralise resource-constrained MHAOD services (i.e. lessen the dependence of users visiting a physical health provider) in order to expand their provision and accessibility, and in turn, mitigate the increase in MHAOD illnesses arising from the pandemic (Chew et al., 2020).

The intersection of technology and marketing scholarship has the potential to leverage innovative service design, facilitate service inclusivity and provide opportunities to revolutionise service delivery for complex services (c.f. Beirao, Patricio & Fisk, 2017), and thus has much to offer in contributing to the targets of SDG3. Specifically, marketing scholarship has been mobilising for decades through social marketing (Rundle-Thiele et al., 2019), Transformative Consumer Research (TCR) (Mick, 2006; Davis & Ozanne, 2019) and Transformative Service Research (TSR) (Anderson and Ostrom, 2015) in tackling issues of sustainability and well-being.

To date, health service research has focused its efforts on understanding value co-creation processes in physical services (Davey & Grönroos, 2019; Davey et al., 2020; Osei-Frimpong & Owusu-Frimpong, 2017), however knowledge of how these value co-creation processes operate within an eHealth service delivery model to increase the capacity for care remain underexposed. Further, the role of marketing frameworks in assisting the adoption of technology by focal actors has much to contribute to this domain. This is evidenced by the volume of work undertaken in understanding the design of service experiences for greater customer engagement across digital channels (c.f. Carlson et al., 2021; Dwivedi et al., 2020; Morgan-Thomas et al., 2020) and health service contexts (c.f. Peltier, et al. 2020; Wyllie et al., 2018).

In the broader health and information systems literature, the adoption of eHealth services for patient (i.e., end-user) care remains only partially understood where most user adoption models such as Theory of Reasoned Action, Theory of Planned Behaviour, Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology (UTAUT) residing at the individual level of analysis (Sun and Qu 2015, Heinsch et al., 2021).

Specifically, these models neglect the involvement of multiple actors beyond the user that are intertwined in the use of eHealth technologies including clinicians, nurses, and general practitioners (GP's) for the co-creation and completion of tasks involving a network of activity, tasks and supporting processes (Sun and Qu 2015).

To address the aforementioned gaps in literature, this study contributes to value co-creation theory and SDG research in three key ways. First, the current study draws on activity theory (Vygotsky 1978; Engeström 1987) as a theoretical lens to identify the enabling conditions through which actors within an eHealth activity system interact and communicate in dialogue for effective value co-creation (Allen et al., 2013). Second, this paper utilises theory synthesis (Jaakkola, 2020) to develop an integrated theoretical framework drawing on dialogic engagement theory to explain how the nature of the dialogue that occurs with all stakeholders (i.e., users and healthcare professionals) embedded within the e-Health activity system can enhance value co-creation processes. Finally, the study proposes that the role readiness of each respective actor within the eHealth activity system is critical to better enable resource integration for enhancing value co-creation. At the individual actor level (i.e. user), this study identifies psychological ownership and technology readiness as vital in guiding actors through an effective value co-creating process. This reconsideration to health care delivery in the context to eHealth, can drive enhanced scaled accessibility, well-being, and societal outcomes pivotal to the success of SDG3.

We addressed this research objective via a case study analysis of comorbid mental health and alcohol and other substance use (MHAOD), eHealth platform eCLiPSE. This platform brokers free access to evidenced based eHealth screening tools and programs, resources, and self-help tools that can be managed by the individually or in conjunction with health care

providers in physical service settings (eCLiPSE, 2021). It is one of the first platforms seeking to facilitate the integration of eHealth programs specifically into the clinical practice and treatment provision of comorbid depression and AOD use problems in Australia. Studying the eHealth intervention eCLiPSE, enables a valuable opportunity to identify the role of various actors supporting and enacting technological processes in this activity system for co-creating improved health and social inclusion outcomes and reduced service reliance. By doing so, this study advances new insights into emerging research on understanding user experience and their dialogic engagement with MHAOD services in this digital ecosystem setting.

Literature Review

Digital Ecosystems for eHealth Treatment.

The continual evolution of internet-based technologies and technological innovations (e.g. smartphone, tablet, and/or computer) in health care has resulted in the emergence of health ecosystems, services, and innovative models of care across a diverse array of health issues. Unobstructed by place or time eHealth provides users opportunities to receive health care (Shah et al., 2018), enhancing their sense of empowerment that boosts their participation in medical decision making, commitment and compliance with treatment (Barello et al., 2015). Despite the paradigm shift in technology-enabled service delivery, uptake and usage of eHealth is limited. The core barrier to uptake is distinguished by the health care's complex multi-stakeholder system, comprising of multi-fragmented decision-making processes, with diverse subset of needs to be satisfied by variety of segments and classes of users (Botti & Monda, 2020).

Studies in service literature have argued that engagement occurs across different digital contexts where individuals and information technologies contribute to the co-creation of value within a larger ecosystem (Botti and Monda 2020; Morgan-Thomas et al., 2020). Here, digital technologies connect the system of actors within an ecosystem through fostering action and interaction (i.e. engagement) either synchronously (i.e. digital and traditional channels used at the same time), asynchronously (i.e. digital and traditional channels used at different times) or a combination of the two to achieve health and social outcomes, and reduced reliance on health services.

Mental Health and Alcohol and Other Substance use disorders (MHAOD)

Regarded as a common and highly disabling burden of disease, mental health, alcohol, and other substance use disorders (MHAOD) affect approximately 970 million individuals globally (Our World Data, 2018). With mental health accounting for 30% of all non-fatal burden of disease and 10% of the overall disease burden globally, including death and disability (WHOa, 2020). Distinct from other burden of diseases, MHAOD imposes a high human, social and economic toll due to its early age onset (i.e. childhood and adolescence) and high prevalence in the working age population (Handley et al., 2016). Undermining an individual's human capital capacity, MHAOD contributes to economic output losses of 2.5 to 8.5 trillion globally, with this figure expected to double by 2030 (World Bank, 2020). Consequently, targets within SDG3 (see 3.4 and 3.5) aim to strengthen and contribute to the development and optimisation of MHOAD prevention and treatment strategies, that also function to enhance mental well-being and reduce premature mortality (UN SDG, 2021).

The mental health ramifications of COVID-19 continue to emerge, with elevated rates of depressive and anxious symptoms and AOD usage when compared with the pre-COVID era (Kola et al., 2021). This has generated extra demand on an already overloaded service system that is also faced with disruption and/or immobilisation of critical mental health services globally (WHOb, 2020). As a result, health service provision is undergoing significant change, with the rollout of telehealth now being implemented widely (Snoswell et al., 2020). This rapid and reactive integration of eHealth technologies, with clinicians who have viewed eHealth as disruptive to existing clinical care and set assumptions of user needs (Peeters et al., 2016) presents challenges to an already complex subset of the health service system. To optimise the finite resources within MHAOD, an understanding of an integrated model of care that incorporates digital services to better enable clinicians to practice, and the community to access evidence-based world-class care is needed and is key to reaching the targets of SDG3.

eCLiPSE a new model of eHealth Intervention

In addressing the gaps in the MHAOD service system, eCLiPSE (electronic Clinical Pathways to Service Excellence) a eHealth intervention platform, aims to improve healthy lifestyle behaviours and well-being for individuals experiencing co-occurring MHAOD (Kay-Lambkin et al., 2011). Developed for the Australian context and suitable for service delivery with limited asynchronous clinician contact, eCliPSE consists of four web-delivered programs that span depression & AOD use (Kay-Lambkin et al., 2009), binge drinking & depression in young people (Deady et al., 2016), healthy lifestyle in people with depression (Kay-Lambkin, 2016), and crystal methamphetamine and lifestyle behaviours (i.e. Breaking the Ice; Tait et al., 2015). These programs require individuals to complete a validated Depression, Anxiety and Stress Scale (DASS) that directs a personalised set of programs to

best aid in the improvement and management of their symptoms. These programs consist of a variety of modules that can take users four to ten weeks to complete, with enabled integration between eCLiPSE, users, health care professionals and the tailored information of their health progress.

Theoretical Background

In our framework, AT is used to identify and describe the key actors and supporting processes in the eHealth intervention of eCLiPSE. We then integrate SDL theorising that value co-creation is an important concept to achive the object of well-being in that it requires effective integration of resources to occur, especially in the dialogue and commuincation. We then draw upon DE theory to explain how critical DE principles and specific co-creation mechanisms in dialogue between the user and actors can harness value co-creation and ultimate the productivity of the activity system. We further propose that the user's psychological ownership and technology readiness also act as critical enabling mechanisms within the activity system. By managing these processes, facilitates health and societal well-being outcomes and contributes to sustained progress on SDG3.

Activity Theory.

Activity theory is a descriptive, overarching conceptual framework (Figure 1) that describes human activities by concentrating on the relationship between the consciousness of individuals within a natural and social reality that is mediated via the use of "tools" including signs, tools and symbols (Vygotsky, 1980). In this theorising, an activity involves a set of actions – that a subject (i.e. individual) consciously enacts with a goal in mind – and is motivated to transform an object (i.e. problem) into an outcome. The object represents a problem or situation that anchors an activity and can involve multiple actors who collaborate

on the same object, and in doing so, form a community (Karanasios 2018). How actors within this community collaborate on the same object is regulated by the division of labour and by rules which define what behaviours are appropriate (e.g. norms and rituals). Figure 1 illustrates the interrelationships relating to the subject, object, and community according to Engeström's (2015) theorising.

Figure 1. Activity Theory

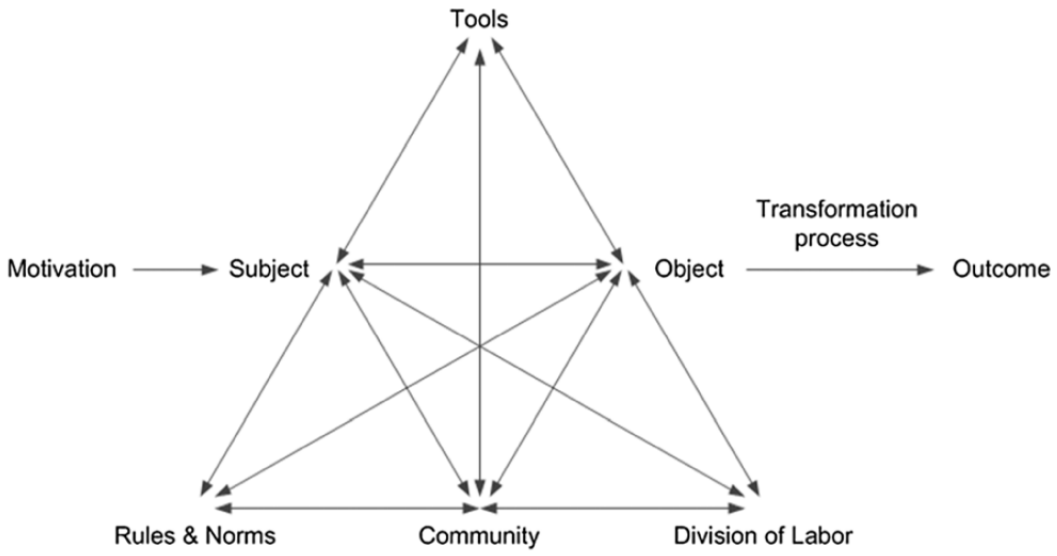


Figure 1 also illustrates how in response to certain intrinsic or extrinsic motivations, a motivated subject will perform an activity towards a specific goal in order to learn about and change the object (either tangible or intangible). In this activity system, subjects need to interact with their community using artefacts, and members within a community, where each member has their own roles through formal or informal division of labour arrangements (Engeström, 2001, 2015). For example, a user of an eHealth provider is instructed to make conscious actions with the goal of completing modules within an eHealth intervention to improve their mental well-being. Once mastered a new activity would begin, in the case of a

user with MHAOD, this would then be learning (i.e. object) to maintain a healthy lifestyle (i.e. outcome).

Improving MHAOD well-being, is a complex individual and social challenge, which is entrenched in socio-cultural contexts (Teeson, 2000). Our theorisation also extends to another focus, i.e., technology enabled services in a digital ecosystem, which of itself represents another complex social-technical system (Morgan-Thomas et al., 2020). An advantage of activity theory in the context of an information system such as eHealth is that it integrates technology (the tools) as used by the individual and the community of members into the unit of analysis (i.e. the activity) (Karanasios 2018). To understand how health and social well-being can be mediated through technology processes, activity theory offers the capacity to illustrate the intricate processes involved in a complex system. Such a requirement can only be fulfilled by non-reductionist theorising and concepts, like activity theory, which has the capacity to retain the nuanced characteristics of a given phenomenon as opposed to its simplification into linear and sequential relationships (Hasan et al., 2017).

Secondly, unlike theories which place emphasis on explanation and prediction, activity theory places emphasis on understanding how a complex problem can be addressed in a specific approach (Hasan et al., 2017). In this regard, activity theory has been described as a descriptive, general theory. This is relevant for technology-related studies, where such theoretical stances work towards addressing how and why information technology through various processes with multiple actors and enabling conditions, can contribute to resolving a organisational or social problems (Majchrzak et al., 2016, p. 271). On this basis, eHealth and MHAOD specifically, can benefit from activity theory's ability to support the relevant

subjects in tackling social challenges (Karanasios, 2018; Heinsch et al., 2019; Li et al., 2018) and achieving SDG 3 targets.

Value co-creation and Dialogic Engagement.

Service Dominant Logic (SDL) focuses on how value creation takes place via resource integration where value is co-created by the consumer whom is a participant engaged throughout the service exchange (Grönroos & Voima, 2013; Vargo & Lusch, 2016). Prior research across diverse domains has demonstrated that consumers and organisations benefit from value co-creation (Vargo et al. 2017) including complex health service systems (Chen et al., 2020; McColl-Kennedy et al., 2012).

Within health services, the notion of value refers to the bundle of benefits realized from resource integration involving interactions and activities among actors in the customer's service network (McColl-Kennedy et al., 2012). In this stream of research (McColl-Kennedy et al. 2017a; Sweeney et al., 2015), three categories of resource integration activities of service users have been identified: (1) treatment activities (i.e. health care program), (2) health-related information activities and (3) complementary health-related activities that are directly related to the users physical and mental well-being. In this conceptualisation, the users of a health care service are seen as a resource integrator, whom co-determine the value (i.e. benefits) in a joint sphere of interaction with the health service provider.

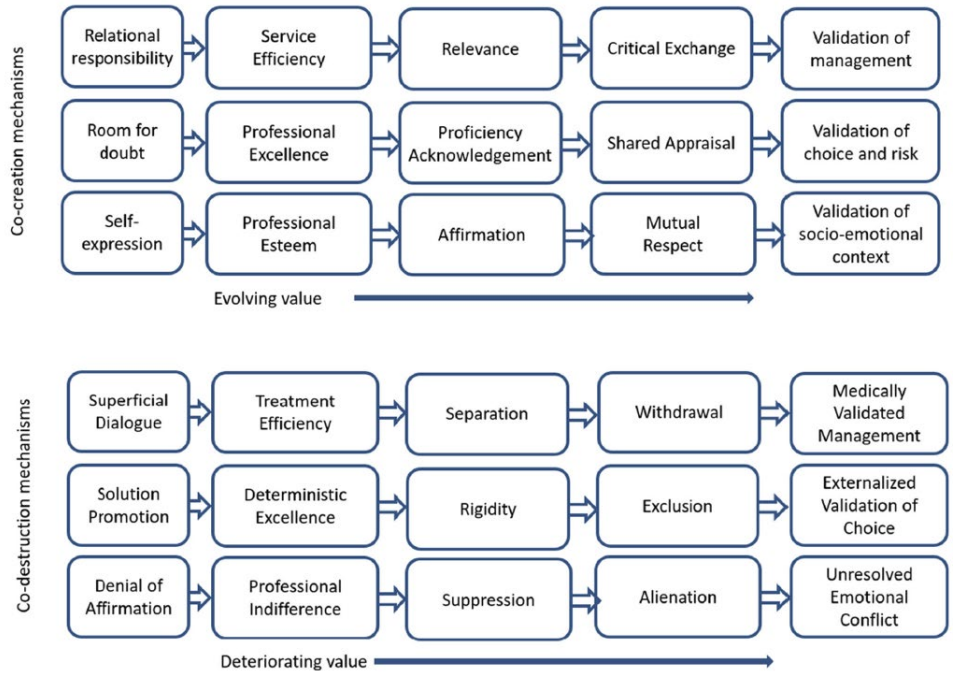
A fundamental aspect of value co-creation's effectiveness has been through engaging users and –health care providers in interactions that facilitate dialogue, shared understanding, empowered care, and user collaboration in joint decision making for personalised treatment (Keeling et al., 2021). Advancing the knowledge base on service delivery in health, Keeling et al., (2021)

argues that ‘shared meaning’ is fundamental for facilitating the co-creation of value and draws on the theorising of Dialogic Engagement (DE) to understand how inputs (e.g. cognitive and emotional accessibility) throughout synchronous face-to-face interactions between users and health care professionals, and the emergent learning that unfolds, provides opportunities for facilitated development of a shared meaning between all actors involved.

DE places focus upon the “quality” of an “ideal” dialogue in support of development of new shared meaning among actors (Cissna and Anderson 2012). Further, DE considers tensions in dialogue not as detrimental, but rather, a stimulant for the construction of new shared meaning, which can occur incrementally over time in multiple interactions to better facilitate shared decision making in order to achieve effective value co-creation (Keeling et al., 2021).

At the core of the theorising on DE, the principles of an ideal dialogue are three pairs of dialogic co-creation or co-destruction mechanisms for complex service interactions as illustrated in Figure 2 (Keeling et al., 2021). Here, users of health services were found to engage in an ideal and quality dialogue over time during multiple interactions through the co-creation mechanisms of 1) relational responsibility (e.g. clinicians integrate user goals into treatment enabling reciprocal knowledge building for optimal care), 2) room for doubt (e.g. knowledge exchange of all treatment options, efficacy and disclosing competing opinions, enabling room for doubt), and 3) self-expression (e.g. users passively seek positive acknowledgement and reassurance of their socio-emotional experiences from health professionalsF) that needed to be supported. Whereas co-destruction mechanisms of 1) superficial dialogue, 2) solution promotion, and 3) denial of affirmation needed to be avoided and mitigated.

Figure 2 – Pathways for creation or destruction of value



Source: Keeling et al., (2021, p.254)

Keeling et al., (2021) demonstrated that these mechanisms work to identify tensions of power, legitimacy of perspective, and socio-emotional contexts between healthcare professionals and users. Here, tensions are addressed through integration of both actor's knowledge resources (i.e. concerns and experiences). By doing so, the opportunities for shared meaning between health service professionals and users is created. However, when tension resolution within the service interaction is unsuccessful value co-destruction arises.

Importantly, not all interactions are classified as DE in complex health services since value co-creation involves various healthcare providers and service delivery occurs over time. What is important is identifying and seizing the opportunity for sufficient "dialogic moments" which are woven into the interactions within the service encounter (Cissna and Andersen 2012). The co-creation pathway (see Figure 2) illustrates the possibility for value to evolve

and be shaped into shared values between the health care provider and the user that then provides the platform for effective shared decision making.

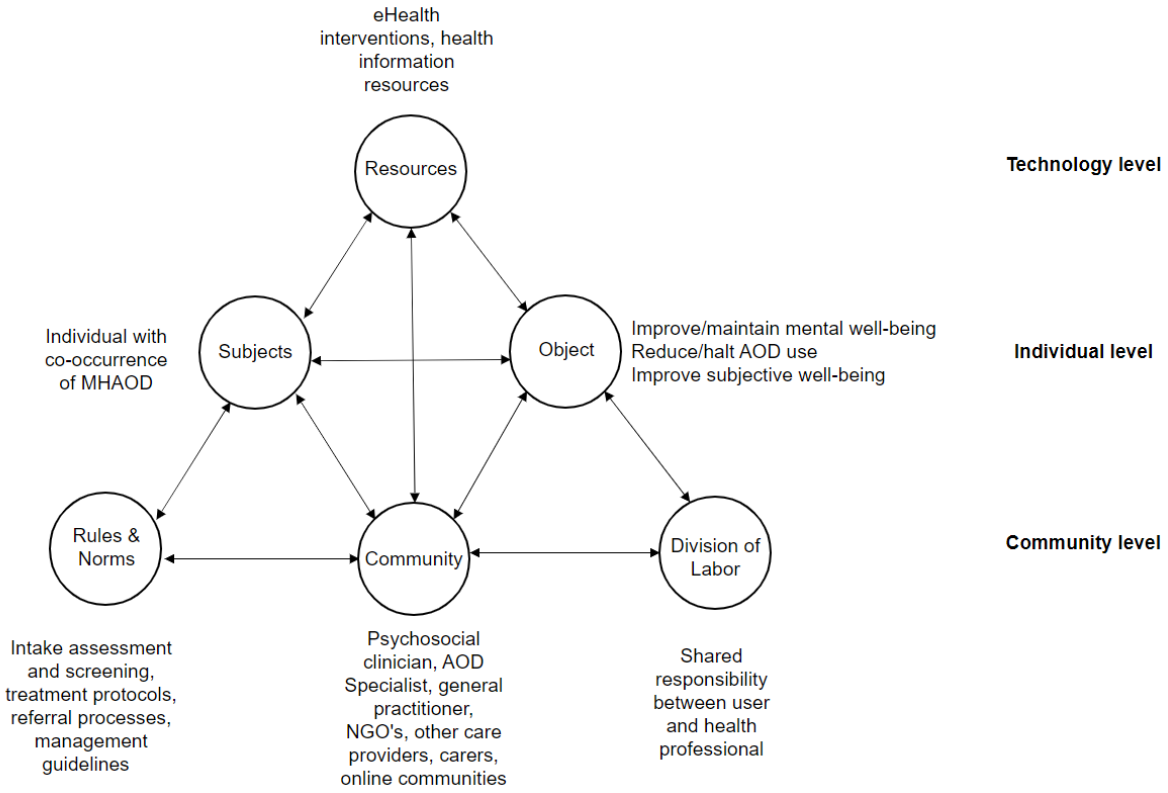
Whilst this DE theorising emerges from empirical investigations of synchronous face-to-face health service interactions between multiple healthcare professionals and users over time in multiple interactions, we contend that they are equally relevant in technology mediated communications which possess dual forms of communication. For instance, in an eHealth context, such communications involve *both* synchronous and asynchronous interactions and DE has much to offer in understanding the pathways of value co-creation (and value co-destruction) via these communication forms that can be argued to be universal across service delivery platforms. The value that emerges from this dialogue point towards more support for aligned communications as well as improvements to the quality of dialogue, so that shared understanding enables greater "buy-in" from the user. By doing so, a strong sustainable relationship between the healthcare provider and user based on mutual respect and trust with the eHealth platform is achieved.

Integrative Framework

In this section, we first describe how our theoretical framework embedded within an eHealth platform represents an activity system and identify its constituent components at the technology, individual and communal levels. Next, we draw on psychological ownership and technology readiness theorising to identify these individual characteristics as critical enablers for optimising the productivity of the eHealth activity system for effective value co-creation. We then conclude by describing how an optimised activity system considering critical enablers of psychological ownership and technology readiness in the DE co-creation mechanisms to achieve outcomes of health and well-being in a MHOAD context.

For clarity, we illustrate in Figure 3 the application of Activity theory to eHealth platform of eCLiPSE. At the individual level, the uptake of MHAOD services can be theorised as an activity whereby the subject is a user, the object is comorbid MHAOD treatment, with the tools related to health-related information systems, which create clinical pathways of care that support the user. An individual may have access to multiple systems for the delivery of a comorbid MHAOD service. For instance, a user can access eHealth platforms asynchronously as an early intervention tool to receive personalised and clinically supported programs in parallel with psychosocial clinician appointments. The motivation of this activity is to achieve a sought-after outcome, primarily through engagement with an integrated treatment through the utilisation of relevant information.

Figure 3– Activity System Framework for eCLiPSE



Source: Developed in this study

At the community (i.e. social) level, the uptake of MHAOD services can be considered a collaborative activity involving various subjects whereby numerous users may have access to the same system, and subsequently form a community building resilience and response time. In addition, the collective use of eHealthprograms and online brand communities of non-government organisations (i.e. Blue Voices, Headspace Youth) are examples of eHealth uptake at the social level. The social interaction occurring among actors of the same system are structured around rules and division of labour, that comprise the social structure of MHAOD service uptake.

With regards to the division of labour the integration of eHealth (e.g. eCLiPSE) tools by clinicians into their clinical care with users should foster a shared responsibility between the actors to ensure. This may involve synchronous use of the tool during a face-to-face interactions, user's asked to complete treatment modules and providers tracking user progress aschronyously. The rules relate to the norms and appropriate standards of conduct actors in the activity system need to follow together. For instance, in a face-to-face synchronous interaction a practitioner may query the progress of the user, open up dialogue that can assist a user in completing their eHealth programs (i.e. room for doubt), and through this discussion the user is then able to provide clarification on the management of their treatment (i.e. self-expression).

At this juncture, it is important to note the individual and community levels of MHAOD service uptake illuminated in the activity system framework (Figure 2) are indeed related (Davidson and Chismar 2007). This is because health care service interactions not only include individuals such as users (or patients), carers, clinicians, and counsellors, but also user groups which cooperate with one another (Mouttham et al. 2012; Sadeghi et al. 2012).

Consequently, uptake of MHAOD services requires usage from individuals (by users, clinicians, and counsellors) *as well as* the social actors (community groups) through technology (resources involving communication exchange of health information and treatment).

Integrating MHAOD at individual and social levels supported by the technology level is a benefit of activity theory for optimising uptake. In contrast, technology usability and adoption studies and the theorising that underpins them mainly concern channel interface issues at the individual level (Heinsch et al., 2021; Sun and Qu 2015). Although few studies call for examining the uptake of co-occurring MHAOD services using a muti-level lens (i.e., individual, organizational and social levels), they emphasize the various requirements of stakeholders at the social level (Lapointe et al. 2011) and on preparing the organisation for change via planning, management, communication, learning and evaluation (Cresswell and Sheikh 2009). However, the activity theory perspective of MHAOD draws attention to understanding service uptake not only at an individual level but also at a social level concerning joint collaboration and joint effort among different user groups of actors that are often overlooked aspect in service adoption/ecosystem literature. Moreover, activity theory as a theoretical lens elucidates the critical components for MHAOD service uptake and need for stakeholders to coalesce around the needs of these actors within this system that can help contribute to SDG3. As such, the following proposition is postulated:

P1. Maximising the effectiveness of the activity system will occur through supporting and resolving tensions at the individual, communal and technology level

Literature in the area of health service co-creation of value has identified psychological ownership as a critical variable (Chen et al., 2020) that refers to a psychological state

individuals feel as though a target of ownership is 'theirs', in other words 'it is mine!' (Pierce et al., 2003, p. 86). This includes tangible (e.g. physical goods) and intangible targets (e.g. ideas, values), such as an individual's own well-being (Hepi et al., 2017). Prior research indicates psychological ownership is critical in enabling favourable behavioural outcomes (Hulland et al., 2015).

In the health context, individuals who possess a sense of psychological ownership of their well-being are more inclined to show engagement in their own well-being and health care such as illness or disease ownership and adherence to medical advice (McColl-Kennedy et al., 2012; Sweeney et al., 2015). Interactions involving other engaged actors (e.g., clinicians, GPs, family, community support groups, NGO's) could also increase the user's psychological ownership over their well-being and prompt further engagement in MHAOD related activities (e.g., improving their mental health through exercise). Drawing on this literature, it can be argued that the level of psychological ownership by the user may influence the extent of they participate in the DE process (i.e. extent of resource integration), and the underlying DE co-creation mechanisms, when using eHealth platforms.

In addition to psychological ownership, the level of technology readiness by the user will also likely influence the extent of participation with eHealth platforms. Technology readiness describes an individual's likelihood to embrace new technology to achieve goals in home life and in the workplace (Parasuraman 2000; Parasuraman and Colby 2015). It is conceptualised as a complex construct comprised of four dimensions: optimism (i.e., a positive belief that it provides increased control, flexibility, and efficiency in their lives), innovativeness (i.e., a tendency to become a technology pioneer), discomfort (i.e., feeling of being overwhelmed by technology and a perceived lack of control), and insecurity (i.e., distrust towards technology).

In this conceptualisation, optimism and innovativeness serve as facilitators of technology readiness which encourage uptake and use. However, discomfort and insecurity are inhibitors of technology readiness whereby users are unlikely to adopt new technology. Consequently, technology readiness can increase the inherent tension within the interactions of the eHealth activity system that can either shape enhanced user engagement or perpetuate service designs that exclude vulnerable populations.

Drawing on this theorising, we propose that psychological ownership and technology readiness are critical user characteristics that need to be evoked, supported, and nurtured for optimal user performance in the activity system. By doing so, the user will be more confident, motivated, and subsequently role ready to integrate their resources (along with alleviating challenges) and be an active participant in the DE process across each of the co-creation mechanisms. Thus, the following is postulated.

P2. The user's psychological ownership and technology readiness act as critical enabling mechanisms within the activity system

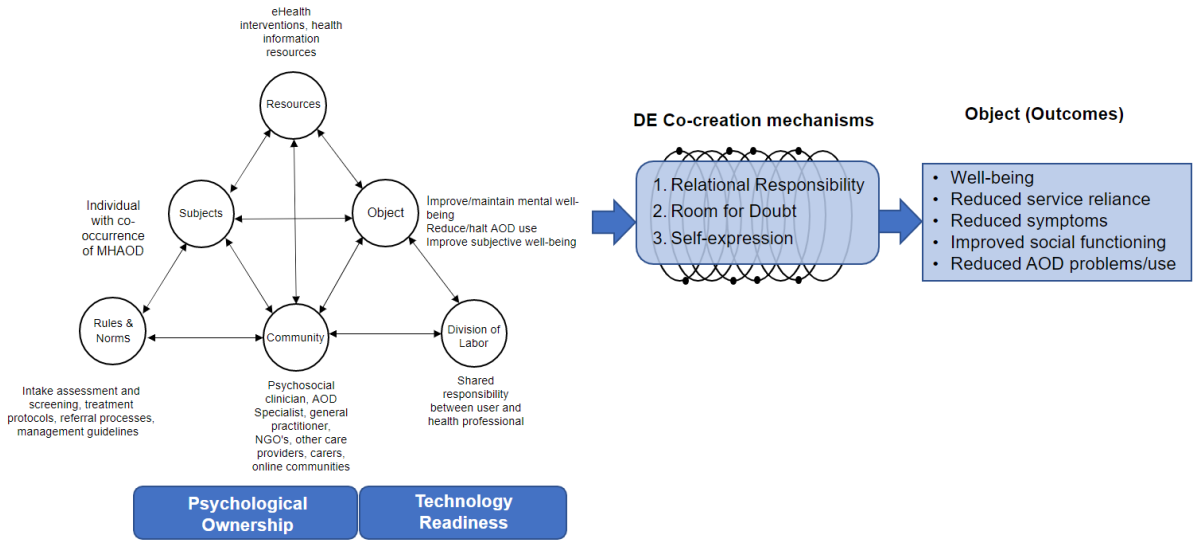
Building on this view, we further argue that supporting resources of other actors, such as efficacy of the technology infrastructure supporting the eHealth intervention platform, and positive awareness and referral of eHealth technology by clinicians in the activity system are necessary. By doing so, all actors are in a heightened state of role readiness to participate in quality dialogue in the user-technology interface which will facilitate the value co-creation mechanisms of DE and lead to the fulfilment of the SDG3 goals. For example, in the context of an eHealth platforms such as eCLiPSE 1) relational responsibility (e.g. users can choose and design the type of relationship [digital only or digital and face-to-face] they share with clinicians), 2) room for doubt (e.g. invited feedback from users and clinicians of the

eCLiPSE-brokered treatment) and 3) self-expression (e.g. treatment programs enable users to build treatment experience stories that can be shared with other community members) to be supported. As a result, the co-destruction mechanisms of 2) superficial dialogue, 2) solution promotion, and 3) denial of affirmation are suppressed.

It is then further theorised that a quality dialogue by the user within the activity system across multiple interactions over time will enable greater shared meaning and decision making to occur. Consequently, this works towards achieving health and social outcomes of personal well-being, reduced health service reliance, improved social functioning and reduced MHAOD symptoms. We illustrate this process in Figure 4 of how an optimised activity system facilitates value co-creation mechanisms of DE across multiple service interactions over time. Hence, the following proposition is advanced:

P3. Optimisation of the activity system, considering the users characteristics and supporting resources of actors in the activity system, have the potential for increasing the effectiveness of dialogic engagement co-creation mechanisms to achieve health and social outcomes

Figure 4. A Framework for DE Co-creation in an eHealth Intervention Platform



Source: Developed in this study

General Discussion

Theoretical implications

Scholars have called for new insights towards how marketing scholarship can contribute to grand societal issues including the SDGs (Bolton, 2021; Voola et al., 2022), and how health well-being can be co-created (Chen et al., 2020; McColl-Kennedy et al., 2017). Further, service scholars have also called for more understanding of value co-creation in multi actor contexts (Hepi et al., 2017; Kleinaltenkamp et al., 2017). By explaining the value creation process through the lens of activity theory and DE practices for an eHealth context, this study contributes to this discourse on well-being and how this process can be harnessed to increase the capacity of health care. As such, the research contributes to value co-creation theory (and managerial health service practice) in alignment to how progress can be achieved for SDG3 targets 3.4 (prevention, treatment, and promotion of mental health) of and 3.5 (strengthen prevention and treatment of AOD use).

The primary contribution of this paper is a deeper understanding on creating the enabling conditions for the co-creation of value in eHealth platforms for achieving health and social outcomes. Our novel framework in Figure 4 integrates activity theory, SDL informed value co-creation theory and emergent DE theorising to explain the essential elements in a unified multi-actor activity system to better facilitate the value creation process in eHealth interactions. Foremost, it establishes three guiding propositions regarding this process.

A real case of eCLiPSE is used to demonstrate the dynamics and intricacies of the activity system in an eHealth context which has yet to be advanced in literature. Drawing on activity theory (Vygotsky 1978; Engeström 1987) into the eHealth domain, the theoretical framework addresses critical questions such as clarifying the role of multiple actors in a unified activity system involving individual, community and technology aspects for co-creating health and social outcomes. It further illustrates for the first time how the activity system is shaped through the influence of DE processes that incorporates mechanisms for co-creation with the user embedded within the activity system in the treatment of MHAOD. The conceptualization further proposes that the role readiness of each respective actor within the activity system is critical to enable resource integration and participation. At the individual actor level of the user, this study identifies psychological ownership and technology readiness as key enabling value co-creation variables.

Building on the work of Keeling et al., (2021), we further identify in our novel framework how users engage in an ideal and quality dialogue in an eHealth intervention platform through the co-creation mechanisms of 1) relational responsibility, 2) room for doubt and 3) self-expression to be supported. Whereas co-destruction mechanisms of 1) superficial dialogue, 2) solution promotion and 3) denial of affirmation need to be avoided and

mitigated. To maximise user engagement for co-creation, the integration of eHealth services must not simply focus on providing technical infrastructures but must also consider the individual and social aspects that can be mediated through technology enable an 'ideal' dialogue during service interactions allowing for user autonomy in the activity system. Further, it is critical to evolve this process dynamically over time into shared value and shared decision making to enhance the capacity of care to achieve improved health and social outcomes. We next apply the proposed framework the case of eCliPSE to illustrate its practical applicability.

Practical implications.

The theoretical framework (Figure 3 and 4) in this study illustrates how an optimised activity system in eHealth involving multiple actors and integration of their resources can better enact critical DE practices to co-create value, and ultimately well-being. The case of eCliPSE provided an illustrative application of an eHealth intervention platform representing an activity system and the theoretical framework which offers managerial guidance for stakeholders within this activity system in three ways.

First, the framework reveals why it is important to attend to ensuring the activity system of the user has appropriate support and alignment between the skills, competencies and resources at the individual, communal and technology level. For example, public decision-makers need to focus on these activity system elements by seeking to stimulate and support the psychological ownership of the user and the health professional (e.g. user well-being, my patients well-being) and technology readiness (e.g. educating and knowledge sharing) of users and other actors in the activity system (e.g. clinicians practice managers) in order to build trust and become role ready for active participation in the value creation process. By

doing so, this will facilitate co-creative service designs for synchronous and asynchronous interactions whereby users and other actors can become co-designers of the service experience that strengthens independent capacity and supports accessibility. Further, technological barriers associated with ICT platforms (i.e. mediating artifacts) need to be overcome within each respective activity system along with definition of new social norms (e.g. within institutions) that are patient-centred and integrate social actors (i.e. community groups, NGO's) in the activity system.

Second, all actors in the activity system need to recognise and prioritize the importance of the DE processes that occur in the eHealth platform, and the necessary alignment of supportive resources to facilitate and reinforce them in a technology-mediated environment. Our proposed mechanisms indicate how consumers can engage in dialogue to more effectively integrate their resources for value co-creation. As such, consideration needs to be given to channel design in enabling clear communication opportunities in support of the DE processes as value pathways. For example, this can be achieved through the personalised integration of service scripts (i.e. clinician discussion, automated chatbots) and content pieces (i.e. emails and blogs) that builds knowledge exchange, raises awareness and reflection of treatment amongst all participants in the DE process. Further, treatment programs and interface design of the eHealth platforms should encourage non-expert engagement and interaction amongst community members that fosters them to share their lived experiences and in turn facilitating affirmation of their treatment journey.

Finally, education and training with all actors is needed to ensure role readiness for effective participation with the eHealth platform so that the DE processes can be maximised. Such managerial efforts better enable the optimisation of the activity system and subsequent DE

processes to be unlocked in health care service settings to achieve its value-creating potential and supports the shift towards an integrated people-centred approach (Deloitte Insights 2018; WHO et al., 2017).

Limitations and Directions for Future Research.

Given the dearth of insights in literature exploring value co-creation in activity systems, and for achieving health and social outcomes in particular, the development of the theoretical framework in this paper enables a conceptual foundation for future research enquiry to examine more closely the value co-creation process. Important questions arise relating to specific conditions that not only shape the activity system and its development for users and health practitioners (e.g. clinicians, GP's), but also affect the DE practices throughout the value creation process and attainment of SDG3. As such, various questions deserve further research attention. First, what are features that characterise the focal actor (i.e. user) within the activity system. For example, how does motivation play into the facilitating DE co-creation mechanisms? What additional individual traits versus psychological states influences affect the facilitation of DE co-creation mechanisms? What can disrupt the operation of DE co-creation mechanisms?

Second, how do certain technological features in the activity system better enable the DE co-creation mechanisms. For example, how can the digital space within which the shared interactions through the dialogic engagement co-creation mechanisms be optimally configured in eHealth services? How can (new) interactive e-health platforms better enable synchronous and asynchronous communication (e.g. asking questions, receiving feedback) influence the quality of the dialogic engagement in the digital space? How can classic technology adoption models shed light on these issues? Such questions surrounding how to

sustain continued use of eHealth (i.e. interventions, telemedicine, cloud-based services) are needed to drive and stimulate critical enquiry in this domain that aid in facilitating growth in SDG3.

Conclusions

SDG 3, as all the SDG's, are complex, bold, and extensive where the realisation of these goals remains challenging. By adopting an integrated framework to inform appropriate use of eHealth considering service-oriented approaches to better engage users for value-co-creation, we can better plan to support the efforts to support sustained progress in SDG 3 targets. Particularly given eHealth's capacity to provide quality patient-centred health care through shared values, meaning and decision making at scale. However, care needs to be taken to ensure e-Health services are designed for inclusion and fair equitable access to fully realise SDG3.

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