Supporting Care Partners with the Amazon Echo

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"Alexa, play morning playlist."

INTRODUCTION

By the year 2050, there will be twice as many older adults as there are today, peaking at 1.6 billion individuals who are 65 years and older (Cire, 2016). This will lead to a higher prevalence of dementia and mild neurocognitive disorder (mNCD), an early stage of dementia. With the changing demographics, there has been a shift in technology to support the needs of older adults with mNCD and their caregivers.

The purpose of this study was to determine the care activities that a home-based voice user interface (VUI) technology, such as the Amazon Echo, could support after the onset of mNCD. From this study, we can better understand how to design and implement technology for older adults with a focus on quality of life instead of the diagnoses.

METHODS

CPA	Age	Gender	Race/ Ethnicity	CPB	Age	Gender	Race/ Ethnicity	Recruiting facility
CPA 1	78	M	African American	CG 1	76	F	African American	Integrace
CPA 2	76	F	White/ Non-Hispanic	CG 2	77	M	White/ Non-Hispanic	Integrace
CPA 3	70	M	White/ Non-Hispanic	CG 3	71	F	White/ Non-Hispanic	Integrace
CPA 4	68	F	White/ Non-Hispanic	CG 4	63	M	White/ Non-Hispanic	Integrace
CPA 5	72	F	White/ Non-Hispanic	CG 5	72	M	White/ Non-Hispanic	Integrace
CPA 6	75	M	White/ Non-Hispanic	CG 6	76	F	White/ Non-Hispanic	Riderwood

Chart 1: Study Demographic Information

Before the installation of the Amazon Echos in the homes of the participants, the research team interviewed the dyad together. Next, the Amazon Echos were installed, and the dyads were taught how to use the Echos. During the installation, a checklist was used to ensure consistent installations across the study. There was a one-week familiarization period where the dyads were able to get accustomed to the Echo. The research team went back every two weeks to collect dialog history. At the end of the four-month study period, there was an exit interview which asked the participants about their experiences with the Amazon Echo and improvements they would like to make to it.

RESULTS

Phrase Frequencies

Rank	Dyad 1	Dyad 2	Dyad 3	Dyad 4	Dyad 5	Dyad 6
1	what's on the bible read	what time is it	what time is it	what is the the date	a timer for 5 minutes	What's the weather in Silver Spring
2	what time is it	set an alarm	spelling game	on Pandora play smooth jazz	play the…	thank you
3	what's on the Washington post	hang up	n p r	play Christmas music	set an alarm	the temperature
4	politics brief	answer	find	what's the weather	play the final countdown	what time is it
5	Pandora	can you call	this account	December 18th 1993	what's the weather	play Mozart
6	what's the weather	louder	louder	increase the volume	my calendar	louder

Chart 2: Phase Frequencies Per Dyad
Rank of the most common phrases dyads used with the VUI.

Coded Interactions with the Amazon Echo

Supporting Relationships
Supporting/Helping Daily Life
Entertainment
Providing Autonomy
Learning/Expanding Memory & Brain Power
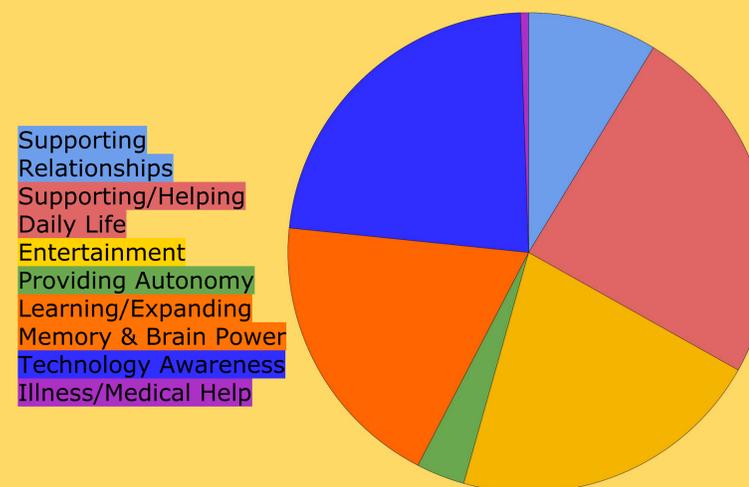Technology Awareness
Illness/Medical Help

Figure 1: Coded Usage Data
When the research team collected the usage data, it was coded into seven different categories as follows; Supporting Relationships, Supporting/Helping Daily Life, Entertainment, Providing Autonomy, Learning/Expanding Memory & Brain Power, Technology Awareness, and Illness/Medical Help.

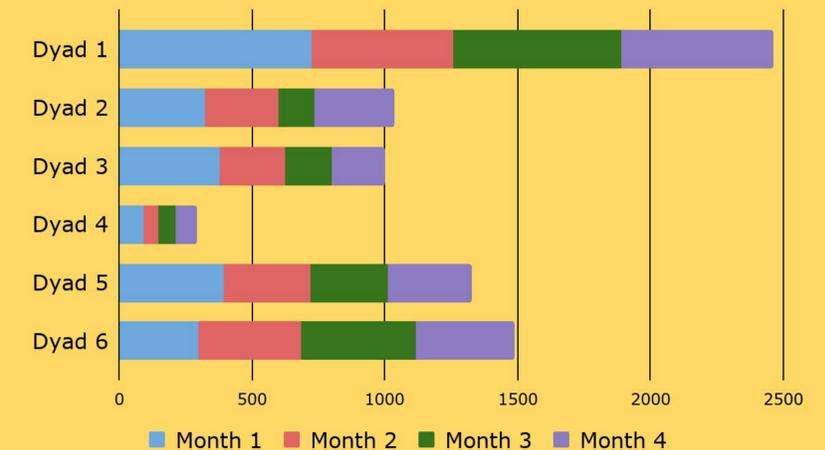### Interactions Per Month with the Amazon Echo

Month 1   Month 2   Month 3   Month 4

Figure 2: Dyad Interactions Per Month
The usage data that was collected from the Amazon Echos was separated into monthly usage.

DISCUSSION

The Amazon Echo was selected because it was not created with the traditional care model in mind but still contains functions that could provide a variety of forms of care. This proved beneficial in that the dyads were not limited to using the VUI for Illness/Medical Help only but if they wanted to seek out that information, the Amazon Echo was able to provide it. With the Amazon Echo not being focused solely on the Illness/Medical information, the dyads were able to benefit through the entertainment and other tasks that the Amazon Echo could provide.

There were four main themes identified in the coded usage data; Supporting/Helping Daily Life (45 interactions), Technology Awareness (42 interactions), Entertainment (39 interactions), and Learning/Expanding Memory & Brainpower (35 interactions). Furthermore, the dyads used the Amazon Echo least for Illness/Medical Help (1 interaction).

The results from this study indicate that the fundamental daily care activities of dyads develop in a multifaceted way from using the VUI. The Amazon Echo works to satisfy multiple needs of both care partners without focusing solely on the medical aspect of care.

ACKNOWLEDGEMENTS