

Assessing Drivers of Motivation for Hearing Impaired People Using mHealth Tool ALICE

Kenya Barnes University: University of Alabama at Birmingham

Supervisors: Professor Astrid van Wieringen, Stefanie Krijger, Andrea Bussé, Katholieke Universiteit Leuven



About Me











KU LEUVEN









Hearing-Impairment (HI) and Hearing Loss

- Affects over 430 million people or 5% of the current population
- Estimated to grow to affect over 700 million people
 by 2050 → 1 in 10 people
- Impacts how people communicate and their psychological state of being
- Managed by hearing aids, cochlear implants, middle ear implants, and now audiological rehabilitation (AR)



Projected number of people with disabling hearing loss worldwide in 2019, 2030, 2040,



Audiological Rehabilitation (AR) and mHealth

- <u>mHealth</u> refers to the use of mobile technology for healthcare
 - A form to deliver AR for the HI community
 - Includes:
 - hearing screening/auditory training
- <u>AR</u> is all encompassing for the HI population
 - Includes:
 - counselling
 - Hearing training
 - sensory management
 - Holistic approach that now focuses on individualization (person centered care)

1 2 3 1 2 3 4 5 6 7 8 9 - 0 0K •••••••••••••••••••••••••••••••••••			# ¥ 7 335 £ 13.57			4 ≤ 7 20% ±1414	8		4 X 7 33% ± 13	
$ \begin{array}{c c c c c c c } \hline \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	Gelieve telken gevolgd door (s drie cijfers OK	in te geven,	ара	aba	ada	paat	peet	poot	
	1	2	3	ata	asa	aza	piet		poet	
7 8 9 6 0K ama awa ama awa pit pot aligator 0 struisvogel kast bord vur kanare bord maam weer 2u19 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000				afa	ava	acha	nat		net	
Alligator Oven Statistical Oven Statistical Oven Statistical Oven Statistical	7	8	9		uru	uonu	put		per	
Alligator Oven Vuur 10u19 alligator lepel vuur 2u14 struisvogel kast veer 2u17 kanarie bord 2u19 2u19 papegaai bak 3u19 krop goot vier 10u17 krop		0	ок	ama	ana	awa	pit	pot	put	
$ \begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $. 0			. 0				
struisvogel kast veer 2u17 kromp kanarie bord 2u19 2u19 2u17 2u19 papegaai bak vaar 4u17 3u19	AND REPORTS			oven		4.7 shahas	10u19	a	447.05	
kanarie bord 2u19 raam vaar 4u17 papegaai bak 3u19 salamander handdoek voor 4u19 goot vier 10u17	struisvogel				uner			-	kromp	
papegaai bak 3u19 salamander handdoek voor 4u19 goot vier 10u17	kanarie		bord		veei		2u19			
Image: Salamander Image: Salamander			raam		vaar		4u17			
salamander goot vier 10u17	papegaai						3u19			
vier	salamander				voor				krop	
vuur 3u17	kameleon				vier					
	5 II II 0						3u17		5 11 1	



Research Topic

1. What drives <u>motivation</u> and how can this be used within the mHealth tool ALICE for hearing impaired people?

2. How can we achieve effective <u>engagement</u> with <u>adherence</u> to the mHealth training app ALICE for the hearing-impaired population?



Digital Behavior Change Intervention Perski Model



*

Hypothesised



Factors Affecting Motivation

Goal-Setting	Rewards	Competition	Personalization	Testimonials
 Increases adherence allows people with HI to hold themselves accountable creates better understanding between HI and AR teams 	 encourages continuation of AR tasks Causes HI user to have a trigger Creates engagement 	 Achieves extrinsic values relatedness or reception due to society 	 Leaves the power in the hands of the user (PCC) Emphasizes user's intrinsic values Allows sense of identity within the app 	 creates community for HI population can reiterate app success causes users to believe in the training methods



Possible Future Directions

- Obtain testimonials from hearing impaired population about common situations that are difficult
- Have users define end goals upfront
- Have rewards integrated
- Obtain data about continued use and display via an easy to understand infographic about the benefits of continued use
- Emphasize that hearing aids don't "fix" but app can \rightarrow learned behavior
- Mini tests/check points of what has been learned for mastery
- Possible leaderboard to increase competition



ALICE (Assistant for Listening and Communication Enhancement) Application

- Tool for hearing impaired (HI) people or those with listening difficulties
- Has two softwares
 - ALICE-Client: provides remote training, counselling, and monitoring
 - ALICE-Pro: provides audiologists and those in the audiological rehabilitation (AR) process with data of clients
- <u>Monitoring</u> consists of phoneme discrimination tests and speech level understanding tests
- <u>Listening</u> consists of training exercises about vowels, consonants, voice recognition, and cognition
- <u>Counselling</u> consists of 3 questions every other day to inventory their daily experiences with listening difficulties

Gelieve telkei gevolgd door	ns drie cijfers i OK	n te geven,	ара	aba	ada	paat	peet	ро
1	2	3	ata	asa	aza	piet		ро
1	2	3						
7	8	9	afa	ava	acha	pat		pe
-	0	ок	ama	ana	awa	pit	pot	pu
	* 4 7 104101	= 0	• • • • • • • •		E 0	447 894		
alligator		oven		vuur		10u19 2u14		
	struisvogel					2014		
struisvog	el	kast		veer		2u14 2u17	- ,	kromp
struisvog kanarie		1000		veer		10777100	1 '	kromp
kanarie		kast		veer vaar		2u17		kromp
		kast bord		vaar		2u17 2u19		kromp
kanarie		kast bord raam				2u17 2u19 4u17		kromp
kanarie papegaa	i er	kast bord raam bak	*k	vaar		2u17 2u19 4u17 3u19		