Successful Leisure in Independent Living Communities: Understanding Older Adults' Motivations to Engage in Leisure Activities

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ABSTRACT

Leisure activities are a source of meaning and enjoyment for individuals across the lifespan. In this study, we conducted interviews with twenty-four older adults living in four different independent living communities. We present societal and ecological factors and motivations that influenced the way people participated in and decided what constitutes leisure activities. The goal of maintaining physical and cognitive health was often intertwined with motivations to engage in leisure activities. We discuss how this fits into the broader framework of *successful aging* and implications for technology design. We also provide an example of how findings from this study can be applied to a specific leisure activity: watching television.

Author Keywords

Aging; older adults; leisure; ageism; successful aging.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Motivations and attitudes towards activities – leisure and otherwise – can be complex. For example, watching television can be considered both a pleasurable pastime and a waste of time. Yet, leisure activities are a source of meaning and enjoyment for many individuals, including older adults. For this paper, we define a leisure activity as "uncoerced activity engaged in during free time, which people want to do… in either a satisfying or fulfilling way" [72]. For older adults, leisure activities can provide opportunities for self-expression and personal fulfillment

[12] and are associated with a variety of health benefits [41,50,78].

Researchers in HCI have begun discussing the predominant focus on social isolation and health issues in older adulthood, which leads to technological 'solutions' that compensate for perceived deficits rather than looking closely at this population's actual needs and interests [13,62,82]. As this conversation develops, researchers are turning to other areas of older adults' lives, such as gaming [27], financial practices [79,80], and creative engagements with technology [10,32,63,75]. Though some of this research touch on individual leisure activities, the HCI community is currently missing a clear understanding about older adults' motivations to engage in a variety of leisure activities and the ways they decide activities constitute leisure activities. In this paper, we turn our focus towards leisure activities in older adulthood, and find that leisure activities are actually intertwined with health and wellness.

Based on interviews with twenty-four older adults living in independent living communities, we elucidate the nature of leisure activities that older adults participate in and the ways that they take into account motivations and other factors. We discuss implications for the design of technologies and detail ways that the intertwining of leisure and health and wellness both complicates and contributes to the discussion on the overemphasis on health in design for older adults [47,82].

This paper has three contributions:

1) A layout of the societal and ecological factors which influenced participants' leisure activities.

2) A description of motivations for participating in various leisure activities and a more nuanced understanding of why these individuals perceive activities as leisure activities.

3) Design considerations around these findings.

RELATED WORK

Below we discuss research on leisure activities from HCI as well as gerontology. We also provide an overview of *successful aging*, a concept in gerontology that provides a useful lens to understand older adults' leisure activities.

Leisure and Successful Aging
Leisure activities are important to individuals throughout the lifespan, and have been an active area of research in older adulthood. Benefits from engaging in leisure activities for older adults include opportunities for self-expression and personal fulfillment [12] and can be helpful for managing difficult situations [25,40]. Engaging in certain leisure activities have a number of health benefits, and are associated with higher cognitive functioning [50] and a lower risk of dementia [78]. Additionally, engaging in leisure activities is associated with greater mental wellbeing [41]. Although people engage in leisure activities throughout their lifespan, the leisure activities individuals engage in can change as they age. For example, older individuals tend to continue watching television and listening to the radio, but may travel less as they age [74].

Engaging in leisure activities in older adulthood fits into the concept of successful aging. Successful aging is a prominent model in gerontology [3] that is based on "avoiding disease and disability, high physical and cognitive function, and engagement in life" [73]. This model has permeated the discourse of popular media [65], biomedical literature [8], and policy [19]. It is partly responsible for the widespread conception that older adults benefit from engaging in activities – particularly physical and cognitive activities – as they age. Indeed, this model was developed in reaction to previous models and societal views that associate older adulthood with inactivity and posit that individuals should withdraw from activities as they age (i.e. disengagement theory [33]). Research has confirmed that participating in certain leisure activities provide older adults with the ability to resist narratives that frames aging as a period of decline and inactivity [20,51].

Although successful aging has been beneficial in encouraging individuals to continue to engage in activity in older adulthood, it has also faced criticism for framing individuals who can and do engage in certain types of activities (e.g. competitive sports) as exemplars. This inadvertently reinforces negative attitudes towards individuals who cannot or do not engage in these activities [20,39,51]. Furthermore, this model poses youthful states of health as the ideal and does not take into account normal changes that may accompany aging [46]. It also has been criticized for overemphasizing the individual's role in staying healthy rather than taking into account social, economic, and political factors that affect the ability to maintain health (e.g. not being able to afford medications) [34,67]. Researchers in HCI are beginning to reflect on problematic aspects of successful aging [43,82], and this work contributes to that discussion.

Independent living communities in HCI
The model of successful aging has permeated many settings, including some of the places in which older people live. Certain independent living communities have been described as providing "societal scripts in successful aging," in terms of how their advertising materials depict only healthy individuals whose days are filled with activity [52]. Independent living communities often house a variety of planned leisure activities, and some individuals describe access to these activities as motivation to move there [28].

In HCI, one vein of research has studied interactions between individuals living in independent living communities. For example, technologies have been proposed to monitor [59] and increase [42,58] interactions in common spaces. One system was designed for residents to register for activities in an independent living community [57]. Though researchers have designed to increase interaction and activity in independent living communities, less understood is the ways that older adults are already engaging in activities and how the communities in which they live affects their activities.

Lindley and Wallace describe the ways that older individuals "place in age," or adjust to downsizing or moving into an independent living community [49]. They describe some features of living in a care home, such as having structured activities planned by staff, rather than being based on the interests of individuals, and call for researchers to investigate supporting continuity (e.g. of interests and activities) in light of changes (i.e. of living situations) [49]. Our analysis contributes to an understanding of the ways individuals navigate leisure activities in independent living communities and how various factors affect their engagement.

Older Adults' Leisure Activities in HCI
Recent research has identified the way aging is often treated as a "problem" in HCI (e.g. resulting in the loss of physical and cognitive abilities) with technology treated as a "solution" [82]. Adding to a rich area of research on leisure with the general population (e.g. [6,11,24,30]), researchers have begun to design technologies beyond health and social needs for older adults. These researchers have expanded into areas of leisure activities such as creating and sharing media [7,85], games [27,71] and "creative technological explorations" [63]. For example, researchers designed an online social gaming site for older adults to play poker [71], and planned a workshop to expand beyond 'functional' goals (e.g. maintaining stability in walking) to explore more 'hedonic' (i.e. for the sake of pleasure) aspects of game play for older adults. However, in gerontology, leisure activities such as playing games or maintaining social connections can actually be considered in the realm of health. In this paper, we contribute an analysis that details the ways older adults' hedonic and functional motivations for engaging in leisure activities are actually intertwined.

Critiques of HCI research include that older adults are regularly framed as technologically illiterate [22,81]. Recent work in HCI counters this perception, demonstrating the many ways that older people integrate technology in their day-to-day life and leisure activities, such as creative personal projects [38], communication [10,36], gaming

[83,84], and hacking electronics [75]. For example, Brewer and Piper discuss the ways that blogging supports self-expression, the development of identity, and meaningful engagement in retirement [10]. Collectively, this research contributes to our understanding of the role of technology in older adults' lives. However, we are missing a broad understanding of the landscape of activities with which older individuals engage for the purpose of leisure. Some researchers have explored older adults' motivations for engaging in leisure activities, such as a study on the motivations of elderly electronic hackers in China and the ways that their activities are entangled in social, political, and economic contexts [75]. However, we are missing an understanding of the way this context interacts with motivations to engage in a broad range of leisure activities.

METHODS
Procedure
We recruited people age 60 and over from four independent living (i.e. retirement) communities for two-hour audio-recorded semi-structured interviews. Interviews were conducted in participants' apartments, and pictures were taken of participants engaging in leisure activities. During interviews, participants were asked what leisure activities they do at home and in the independent living community, what encourages them to take part, and what, if anything, makes the activities meaningful or enjoyable. Participants were compensated with a $25 Visa gift card. All procedures were approved by the University Institutional Review Board.

Participants were recruited from independent living communities as people in these communities may experience more constraints on their activities but also more opportunities for social interaction and activities than those living in their own homes. The four independent living communities are located in Northern California, USA, and range from 80 to 183 residents each (average of 120). We attempted to recruit participants with a range of income levels by recruiting from communities that ranged in the rent they charged, with some specifically housing low income seniors. As of 2016, the rental rates of ranged from $450 USD to $5,300 USD per month.

Participants
Twenty-four participants took part in the study, with an average age of 79.4 (ages ranged from 60 to 96). Twenty-three participants identified as White and one as Asian. Twenty participants lived alone in their apartment and four shared an apartment with others. Nineteen identified as female and five as male. Though males only made up 20% of the participant base, this matches the gender ratio at the communities (the four sites combined have a 24% male population). Towards the end of the study, we began purposely recruiting men to increase their representation in the study. Although we did not ask participants to disclose health conditions, they were brought up by participants during interviews. Conditions included those affecting mobility (e.g. arthritis, Parkinson's), mental health

conditions (e.g. depression), and other conditions (e.g. hearing impairments).

Analysis
Interviews were audio recorded and transcribed. Data analysis followed a grounded theory approach [14]. Five transcripts were initially coded to generate themes using open and axial coding. Some of the initial codes included transportation and available activity, which related to the high-level theme of access. The researchers agreed on a codebook and additional themes were added as all additional transcripts were analyzed. We began to see the data in terms of social and critical gerontology, which is a body of literature that takes into account the ecological and societal factors that construct 'old age' [65]. With concepts from these bodies of work in mind, we iteratively coded data and related the codes and emerging concepts to each other through a process of memoing and theorizing.

Limitations
The participant base is limited in terms of gender and racial diversity, and participants were asked to limit the majority of their discussion to activities they did in their apartment and the independent living community. These factors likely constrain the types of activities participants did and spoke about. Furthermore, participants were interviewed once and thus the data does not capture changes that occur over time beyond what participants described. The participants in this study did not describe financial considerations as significantly impacting their lives, but other older adults live with severe financial insecurity. This study does not address this population, though we call for future work in this area. Additionally, the majority of older adults do not live in independent living communities. However, the unique features of independent living communities merit their own examination. Finally, as in all studies of this nature, there is a risk of self-selection bias, with individuals who are more engaged in activity more likely to participate.

FINDINGS
Participants described a wide variety of activities that they considered to be leisure activities. Watching TV, reading, and playing games was mentioned by the majority of participants. Many participants mentioned using the computer, interacting with pets, gardening, writing, and learning. Some participants described activities that were not shared by others, such as one participant who collected and sorted buttons. Some activities were considered leisure by some participants and distinctly un-leisurely by others, like exercise and eating. In part, this was due to the ways that motivations to engage in leisure activities were negotiated in the context of societal and ecological factors. Below, we describe these factors as well as motivations.

Societal Factors
Societal factors are the ways that predominant societal narratives and attitudes towards aging affected how individuals engaged in leisure activities. Participants chose leisure activities that helped them stay busy and preserve

physical and cognitive abilities. This aligns with pervasive societal messages around "successful aging." Furthermore, an awareness of what are considered age appropriate activities was integrated into participants' selection of leisure activities.

Staying busy
One component of successful aging is "high engagement in life" [73], and participants described days filled with activity. They shared an acute dislike or even fear of inactivity and boredom.

"I'm never bored because I feel like there's always something to do, always… if I had a few minutes and I wasn't doing anything else, I'd work a puzzle or something, to keep me occupied." [P19]

"I don't know what I would do if I really got bored, and [watching TV] prevents that." [P17]

So, if I didn't go to [visit] my husband [in a nursing home], I don't know what I would do… In one way it is good. My time is taken up." [P5]

The way participants described needing to keep occupied aligns with the concept of a "busy ethic" that describes how "retirement is morally managed and legitimated on a day-to-day basis" [23]. This ethic is aligned with successful aging and is motivated by a system of beliefs that "esteems leisure that is earnest, occupied, and filled with activity" [23]. Participants presented other older adults who did not adhere to the busy ethic as counterpoints to themselves:

"Some of these old ladies don't do anything. They come home, they sit; they don't watch TV, they don't read, they have no company, they have no phone calls – they are just there." [P12]

"Too many older Americans will sit with the remote and they don't move, they don't get up, they just watch game shows or whatever and their minds are not challenged at all. I don't think that's very good, very healthy." [P2]

Successful aging has been criticized for emphasizing a normative ideal that devalues older adults who have not successfully maintained abilities through activity [65], and this can be seen in the ways that participants described these other older adults. Furthermore, successful aging places responsibility on individuals for staying active, disregarding ecological (e.g. transportation) and other factors (e.g. depression) that affect abilities to do so [67]. Participants in this study placed blame on individuals for inactivity, as staying busy was described as a personal responsibility to seek available opportunities.

"Some people in here, they always say they're bored… I say that's their own fault… They don't participate in enough things." [P3]

Other participants, while still disparaging inactive older adults, described factors that resulted in some individuals being "legitimately" inactive. In other words, ecological

factors such as limited transportation made disengagement inevitable for some individuals.

"At 10 o'clock he is still there on the computer playing games, so that's his life… I realize that that's all he has to keep going on, and I'm lucky to have a lot of friends, a lot of people who are saying 'let's go do this,' and so my life is very filled." [P1]

"There are people around here that all they do is watch TV, but they're in their 80s and 90s. I hope I never get to that point, but I probably will… I don't want to sit around watching TV all day long. But people that don't drive around here, they have nothing else to do…" [P23]

Interestingly, though participants spoke about turning to television to stay busy, the television was also described as the main or even sole activity of other, inactive residents. Participants described the importance of having many other activities going on, with television providing a way to fill time in between activities. Watching television was not a leisure activity in it of itself; the amount of time spent watching was a contextual feature that determined whether it was considered a suitable leisure activity. We return to the importance of contextual factors in the discussion.

Though the narrative was largely of activity-filled days, some participants expressed resistance to this idea. This too had a rationalizing component, with participants conveying that they had already 'put in their time.'

"Sometimes I feel guilty. 'Maybe I'm watching too much TV,' but I'll think, 'No, I'm retired. I'm not working.' I can watch TV if I want to.' [P19]

"See, all my life I worked early hours… You know it was always my desire to stay in bed, get a cup of coffee, and read the paper – so I do that." [P12]

By having worked hard earlier, these participants described having earned the luxury of not having to always be busy.

Maintaining physical and cognitive abilities
Keeping busy was tied to a larger narrative around how, with enough activity and effort, participants could maintain physical and cognitive abilities – the "use it or lose it" mentality. Participants described participating in leisure activities such as Mahjong and crossword puzzles in order to maintain these abilities.

"… they [crosswords] start on Monday very easy… If I can do a Saturday, I feel like I've conquered the demons of old age." [P22]

This notion of "defeating age" through activity has been found in other studies, where older individuals describe being motivated to continue engaging in competitive sports by the fear of becoming "old" or "dependent on others" [20]. Some participants in this study discussed how they had found information that these activities would preserve their abilities from external sources. This is not surprising given the ways that successful aging dominates the

biomedical and media discourse [8,65]. P12 explained that despite the significant financial burden and transportation difficulties, she continued to house and visit her beloved horse: because "*It is a doctor's order… my doctors told me-she said, 'Do not quit going, no matter what, because it is so good for you. I can tell.'*"

As when presenting the busy ethic, participants mentioned counter cases of older adults they knew who did not engage in activities to stave off changes associated with aging. For example, P22 said,

"*I get angry when I see people that have this problem and they don't do anything about it… I have one friend who's really dear to me…She could not remember [a conversation after a short] period of time…I encouraged her to start doing crosswords…She knows because I've told her, and she's not doing anything about it.*"

This participant saw her friend's memory issues as remediable if she would engage in certain leisure activities (in this case, crossword puzzles). This is aligned with successful aging's emphasis of individual responsibility for maintaining health, which we return to in the discussion.

Age Appropriate Activities
Participants demonstrated an awareness of what activities are considered appropriate for older adults. For example, a number of participants mentioned age in the context of learning new things. Some seemed to be responding to a perception that older people should stop learning, such as P13 who explained that he considered reading a leisure activity because, "*Even at my age I still enjoy learning.*" He followed up saying "*Because even though I am 96, I still – I can learn things. It won't do me any good…*" Other participants embraced the notion that older people should not learn: P17 explained that though he enjoyed reading:

"*Some things I do read for information, but I'm sorry, at 94 I've quit studying. I don't read very often now to find out things that I didn't know before.*"

Other participants acknowledged stereotypes of older adults in order to distance themselves from these stereotypes. P2 explained that learning new things not only satisfied his curiosity but also gave him the ability to:

"*… carry on intelligent conversations rather than talking about your aches and pains, which a lot of seniors do constantly. When you're sitting downstairs and they say, 'Oh, this hurt today,' I say, 'Gee, did you hear what happened in Yugoslavia?'*"

P2 also explained that he enjoyed that the new activity director had brought a computer to the activity room, as before the activities had been things like basket weaving which he considered "*really boring.*" He said,

"*I've seen too many pictures on TV of them going to a retirement home and all the old people are sitting there doing this, and I'm not ready completely for that yet. Maybe ten years from now. I don't enjoy those hobby type activities.*"

"*Hobby type activities*" were not enjoyable to P2, though he saw them as more appropriate for people older than him and even for himself once he got older. This is a common finding in other studies, where individuals distance themselves from activities or products (and the accompanying stigma) that are aimed at older adults [29,44,47,55]. A perception of age appropriateness affected the ways some participants chose to engage in leisure activities. Because the activity director at P2's community had recently brought a computer, he was able to participate in activities that he felt were appropriate for his age.

Ecological Factors
Community resources such as computers, as well as a variety of other environmental and logistical factors affected the types of leisure activities that participants engaged in. Interestingly, though many participants described that they were limited financially in terms of certain activities they could do (e.g. international trips), they largely were able to find solutions to other activities, such as borrowing books from the library instead of buying or ushering at shows instead of buying tickets. However,

Figure 1. Left: P19 said she never felt bored because there was always something to do; Middle: P21 had read that doing crosswords was beneficial for older adults' cognitive health; Right: P12 said he learned "even at his age".

they faced a variety of other factors that they described as more difficult to navigate, which we detail below.

Access to transportation
Access to transportation was the most significant ecological factor that affected participants' leisure activities, which is aligned with findings from gerontology on the importance of transportation (for an overview, see [18]). Though some participants drove, many described how not driving severely affected their lives: one participant explained that it "*really confines you*" [P5]. Even when public transportation or shuttles were available, there were various issues such as the ability to seat wheelchairs and walkers and the need to schedule in advance. Learning to navigate the world without a car was an issue that affected the types of leisure activities participants engaged in. Participants who had the most difficulty were in the process of transitioning to not having a car, such as P16, who said:

"*I think part of it first of all is adjusting to not having a car … I don't like to impose too much and if I can use the bus, I should use the bus. I know that and then I could go more places but it's like everything at this point requires some kind of help and I'm just not doing [what] I am used to, walking out and getting in the car.*"

Participants described how the lack of a personal car meant that they had to schedule or plan activities, rather than engaging in them spontaneously. One participant said,

"*What I miss about not having the independence is spontaneity… you have to come to get me or I have to get on a bus… [sighs] You have to have dollar bills. I don't have any dollar bills, so I have to go to the bank.*" [P22]

Related to transportation, the independent living community's proximity to activities and infrastructures impacted participants' ability to attend community events, activities, and buildings (e.g. libraries or senior centers), particularly for those who could not drive. P1 explained,

"*I don't know whether I would do that [activity] if I weren't in a place which had the library right at your fingertips… We have the old downtown… like a block away, and the university is a block away. They have entertainment there and all sorts of activities over at the university.*"

Available space
Living in an independent living community meant that participants typically had smaller apartments, which limited the kinds of activities that they could do. Several participants who had recently moved mentioned having to downsize, and as a result lost space or equipment such as sewing machines. P16 explained that "*you began thinking okay [where do I put my] sewing machine… I had a huge dining room table, that's gone, so you just change your priorities.*" Although P16 "*used to sew a lot,*" she altered her priorities to better match what she could do within of her new home. Even when participants had the space or equipment to continue with their activities, living in an

apartment building rather than their own house limited activities, as they had to consider neighbors (e.g. not playing piano when others might be sleeping).

Planned activities
Communities offered different activities at different times, in part based on the activity director. Individuals explained how the time activities were scheduled (either by a director or a group of friends) affected their ability to participate:

"*I used to [play games more], but then they put it on a certain night… Sometimes I ended [finishing] up at 10:00 or 10:30 and that's too late for me, so I told them I'm not going to do that.*" [P23]

Furthermore, as these activities have been tailored towards general community interests but not specific individuals, many participants described having interests that were not satisfied through planned activities. P8 explained:

"*…the activities they offer, other than the exercise class are sedentary. I think that's probably why I don't do that…I'm pretty sure I'll enjoy doing those things when I can't drive.*"

The constraint of being limited in terms of offered activities that meet P8's desire to stay active did not particularly affect her, as she had ample transportation to engage in the activities she wished to do elsewhere. She recognized it would only affect her once she lost her ability to drive, at which point she would "enjoy" those activities. Different factors intersect in ways that affect how participants decided what activities constituted leisure activities.

Motivations for Engaging in Leisure Activities
Societal and ecological factors provided a backdrop against which participants negotiated motivations to engage in leisure activities. In this section, we describe these motivations. We found prior work (De Schutter and Malliet's work on the needs of older players of digital games [69]) useful as it aligned well with many of the motivations described by participants in this study. This prior work described five categories of motivations (which they refer to as perceived needs): cognitive, affective, individuality, connectedness, and escapism. We expand on these categories by looking at leisure activities beyond digital gaming. The additional categories of motivations are physical motivations and accomplishment.

Cognitive motivations
Cognitive motivations are "the desire to acquire knowledge, information, or skills" [69]. In other words, learning itself is a leisure activity. P7 explained, "*learning is my hobby.*" Participants were motivated by satisfying curiosity and being informed. Many participants described learning by watching informative television programs and reading.

Cognitive motivations also include when participants describe "excercis[ing] the brain" [69], or the importance of learning to maintain existing cognitive abilities. Many participants recognized specific activities, such as crosswords and learning new things as being beneficial for

this purpose. P3 watched informative TV programs "*To learn, for the brain not to die,*" and P2, who noticed himself forgetting things and learned Japanese as it was a:

"*...very good mental exercise in remembering. Some people have really good memories when they're 80, 90. My memory is getting really bad, worse and worse as time goes on. I thought this would be a good exercise for me.*"

As in P2's case, societal factors influenced individual's motivations to engage in leisure activities. Engaging in specific cognitively stimulating activities (e.g. learning a new language) is part of a larger societal narrative around activities that help people maintain abilities as they age.

Physical motivations
Like cognitive motivations, participants described multiple motivations to engage in physical activities: to preserve abilities and for enjoyment. In regards to the latter, participants were motivated because of the pleasant physical feelings associated with moving the body. P4 explained that when she stretched, "*I enjoy doing it because I know how good it makes my body feel.*" P8 said,

"*it's amazing how it is when you are active and you do move. Even during that time, you feel better.... More energetic and more able than if you didn't do it.*"

Participants also described motivation to engage in physical activities in order to maintain physical abilities. P15, who had had a stroke, said that:

"*…I have a tendency not to want to move sometimes, and that is when I get myself in trouble, because then I get all stiff and my leg doesn't want to work and my brain doesn't want to work right. That is why I read and watch TV and watch the birds. I try to multi task all the time, you know… I try to keep active because when I stop being active then I will die.*" [P15]

Like cognitive motivations, physical motivations are in part driven by societal factors such as staying busy to maintain abilities.

Accomplishment
Despite the inquiry into digital gaming (with its common practice of achievements and badges), De Schutter and Malliet's categories did not touch on the desire to engage in and finish activities for the sense of accomplishment. Researchers are drawing attention to the distinction between momentary pleasure (hedonic) and striving for accomplishment (eudaimonic) [53,70]. Many participants were motivated by both, and the latter is discussed in this section. Diverse activities contributed a sense of accomplishment, included writing, reading, sewing, and crossword puzzles. The main element that led to feeling the sense of accomplishment was completing an activity, sometimes regardless of how challenging the activity was. Regarding doing crafts organized by the activity director, P12 said, "*We accomplish something. I don't say I learn a lot because it is all stuff that you have done since*

kindergarten." Yet P12 still enjoyed a sense of accomplishment, saying she enjoyed "*getting something cute that you make, even though it is [a] piece of junk… I think anybody that sits down and makes something feels satisfied, don't you*?" Other participants felt satisfaction from activities with tangible outcomes. P24 described that she enjoyed knitting and crocheting because she was making "*something that I need, and so I am accomplishing something.*" P3 described the satisfaction she experienced when she received positive feedback from others, saying, "*When I finish, I love to be told it's beautiful.*" P3 gave away most of the needlepoint she made to others.

Individuality
"The need for individuality encompasses a collection of desires: autonomy, positive self-esteem, status, authenticity, and identity" [69]. Participants were motivated to do activities that aligned with a sense of identity, such as activities with which they had history and familiarity. Although some participants mentioned doing activities for the sake of reminiscence or nostalgia, for others, it was due to having enjoyed a particular activity their entire life. P1 said, "*I've done [needlepoint] since I was in my teens… Seems like it's become a part of me.*" [P3]

Participants described the ways that activities that they had always found compelling now felt familiar, and they often pursued activities that helped them maintain continuity with their prior interests. Some participants described rejecting activities that were not in line with their past or identity.

"*They love sing-alongs. When I say 'they', I mean the average people here. And that's not my thing… I am from New York and I have a different concept of things, I really do. A lot of them are Midwest, and they had a different upbringing, a different lifestyle.*" [P5]

Others were more open to new activities. Despite their openness, some faced barriers due to a lack of experience given their personal histories:

"*I don't know how to play, maybe if I knew [I would]. I just happened to never have a group who did those things… They did talk to me into playing cards one night but I think they found out I was a beginner.*" [P12]

Connectedness
"The need of connectedness refers to the desire to maintain contacts with one's family, friends, or the world outside" [69]. Participants described deriving companionship as a major motivation to participate in activities, and some described opportunities to interact with others as motivation for moving to an independent living community over another type of housing. While some participants described feeling disconnected from other residents, many said that there were people in the independent living community that they could relate to or engage with. P8, who had recently moved to the community, said that "*A lot of the people are very friendly here. And I feel very welcome, and there are people that like to see me and like to talk with me…*"

Participants considered the process of obtaining companionship a leisure activity in it of itself (e.g. talking on the phone to friends), and also described participating in activities such as games because of the companionship of others playing the game. Some participants described engaging in activities that didn't satisfy other motivations (e.g. identity or affective), but yielded them companionship through interactions with others. For example, P16 said,

"Something that I had never, never, ever done before except when I was probably 10 was play bingo. I started going to the bingo games here and they are stupid and idiotic but they are fun… they are nice people to be with and that is essentially what it is."

Participants used technology to mediate relationships with others in order to derive companionship in a way they found satisfactory. Some preferred contact through email or text to manage the amount of spent on this activity. Discussing staying in touch with her friends after moving, P6 explained:

"*Some of them don't even have a computer or laptop, so you have to take the time to call. They don't even text... It eats up a lot of time. We don't get to do it as much as we'd like.*"

Surprisingly, several participants also described deriving companionship through the use of technologies such as televisions and radios. P15 explained that she watched TV more than any other activity *"mainly because I like the company that it gives me, and to hear other voices, and have somebody around - because I am a people person.."*

Though for some, companionship from the television was a substitute for human contact, others appreciated the unique characteristics of this alternate form of companionship. P21 appreciated a sense of unconditional approval that she received when watching television. She explained:

"… I'm comfortable with the TV… it's accepting to me. If I have to have someone come in, then my anxiety and nervousness kicks in… I'm so insecure that the TV provides a very safe interaction... I don't want to be judged or criticized."

This participant identified unconditional approval as more difficult to obtain from people than from her television. However, she also spoke of problematic elements of obtaining companionship from this non-human source. P21 explained that though she highly valued the safe interaction and ability to modulate her emotions through the media she engaged with, being able to shape her world so carefully cut her off from the full human range of emotions, saying, *"It is a crutch, because I feel good. If I don't like the program, [I] change it or turn it off. I rarely feel bad."*

These findings are in line with recent work that challenges conceptions of older adults as unilaterally desiring more social contact [44,48]. Participants in this study used technology to manage their relationships with others, and

sometimes intentionally used it to replace companionship from human sources.

Affective and Escapism

In this section, we merge affective needs, which "refer to the desire to acquire aesthetic, emotional, or enjoyable experiences," and escapism, which "refers to the desire to run away from the strain of having to fulfill other needs or having to perform other activities" [69]. These motivations were often intertwined, as participants often engaged in activities that they found to be enjoyable because they were entertaining, relaxing, or distracting. Many participants described how watching movies and television was enjoyable because of its immersive quality. At times, enjoyable leisure activities were explicitly contrasted with activities that involve learning, which requires a certain level of alertness. P5 explained that she was struggling with the stress that accompanied visiting her husband who had dementia at a nursing home, and said,

"*These books are not intellectual, but I don't think I could even cope with anything that I really have to study. Because my mind is so full of everything else that I just want to relax, and the only way to do [that] is to read these books.*"

Other activities that were considered enjoyable were also used to get to desirable mood states. For example, P7 explained that he specifically watched uninformative TV shows "*… just to change my emotional setting. Say, 'Big Bang Theory [television show],'… That's a lot of fun… I use it to laugh or smile.*" Like other participants, he drew a distinction between activities that led him to think – which he also considered leisure activities – and those which were enjoyable to him in an affective and escapist sense. Although calming and distracting activities often had in common that they did not include learning, the activities differed for different participants. P3 explained that she enjoyed needlepoint because: "*It keeps me nice and calm. When I'm working, I'm not thinking of anything else.*" And P4 described sorting buttons as "*what I call naval scratching time. You know, some relaxation, something that relaxes me and interests me is [a] small joy.*" Participants sought out these diverse activities to relieve anxiety, distract themselves from troublesome thoughts, and relax. At the same time, many participants explained that they placed limits around how much time they engaged in these activities to ensure that they also participated in activities that helped them maintain physical and cognitive functions.

DISCUSSION

Our findings reveal a range of factors that influence motivation to engage in leisure activity as well as two central factors – societal and ecological – that operate across these motivations. Below, we discuss what these findings mean for researchers in HCI. First, we contribute to the dialogue in HCI on successful aging and the medicalization of older adulthood. We then discuss implications for the design of technology in light of the varied motivations and factors that affect the ways older

adults are likely to adopt and use leisure technologies. Finally, we provide a case example of applying these findings to the design of a common leisure technology.

Redefining Leisure

This work calls into question the way we define leisure in older adulthood. We initially sought to study leisure activities as a distinctly non-health related area. However, we found that a wide range of leisure activities in older adulthood can be considered health and wellness activities by participants (in terms of individual motivations), the communities in which they live (ecological factors), and according to a broader societal narrative (societal factors). In other words, the tenants of successful aging, particularly the emphasis on physical and cognitive activity, are bound up in the way older adults engage in leisure activities. Recognizing that many of the leisure activities that older adults engage in can be considered health and wellness activities has a variety of implications for improving the design of technologies for older adults, some of which we discuss below. It also calls on us to question some of the experiences and activities that are currently neglected when we think about health in older adulthood.

At the same time, we must be cognizant of what it means to consider leisure activities under the same umbrella of health and wellness. Recent critiques of how we treat aging in HCI urge us to move away from medicalizing older adulthood and the predominant focus on physical and cognitive health [63,82]. The successful aging narrative is not entirely harmful; there is a large body of evidence that engaging in activities is beneficial for older adults, and many individuals find meaning in engaging in activity throughout the life course [12,25,40,41,50,78]. However, as a research community, we can reflect on which components of successful aging we incorporate into our technology design. The ways that we position certain populations and how values become embedded in technologies are areas that require continued study and reflection and researchers are becoming increasingly concerned with this issue more broadly [4,5,21,37,60]. One conceptual shift that may be useful is framing studies on older adults in terms of motivations for wellbeing that exist across the lifespan (e.g. accomplishment, escapism). This subtle shift can maintain focus on motivations that are important to this population while moving away from a framework that associates older adulthood with deficits (e.g. declining cognition).

Design Implications

Like previous work [69], we found individual motivations of participants to engage in leisure activities. To these, we add that societal and ecological factors impacted what activities individuals defined as leisure. Below, we describe design implications for researchers designing technologies to support leisure and health and wellness activities.

Implications of leisure as a health and wellness activity

Given the ways that leisure activities are intertwined with maintaining health, our analysis contributes to the area of designing health and wellbeing technologies. In particular, we call attention to the ways that researchers – as well as older adults – may be overlooking health and wellness activities that older individuals are already engaging in. Currently, HCI researchers are designing technologies that attempt to harness older adults' interests in leisure activities to encourage them to engage in "healthy" activities. For example, researchers are using bingo to encourage older adults to engage in physical [15] or cognitive exercise [15,61]. Bingo itself, though, is not seen as an activity to encourage, likely in part to being associate with older adulthood. However, engaging in activities such as bingo is actually associated with a lower relative risk of dementia [68]. Using Bingo to encourage other activities may not be the most effective approach, both because Bingo itself is already a cognitive and social activity, but also because of the conflicted feelings participants described towards activities such as Bingo (e.g. enjoying the company but wanting to avoid the stigma of an activity associated with older people). A more effective route may be to design technologies that support older adults in recognizing that they are already engaging in healthy activities when, for example, they play Bingo. This is supported by literature in gerontology that an individual's satisfaction with their leisure activity (e.g. considering what they do to be 'enough' or 'valuable') impacts their wellbeing [1].

This study presents additional motivations that researchers can take advantage of in the design of leisure or health and wellness technologies for older adults. For example, in motivating older adults to exercise, technologies have been designed to target the desire for social connectivity (e.g. [31]) or fun, which we refer to as affective motivations (e.g. [26]). Our analysis contributes additional motivations that could be incorporated into technologies for health, such as escapism and physical motivations. For example, designing for physical motivations could involve a setting where individuals can engage in somatic awareness [35] to attend to the sensations of exercise. Researchers can also leverage multiple motivations, with an awareness that some motivations conflict (e.g. cognitive and escapism).

Expanding past individual responsibility

The successful aging narrative emphasizes individual responsibility in maintaining health, ignoring systemic factors that affect older adults' ability to maintain their health and participate in activities [34,67]. When adopted by researchers, the successful aging narrative manifests in technologies that focus on personal responsibility to participate in activities, such as technologies to motivate social interaction and physical or cognitive exercises [82,86]. Though these are important areas of study, we can expand our focus to encompass technologies that move us past individual responsibility towards ecological and societal factors that affect opportunities in older adulthood.

In this study, participants discussed a variety of ecological and societal barriers to activities that have been largely

unaddressed thus far in HCI and point to future opportunities for design. Areas where HCI researchers can have real impact in the lives of older individuals, and have recently started to explore, include transportation [45,54,56], economic opportunities enabled by emerging technologies [9], and platforms that challenge stigma [43]. Researchers can take advantage of emerging technologies such as self-driving cars and the technological infrastructure of the sharing economy. As one potential area of study, researchers can support awareness of nearby activity opportunities. Though research has focused on fostering social interactions between individuals living at a particular retirement community [42,58] to meet motivations for connectedness, participants in this study also described motivations to engage in specific activities or interests (to meet motivations such as accomplishment and individuality) that were not supported in the communities they lived in. This situation suggests an opportunity to create platforms to pool resources of neighboring living communities and community centers. With such a platform, people of a certain skill level or interest from different communities can be connected to support leisure activities. Turning to societal and ecological factors rather than individual factors is aligned with calls from Social Justice-Oriented Interaction Design [21] and Feminist HCI [5,60]. Furthermore, future work should include individuals of low socio-economic status, who are particularly vulnerable to being marginalized by the successful aging narrative [34].

Motivations and societal and ecological factors interact
Leisure activities are often thought of in terms of discrete categories of pastimes (e.g. playing poker, reading). However, what participants defined as leisure activities actually depended on a variety of contextual factors, such as who was doing the activity, how long they were doing it for, and who they were doing it with, rather than what the activity itself was. For example, individuals described considering some activities as leisure activities solely because of the company with whom they did these activities – without the company, participants would not have been interested in engaging in that particular activity [84]. Researchers can study how to incorporate these factors into context-aware systems [16].

Specific example informed by this study: the television
In this section, we provide an example of applying the factors and motivations identified in this study to the design of the interactive television. The interactive television is an existing technology that is an active area of research in HCI (e.g. [2,17,76]), Watching television is a common leisure activity across age demographics [77], and in this study, watching television was frequently mentioned as a leisure activity. It is also an activity that raised conflicting feelings in individuals who engaged in it (like gaming, see [24]). Interactive televisions incorporate additional functionalities such as social interaction [2,76] and information seeking [17]. In some studies, researchers describe using televisions as a platform as they are likely to be more acceptable to

older adults than computers (e.g. [2]). However, largely left out of the discussion are societal stigmas around older people who watch "too much television." Previous studies have found that television viewing is embedded in the social context of the home [6], and we add that it is also embedded in the context of societal narratives. While it is possible that incorporating other functions will make the television seem like a more societally sanctioned tool, it is also possible that participants will reject interactive televisions to avoid spending more time with the television. Furthermore, some participants described using the television to escape other obligations or stressful thoughts: it is possible that building in functions that come with obligations may detract from the restful time that is spent. One possible design direction is to create different "channels" that disable the interactive functionality. This could better allow for the ways that older adults currently flexibly use the television to alternatively fulfill both needs such as learning (accomplishment) as well as escapism.

Participants derived companionship from having the television and radio on, even when they were not watching (similar to findings in [66]). Addressing social isolation and new avenues of communication for older adults is an active and important area of research in HCI (e.g. [48,64]). The participants in this study, however, were engaged in many social activities and most did not mention the need for additional ways to communicate with others, perhaps in part from living in a community with others. Participants explained that they actually treasured having time *not* around other people, but enjoyed not feeling alone through the use of technologies such as the television and radio. This points for opportunities to study whether pre-recorded ambient conversation of loved ones playing in the background create a more meaningful source of non-human interaction, or, whether the anonymity of these technologies is what is desired. More importantly, it calls for us to question whether adding communication capabilities to a television will impinge on precious time alone create a sense of obligation for older adults to respond. Our analysis contributes to an ongoing dialogue around the need to honor older adults' choice to not partake in interventions that aim to increase social interactions [86].

CONCLUSION
Based on interviews with older adults living in four independent living communities, we discuss the ways individuals participate in and define what constitutes leisure activities. Participants described motivations for engaging in activities as well as societal and ecological (e.g. access to transportation, planned activities) factors. Leisure activities were often intertwined with health and wellness activities. We present an analysis of how this contributes to a conversation on successful aging in HCI, implications for the design of technologies, and discuss the interactive television in light of these findings.

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