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Explaining perceived ability among older people to provide care as a result of HIV and AIDS in South Africa

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Abstract

In South Africa, older people have become the primary caregivers of children and grandchildren infected or affected by HIV and AIDS. This study explores the determinants of the perceived ability to care for children and grandchildren in the domains of providing nursing care, communicating with (grand) children, generating income, and to relax. Structured one-on-one interviews were conducted among 409 isiXhosa speaking older people in two sites in the Eastern Cape Province of South Africa. Results showed that perceived ability among older people to provide nursing care was primarily dependent on the level of knowledge on accessing grants and personal norm towards providing care. Perceived ability to communicate effectively with children and grandchildren was most strongly predicted by a positive attitude towards communication and perceived ability to provide income was influenced by a more negative attitude towards people living with HIV or AIDS. Perceived ability to relax was dependent on more negative attitudes towards communication, lower perceived responsibility to provide income, and a higher perceived behaviour control over providing nursing care. The findings of this study add relevant information to understanding the psychosocial context in which older people provide HIV and AIDS related care and support the development of targeted programmes to assist older people in their role as caregiver.

Keywords: Older people, care-giving, South Africa, HIV, AIDS

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Explaining perceived ability among older people to provide care as a result of HIV
and AIDS in South Africa

In the past few years the HIV and AIDS epidemic has become one of the most important public health challenges in South Africa. A recent report by the Department of Health indicated that 5.4 million South Africans were infected with HIV with the rate of infection being highest amongst people between the ages of 15 and 49 years (Department of Health, 2007). As health services are unable to accommodate the increasing numbers of patients, the care of sick adult children and orphaned grandchildren is primarily left in the hands of elderly parents (Ntozi & Nakayiwa, 1999; Williams & Tumwekwase, 2001), mainly elderly women (Madhavan, 2004; Ssengonzi, 2008) who often have little or no support to assume responsibilities for the physical, emotional and economic needs of their dependents (Freeman & Nkomo, 2006; Knodel, 2005; Ntozi & Nakayiwa, 1999; Nyambedha, Wandibba, & Aagaar-Hansen, 2003; Schatz, 2007; Ssengonzi, 2007; Williams & Tumwekwase, 2001).

In South Africa, the situation of grandparents caring for their adult and grandchildren is however not new. Its history of Apartheid and labour migration systematically divided African families by recruiting men and women to the centres for employment (Chazan, 2008; Madhavan, 2004; Marais, 2005). Families were in a reciprocal exchange while older people facilitated the economic migration of younger adults by caring for their grandchildren and safeguarding the family land and assets (Hosegood & Timaeus, 2006). What is new to this situation is that AIDS has undermined the traditional reciprocal care arrangements as migrant parents fall ill and die, and therefore can no longer provide remittances to the grandparents caring for their children (Chazan, 2008; Madhavan, 2004; Marais, 2005). Besides, parents

themselves may move back home to be nursed (Clark, Collinson, Kahn, Drullinger, & Tollman, 2007; Marais, 2005; Schatz, 2007). As a result, older people have to endure the emotional, physical, financial and social costs that arise from their role as caregivers (e.g., Freeman & Nkomo, 2006; Ntozi & Nakayiwa, 1999; Nyambedha, Wandibba, & Aagaar-Hansen, 2003; Schatz, 2007; Ssengonzi, 2007).

To support older people in their role as caregivers, an understanding of their beliefs and needs with respect to providing care is required. Existing research has identified potential factors related to the care-giving roles of older caregivers (Freeman & Nkomo, 2006; Ssengonzi, 2007; Ssengonzi, 2008; Williams & Tumwekwase, 2001), but there is a lack of evidence regarding the relative contributions of these factors in explaining the perceived ability to provide care. This paper therefore aims to identify the psychological correlates of the perceived ability of older caregivers to provide different aspects of care which will impact on the development of targeted programmes to assist older caregivers. Further, the results of this case study in combination with results from other studies adds to a better understanding of the psychosocial context within which older caregivers provide HIV and AIDS related care.

Method

Study Design

This quantitative study consisted of a cross-sectional survey among 409 isiXhosa speaking elderly caregivers of 60 years and older, who reported caring for their sick adult children and/or grandchildren as a result of HIV and AIDS. The elderly caregivers were from Motherwell and Uitenhage, two districts in the Eastern Cape of South Africa.

Study Setting

Historically the Eastern Cape is home to a predominantly isiXhosa speaking population and portrays a culture rich in traditions. The study sites of Motherwell and Uitenhage consist of informal settlements and are part of the Nelson Mandela Metropolitan Municipality that has a population of just over 1 million people (Statistics South Africa, 2007). The majority of the population is African, younger than 30 years of age, do not have a secondary school qualification and live below the Household Subsistence Level poverty line on an annual income of R19200 (about 2313 USD) (Department of Provincial and Local Government South Africa, 2008; Nelson Mandela Bay Municipality, 2008).

As with many informal settlements in the Eastern Cape, Motherwell and Uitenhage are faced with high rates of unemployment, poverty and service delivery backlogs (Nelson Mandela Bay Municipality, 2008) and a high prevalence of HIV infection. In 2006, 29 percent of the antenatal clinic attendees were found to be HIV positive (Department of Health in South Africa, 2007). In the Nelson Mandela Metropolitan HIV and AIDS was most prevalent among the African population. The African population had the largest number of maternal (81.2%) and paternal (70.3%) orphans (Development Partners, 2007).

Participants

In total 200 participants from Uitenhage and 209 from Motherwell completed the survey. Eight participants did not fulfil the inclusion criteria and were removed from the analyses. The inclusion criteria were that participants spoke isiXhosa, were over the age of 60 and were looking after one or more children and/or grandchildren. The age of 60 was maintained as cut-off point as this is the pensionable age for women in South Africa. This resulted in a total sample of 401 elderly caregivers.

Procedure

As no detailed population statistics were available for the study sample from which a probability sample could be extracted, community health workers were approached to provide access to caregivers with whom they had worked with extensively. The community health workers were employed by Age-in-Action, a local non-governmental organisation and partner in this study.

Eighteen trained community health workers, nine from Motherwell and nine from Uitenhage, all first language isiXhosa speaking women were recruited onto the study. They were responsible for inviting the participants who received services from the Age-in-Action club to participate in the study. Through a snow-ball effect some older persons in the community became aware of the study and showed their interest to participate. They were included if they matched the inclusion criteria.

The community health workers conducted one-on-one interviews with the participants. Questions and response options were read out to the participants and answers were recorded on paper questionnaires. The interviews were conducted in isiXhosa, the first language of both interviewers and participants. Each interview took about one hour and twenty minutes. Interviews took place at the homes of the participants where they usually receive the services provided by the Age-in-Action club. As the health workers were known to the participants and they usually visited them in their homes there was minimal concern that these visits would arouse suspicion or curiosity from neighbours and family.

Detailed information about the content, procedures and confidentiality of the study was provided to the participants both verbally and in writing in isiXhosa before consent was obtained. Ethical approval for the study was granted by the South African Medical Association Ethics Committee.

Measurement Instrument

The measurement instrument was based on existing literature about older people as providers of care, foregoing qualitative and quantitative research (Boon et al., 2009a; Boon et al., 2009b; Freeman & Nkomo, 2006; Reddy, 2005; Nyambedha, Wandibba, & Aagaard-Hansen, 2003; Ssengonzi, 2007; Williams & Tumwekwase, 2001), and general predictors of human behaviour derived from social cognition models (Connor & Norman, 2005). Demographic questions concerning age, gender, relationship status, monthly income and number of dependents were included.

All psychological measures were based on Likert-type items with three or five response options. For each measure, scores on items that showed sufficient internal consistency (Cronbach's alpha [α] > .60) were averaged into one single index. Higher scores reflect a stronger presence of the concerning variable. Based on previous research (Boon et al., 2009a; Reddy, 2005), four care abilities were identified that served as outcome variables; (1) the perceived ability to provide nursing care; (2) the perceived ability to effectively communicate with children in different generations; (3) the perceived ability to provide an income for the household, and (4) the perceived ability to take time to relax. An overview of the psychological measures, including sample items and the Cronbach's alpha, is presented in Table 1.

[Table 1 about here]

Data analysis

In the main analyses, bivariate correlations were calculated for the psychosocial variables. As eighteen interviewers were responsible for data collection, all participants were nested within a certain interviewer. To control for possible influences of the interviewer on the individual's responses, linear mixed model analyses were conducted to determine for each of the four dimension of perceived caring ability the unique contribution of significant ($p < .05$) univariate correlates,

with interviewer included as random effect variable. Furthermore, to control for possible differences between the two study sites, significant correlate x site interactions were included in the mixed model analyses. Subsequently simple effect analyses were conducted to determine for each site the influence of the correlate on the specific dimension of perceived ability. A 5% significance level was observed throughout.

Results

Demographics

Most of the participants were female (N = 344; 85.8%), widowed (N = 211; 52.6%) and between 60 and 69 years of age (N = 184; 45.9%). About half of the participants (N = 199; 49.6%) went to school, of which 148 (74.4%) completed only primary school. The majority of older persons (N = 261; 65.1%) had to manage with a monthly income between 500 and 1000 South African Rand (approx. between 60 and 120 USD at the time of our research). For most participants (N = 291; 72.6%), the old age government grant of 740 South African Rand per month (approx. 89 USD) was the main source of income.

Care-giving Details

On average, elders cared for 4.65 children and grandchildren (range 1 – 16). In total, 118 (29.4%) caregivers cared for only grandchildren and 11 (2.7%) provided care for only adult children. The majority of 224 (55.9%) caregivers cared for both grandchildren and adult children, and 46 (11.4%) caregivers also cared for other dependents, such as grandchildren or adult children of relatives or neighbours.

Correlates of perceived abilities related to providing care

Means, standard deviations and inter-correlations of the study measures are shown in Table 2. On the outcome measures, the highest mean score was found for

the perceived ability to communicate with children and grandchildren, followed by the ability to provide nursing care and the ability to relax. The lowest mean score was found for the older person's perceived ability to provide an income.

[Table 2 about here]

Table 3 displays the estimates of fixed effect (β), standard error (SE), and explained variance (R^2) for each dimension of perceived caring ability.

[Table 3 about here]

Perceived ability to provide nursing care

To explain the variance in providing nursing care, unique contributions were found for knowledge on accessing grants, personal norm towards providing care, attitude towards people living with HIV or AIDS, perceived care burden, and subjective norm towards providing care. Higher scores on these variables were related to more positive perceptions of the ability to provide nursing care. In addition, significant interactions between site of study and personal norm towards providing care, knowledge on accessing grants, and perceived behavioural control over providing nursing care were found respectively. Simple effect analyses showed that among those living in Uitenhage personal norm towards providing care ($\beta = .21$; SE = .04; $p < .001$) and knowledge on accessing grants ($\beta = .20$; SE = .04; $p < .001$) were positively associated with the ability to provide nursing care, whereas in Motherwell no significant associations were found for both concepts ($\beta = -.14$; SE = .08; $p > .05$ and $\beta = -.02$; SE = .04; $p > .05$, respectively). Furthermore, the interaction pattern between site and perceived behaviour control over providing nursing care showed a positive relation to the perceived ability to provide care in Motherwell ($\beta = .17$; SE = .06; $p < .01$), whereas in Uitenhage no significant relationship was found ($\beta = -.01$; SE

= .06; $p > .05$). The total model explained 41% of the total variance in perceived ability to provide nursing care.

Perceived ability to communicate effectively with dependents

The perceived ability to communicate with dependents was explained with unique contributions from attitude towards communication, attitude towards people living with HIV or AIDS, perceived behaviour control over providing nursing care, knowledge on accessing grants and subjective norm towards providing care. Higher scores on these variables were associated with higher scores in the outcome variable. Furthermore, the association between knowledge on accessing grants and perceived ability to communicate effectively with dependents differed for Motherwell and Uitenhage. In Uitenhage knowledge on accessing grants was found to be significantly correlated with the ability to communicate effectively with dependents ($\beta = .06$; $SE = .02$; $p < .01$), whereas in Motherwell no significant association was found ($\beta = -.02$; $SE = .02$; $p > .05$). The total model explained 49% of the variance in the perceived ability to effectively communicate with dependents.

Perceived ability to provide income

A higher perceived ability to provide income was associated with a more negative attitude towards people living with HIV or AIDS, a more positive attitude towards communication, a more positive personal norm towards providing care, a higher knowledge on accessing grants, and a more positive subjective norm towards providing care. Furthermore, interactions with site were found for perceived feelings of helplessness, attitude towards people living with HIV and AIDS, perceived responsibility to provide income, and knowledge on accessing grants. In Motherwell, perceived feelings of helplessness ($\beta = .29$; $SE = .14$, $p < .05$), and perceived responsibility to provide income ($\beta = .23$; $SE = .07$, $p < .01$) were positively

associated with the perceived ability to provide income. In Uitenhage no significant associations were found for both concepts ($\beta = -.13$; $SE = .08$; $p > .05$ and $\beta = .01$; $SE = .05$; $p > .05$). In Uitenhage, attitude towards people living with HIV and AIDS was negatively related to perceived ability to provide income ($\beta = -.29$; $SE = .06$, $p < .001$), which was not found in Motherwell ($\beta = .09$; $SE = .09$; $p > .05$). Finally, in Motherwell, knowledge about accessing grants was negatively associated with perceived ability to provide income ($\beta = -.08$; $SE = .03$, $p < .05$), while in Uitenhage the association was positive ($\beta = .06$; $SE = .03$, $p < .05$). Forty-one percent of the variance in perceived ability to provide income could be explained by the correlates in the model.

Perceived ability to relax

Attitude towards communication, perceived responsibility to provide income, perceived behaviour control over providing nursing care, attitude towards relaxation, subjective norm towards providing care, and knowledge on accessing grants uniquely contributed to the prediction of perceived ability to relax. In addition, interaction effects were found between site and, respectively, attitude towards communication, perceived responsibility to provide income, perceived behaviour control over providing nursing care, and knowledge on accessing grants. In both Motherwell ($\beta = .12$; $SE = .09$, $p > .05$) and Uitenhage ($\beta = -.20$; $SE = .10$, $p > .05$), attitude towards communication was not significantly related to perceived ability to relax. In Uitenhage, both perceived behaviour control over providing nursing care ($\beta = .16$; $SE = .05$, $p < .001$) and knowledge on accessing grants ($\beta = .15$; $SE = .03$, $p < .001$) were positively associated with perceived ability to relax; whereas attitude towards providing income was negatively related to perceived ability to relax ($\beta = -.22$; $SE = .07$, $p < .001$). In Motherwell, no significant associations were found between

perceived behaviour control over providing nursing care ($\beta = .00$; $SE = .04$, $p > .05$), knowledge on accessing grants ($\beta = .03$; $SE = .03$, $p > .05$), attitude towards providing income ($\beta = .05$; $SE = .06$, $p > .05$) and perceived ability to relax. The total model accounted for 37% of the variance in perceived ability to relax.

Discussion

In the present study, theoretical psychosocial constructs such as attitudes, perceived behaviour control over providing nursing care, personal and subjective norms towards providing care and knowledge on accessing grants were important predictors across the four ability dimensions. In addition, different correlates emerged for the different dimensions of caring ability that were explored. The most important predictors of caregivers' perceived ability to provide nursing care were more knowledge on accessing grants and a more positive personal norm towards providing care. Perceived ability to communicate effectively with children and grandchildren was predicted most strongly by a more positive attitude towards communication. A more negative attitude towards people living with HIV or AIDS and a more positive attitude towards communication were the primary predictors for perceived ability to provide income. Only in Motherwell feelings of helplessness were positively associated with perceived ability to provide income. The main predictors of perceived ability to relax were a more negative attitude towards communication, lower perceived responsibility to provide income and a higher perceived behaviour control over providing nursing care.

Somewhat counterintuitive was the finding that a more negative attitude towards people living with HIV or AIDS contributed to a higher perceived ability to provide income. This finding could possibly be explained by the impact that interpersonal or environmental variables have on the ability to provide income.

Factors such as for example a bad relationship between the sick person and the caregiver, the reason why the older person took on the care-giving role (Nyambedha, Wandibba, & Aagaard-Hansen, 2003) or fear of disclosure and stigma from the community (Moore, 2008; Mwinituo & Mill, 2006) could have possibly contributed to a more negative attitude towards people living with HIV or AIDS. However these factors might not be restricting an older person's ability to provide income, especially when support from family or community members (Orner, 2006) is available. A negative attitude towards people living with HIV and AIDS could on the other hand also lead to social exclusion of the person infected with HIV as well as the family caregiver (Mwinituo & Mill, 2006), resulting in less support from the community. The counterintuitive finding that a more negative attitude towards communication and a more negative attitude towards providing income contributed to higher perceived ability to relax could possibly be explained by older people not perceiving themselves responsible to provide income and to communicate effectively with children and grandchildren and therefore allow themselves time to relax.

Overall, by determining the relative importance of social cognitive constructs in understanding care-giving related behaviours these findings add relevant information to existing research that mostly used qualitative study designs to determine the needs, consequences and challenges of older caregivers (e.g. Boon et al., 2009a; Schatz & Ogunmefun, 2007; Ssengonzi, 2007; Ssengonzi, 2008; Williams & Tumwekwase, 2001). Nevertheless one should be cautious in generalising the findings to other populations as this study was conducted among a convenience sample of older people in the Eastern Cape of South Africa. More case studies are needed to confirm our findings and extend the current knowledge base of psychosocial correlates of the ability to provide home care in the context of HIV and

AIDS. Furthermore, the differences in findings we found between demographically comparable sites emphasise the importance of a detailed needs assessment and analysis of important predictors of outcome variables for every new study context. In addition to differences between sites, differences might also be found within sites among subpopulations, for example when comparing grandparents caring for only grandchildren versus grandparents caring for both adult and grandchildren.

To conclude, this study has improved the understanding of the most important variables impacting on the care-giving ability of older people in the context of HIV and AIDS. By providing a core list of possible intervention targets (e.g. attitudes, personal norms towards providing care, perceived behaviour control over providing nursing control and knowledge on accessing grants) it provides valuable information for the systematic design and evaluation of educational interventions to assist older people in coping with their care-giving concerns.

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Table 1: Overview of scale measures

Measure	Example	Scale	Number of items	Cronbach's alpha (α)
1. Perceived ability to provide nursing care	I am able to... - get my sick child out of bed - make sure my sick child takes his/her medication in time	1 = Definitely no 2 = No 3 = I don't know 4 = Yes 5 = Definitely yes	8	.91
2. Perceived ability to communicate effectively with dependents	I am able to... - listen to what my children have to say - ask my children about their daily activities	1 = Definitely no 2 = No 3 = I don't know 4 = Yes 5 = Definitely yes	7	.78
3. Perceived ability to provide income	I am able to... - meet the financial commitments of the family - apply for a grant for my child or grandchild	1 = Definitely no 2 = No 3 = I don't know 4 = Yes 5 = Definitely yes	8	.81
4. Perceived ability to relax	I am able to... - sit down and do something for myself - talk to someone about my worries	1 = Definitely no 2 = No 3 = I don't know 4 = Yes 5 = Definitely yes	6	.80
5. Perceived care burden*	Do you have to... - give your child a bath or a wash? - help your grandchild or other children with their homework? If yes, how much of a burden is this for you?	1 = yes 0 = no 1 = no burden at all 2 = not so much of a burden 3 = a heavy burden	29	.97
6. Perceived behaviour control over daily care activities	How easy or difficult do you find it to... - cheer up your child when he/she is feeling sad? - provide enough food for your family?	1 = difficult 2 = not so easy 3 = easy	6	.80
7. Perceived feelings of helplessness	How often do you feel helpless when... - your child is feeling sad? - you want to help your child solve his/her problems?	1 = never 2 = sometimes 3 = often	6	.73
8. Self care	How often do you... - talk about your care-giving difficulties to other elderly parents who are also caring for children or grandchildren - manage to relax yourself	1 = never 2 = sometimes 3 = often	3	.62
9. Attitude towards people living with HIV or AIDS	- Would you use the same toilet as someone who is infected with HIV? - If you knew the person who is selling food is infected with HIV, would you buy food from him/her	1 = definitely no 2 = no 3 = I don't know 4 = yes 5 = definitely yes	6	.69
10. Attitude towards communication	How important is it for you to... - listen to what your children have to say? - talk to your children in a language they understand?	1 = not important at all 2 = not important 3 = I don't know 4 = important 5 = very important	8	.78
11. Perceived	I feel that it is easy to...	1 = strongly disagree	6	.93

behaviour control over providing nursing care	- bath my sick child - give my sick child medications every day	2 = disagree 3 = neither agree, nor disagree 4 = agree 5 = strongly agree		
12. Perceived responsibility to provide income	- It is my responsibility that all household members can eat - It is my responsibility to apply for my child's grant	1 = strongly disagree 2 = disagree 3 = neither agree, nor disagree 4 = agree 5 = strongly agree	5	.84
13. Attitude towards relaxation	- Relaxing is an essential part of care-giving - I deserve to take time for myself	1 = strongly disagree 2 = disagree 3 = neither agree, nor disagree 4 = agree 5 = strongly agree	4	.93
14. Personal norm towards providing care	I feel it's my moral duty to... - provide the family with a meal every day - make sure my child or grandchild is happy	1 = strongly disagree 2 = disagree 3 = neither agree, nor disagree 4 = agree 5 = strongly agree	5	.95
15. Subjective norm towards providing care*	<i>Perceived expectations of others:</i> Do the people around you such as family members and friends expect you to... - tell your children about HIV and AIDS? - provide nursing care to your sick child? <i>Motivation to comply to:</i> - your children - your grandchildren	-2 = definitely no -1 = no 0 = I don't know 1 = yes 2 = definitely yes 1 = not important at all 2 = not important 3 = I don't know 4 = important 5 = very important	8	.87
16. Knowledge on HIV and AIDS	- A healthy looking person can be infected with HIV - HIV can be prevented by an injection or pill for family planning	1 = correct 0 = incorrect	10	
17. Knowledge on accessing grants	- A woman can apply for a state pension when she is 65, a man when he is 60 - It is possible to apply for a grant-in-aid in addition to an old age pension	1 = correct 0 = incorrect	6	

* The scale consisted of two subscales which were multiplied into one scale score

Table 2: Bivariate correlations between study variables (N = 401)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Perceived ability to provide nursing care	-																
2 Perceived ability to communicate effectively with dependents	.57***	-															
3 Perceived ability to provide income	.55***	.50***	-														
4 Perceived ability to relax	.56***	.56***	.57***	-													
5 Perceived care burden	.11*	-.12*	.12*	-.09	-												
6 Perceived behaviour control over daily care activities	.15**	.18***	.08	.22***	-.20***	-											
7 Perceived feelings of helplessness	-.01	-.19***	-.13*	.02	.04	.17***	-										
8 Self-care	.08	.05	.12*	.06	.07	.10	.02	-									
9 Attitude towards people living with HIV or AIDS	.39***	.46***	.26***	.34***	-.07	.10*	-.18***	.09	-								
10 Attitude towards communication	.39***	.60***	.39***	.33***	-.06	.13**	-.24***	-.01	.34***	-							
11 Perceived behaviour control over providing nursing care	.45***	.37***	.38***	.40***	.08	.06	-.02	-.02	.12*	.28***	-						
12 Perceived responsibility to provide income	.29***	.28***	.48***	.32***	.01	-.03	-.19***	-.14**	.14**	.35***	.59***	-					
13 Attitude towards relaxation	-.06	-.03	.26***	.17***	.03	-.14**	-.15**	.02	.05	-.02	.19***	.36***	-				
14 Personal norm towards providing care	.28***	.22***	.40***	.25***	.08	-.06	-.11*	-.02	.12*	.27***	.43***	.59***	.22***	-			
15 Subjective norm towards providing care	.55***	.57***	.56***	.60***	-.01	.18***	-.11*	.10	.49***	.42***	.22***	.25***	.11*	.26***	-		
16 Knowledge on HIV and AIDS	.26***	.35***	.25***	.29***	-.10*	.22***	-.05	.09	.37***	.32***	.00	.09	.02	.10*	.42***	-	
17 Knowledge on accessing grants	.31***	.23***	.17***	.27***	.20***	.09	-.04	.14**	.24***	.13**	.22***	.01	-.12*	.05	.19***	.13**	-
Mean	3,94	4,11	3,67	3,93	2,07	1,76	1,73	3,88	4,47	3,61	4,03	3,90	4,39	4,18	2,14	3,61	2,92
Standard deviation	0,82	0,53	0,70	0,66	0,29	0,53	0,38	0,53	0,40	1,03	0,76	0,92	2,88	0,85	0,38	2,81	1,17
Minimum	1	1	1	1	1	1	1	1	1	1	1	1	-10	1	1	0	0
Maximum	5	5	5	5	3	3	3	5	5	5	5	5	10	5	3	10	6

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 3: Estimates of fixed effects for the ability to provide care, communicate, provide income and relax (controlled for random effect of interviewer)

Perceived ability to:	Provide nursing care	Communicate effectively with dependents	Provide income	Relax
	Beta (SE)	Beta (SE)	Beta (SE)	Beta (SE)
Intercept	3.96 (.14)	4.14 (.07)	3.66 (.13)	3.91 (.11)
Study site	-.10 (.19)	-.10 (.10)	-.05 (.18)	.01 (.16)
Perceived care burden	.11 (.04)**	-.02 (.03)	.05 (.03)	
Perceived behaviour control over daily care activities	-.03 (.06)	-.02 (.04)		-.02 (.05)
Perceived feelings of helplessness		-.04 (.06)	-.13 (.09)	
Interaction with study site			.44 (.16)**	
Attitude towards people living with HIV or AIDS	.13 (.06)*	.10 (.04)*	-.31 (.07)***	-.08 (.05)
Interaction with study site			.43 (.10)***	
Attitude towards communication	-.04 (.08)	.32 (.05)***	.16 (.07)*	-.20 (.09)*
Interaction with study site				.32 (.13)*
Perceived behaviour control over providing nursing care	.01 (.05)	.07 (.03)**	.02 (.03)	.17 (.05)***
Interaction with study site	.21 (.06)**			-.17 (.06)**
Perceived responsibility to provide income	-.02 (.05)	-.02 (.03)	.01 (.05)	-.19 (.06)***
Interaction with study site			.21 (.07)**	.21 (.08)*
Attitude towards relaxation			.02 (.03)	.13 (.03)***
Personal norm towards providing care	.18 (.04)***	.00 (.02)	.06 (.03)*	.05 (.03)
Interaction with study site	-.27 (.08)***			
Subjective norm towards providing care	.07 (.01)***	.03 (.01)***	.06 (.01)***	.05 (.01)***
Knowledge on HIV and AIDS	.00 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Knowledge on accessing grants	.20 (.04)***	.06 (.02)*	.06 (.03)*	.14 (.03)***
Interaction with study site	-.24 (.05)***	-.08 (.03)*	-.14 (.04)***	-.10 (.04)*
R ²	.41	.49	.41	.37

* p < .05 ** p < .01 *** p < .001