Modelling the "roles" of Environmental Factors on Activities and Participation domains

12 – 18 October 2013
Beijing, China

Poster Number
WHO/CTS to insert

Laura Rizzi[1], Sara Anzilutti[1], Lucilla Frattura[2]
[1] University of Udine, Department of Economics and Statistics
[2] Central Health Directorate, Classification Area, Friuli Venezia Giulia Region, IT WHO-FIC CC, Udine

Abstract Logit models (applied separately to the 213 sampled patients and to the subsamples) allowed to analyse the probability of specific "roles" of the more coded Environmental Factors (EF) within the Activities and Participation (AP) domains. These "roles" were based on particular conditions related to the AP qualifiers. The statistical analysis pointed out the effect of gender and group on the probability of the EF specific roles, controlling for the grouped structure of data.

Introduction

In 2011, a field trial using a new electronic ICF-based functioning/disability assessment protocol (VILMA/FABER) was carried out in the Friuli Venezia Giulia Region. The protocol organized the collection of information useful to analyse the interaction between the person and the environment by adopting the ICF and its version for children and youth (ICF-CY). In this present study, generalized linear models were estimated to analyse different "roles" of some Environmental Factors (EF) within the Activities and Participation (AP) domains.

Methods & Materials

The whole enrolled sample of 213 outpatients and two subsamples, the 53 patients aged less than 18 and the 51 patients in charge to mental health services (MHS), were considered separately in the analysis. After an exploratory analysis on the coded EF, generalized linear models were used to evaluate the probability of some particular "roles" for the our most coded EF. These singled out "roles", based on specific conditions (events) related to the AP qualifiers, were: *real facilitator* (when the EF had a qualifier equal to 3 or 4), *real barrier* (when the EF had a qualifier equal to .3 or .4), *relative facilitator*, (when the performance qualifier was smaller than the capacity qualifier, given the EF coded as facilitator), *absolute facilitator* (when the performance qualifier was equal to 4 while the capacity one was larger than 0, given the EF coded as facilitator) and *not improving environmental factor* (when the performance qualifier was larger than the capacity qualifier, given the EF coded) (see Table 1).

Table 1 – Types of EF roles, defined by conditions on qualifiers in performance and capacity items, and their frequencies by EF

Role of EF	Condition/event	Frequency			
		e310	e110	e355	e575
Real facilitator	Only qualifiers 3 or 4	1574 (24.9%)	260 (17%)	559 (23.3%)	670 (23.8%)
Real barrier	Only qualifiers .3 or .4	54 (0.9%)	15 (1%)	1 (0.0%)	4 (0.1%)
Relative facilitator	Performance qualifier smaller than capacity qualifier, given EF cited as facilitator	2690 (42.6%)	863 (56.5%)	1272 (52.9%)	1365 (48.4%)
Absolute facilitator	Performance qualifier 0 with capacity qualifier greater than 0, given EF cited as facilitator	1427 (22.6%)	236 (15.5%)	371 (15.4%)	562 (19.9%)
Not improving environmental factor	Performance qualifier greater or equal to the capacity qualifier, given EF cited	567 (9%)	153 (10%)	201 (8.4%)	218 (7.7%)

The probability of the conditions/events described in Table 1 were studied by logit models, estimated separately for the four most cited EF and for the five coded EF roles. Logit models allowed us to analyse the effect on the probability of each role of individual characteristics such gender (male=1) and group (younger patients=1, patients in charge of mental services=2, other patients as base category). These models were estimated on single item responses as units of observation.

To consider the grouped structure of AP items inside domains and to assess the heterogeneity of the roles' probability across them, relative dummy variables were included in the linear predictors (chapter d9 as base category), leading to the following logit models:

$$log\left(\frac{\pi_{Ri}}{1-\pi_{Ri}}\right) = \beta_0 + \beta_1 S_i + \sum_{g=1}^{2}\alpha_g G_{g,i} + \sum_{d=1}^{8}\gamma_d D_{d,i} + \varepsilon_i$$

Where $\pi_{R,i}$ was the probability of the EF role/event (R) in the item response i, S_i was the dummy for sex, $G_{g,i}$ were the 2 dummies for the group (with $g=1,2$) and $D_{d,i}$ were the dummies for domains (with $d=1,...,8$). A different model was estimated for each of the five roles in Table 1.

Results

Globally, the coded EF related to AP categories were 14,765, 4,343 for the group of patients younger than 18 and 3,387 for the group of MHS patients.
The most cited EF were: e310 immediate family (3,431), e575 general social support services, systems and policies (1,609), e355 health professionals (1,477), e340 personal care providers and personal assistants (1,395) and e110 products or substances for personal consumption (1,338). In the group of patients younger than 18 years, the most cited EF were: e310 immediate family (1,319), e575 general social support services, systems and policies (496), e355 health professionals (349), e580 health services, systems and policies (308) and e360 other professionals (250). In the group of MHS patients, the most cited EF were: e110 products or substances for personal consumption (743), e355 health professionals (702), e580 health services, systems and policies (416), e340 personal care providers and personal assistants (292) and e310 immediate family (288). The analysis of the particular roles of the most cited EF, through logit models, pointed out manifold results.
The role of real facilitator was significantly more likely covered: (a) by the e355 in both the subgroups and for the items of AP chapters d5, d6 and d8; (b) by e110 for the MHS subgroup and for items of chapter d2; (c) by e575 for the MHS subsample and for items of chapter d8.

Table 2 – Estimated OR (odds ratios) for sex, group and AP chapter – *relative facilitator*

Variables	e310	e110	e355	e575
Males	1.49***	0.99	1.29	1.78***
Younger than 18	1.20*	1.27	0.80	1.67**
MHS patients	1.07	4.79***	1.57***	2.45***
d1	0.32***	2.40**	0.76	0.70
d2	0.61**	2.04**	0.57	0.84
d3	0.32***	2.42	0.53	0.46***
d4	0.49***	3.85***	2.35**	0.79
d5	0.86	2.75**	2.24***	1.22
d6	1.00	3.59	0.52	1.84*
d7	0.47***	2.62	0.64	0.40***
d8	0.72*	2.00	1.04	1.00

The role of real barrier was significantly more likely only for two EF: (a) e310 for the MHS patients and for the items of chapters d1, d2, d3 and d7; (b) e110 in both the subsamples and for items of chapter d4. The role of relative facilitator and absolute facilitator resulted more likely for the e310 among males, while the e110 and the e355 played only the role of relative facilitator among MHS patients (see Table 2 and Table 3). No one of the four considered EF played the role of not improving EF in relation to the subgroups of younger, of MHS patients and of males (see Table 4).

Table 3 – Estimated OR (odds ratios for sex, group and AP chapter - *absolute facilitator*

Variables	e310	e110	e355	e575
Males	1.27**	1.24	1.01	0.99
Younger than 18	0.90	0.31***	0.61**	0.48***
MHS patients	0.26***	0.08	0.88	0.31***
d1	0.09***	838309	0.53**	0.13***
d2	0.28***	810758	0.64*	0.49***
d3	0.14***	4.87***	1.09	0.15***
d4	0.44***	3.43***	1.28	0.52**
d5	2.14***	4.41***	2.68***	2.73***
d6	2.37***	7.11***	1.62*	2.18***
d7	0.30***	1.56*	0.64*	0.30***
d8	1.28	605126	0.88	1.22

Table 4 – Estimated OR (odds ratios) for sex, group and AP chapter - *not improving environmental factor*

Variables	e310	e110	e355	e575
Males	0.72***	1.15	0.78	0.57***
Younger than 18	0.86	0.73	1.21	0.63**
MHS patients	0.78	0.28***	0.64**	0.39***
d1	2.02***	0.50*	1.35	1.22
d2	1.29	0.50**	1.79	1.05
d3	2.29***	0.66	1.94	1.98**
d4	1.41*	0.51*	0.45**	1.08
d5	0.76*	0.38**	0.44***	0.65*
d6	0.66*	0.38	1.96	0.49*
d7	1.55*	0.52	1.65	2.34**
d8	1.07	0.67	0.98	1.06

Conclusions

Beyond the manifold results, our analysis mainly pointed out that the role of real facilitator was significantly more likely covered by the e355 (health professionals) within subgroups. While EF e310 (immediate family) and e110 (products or substances for personal consumption) resulted more likely real barrier, in the subgroup of the MHS patients. Finally the roles of relative facilitator and absolute facilitator resulted more likely for the e310. among males.

References

1. Frattura et al, ICF implementation in regional policies: the case of the Friuli Venezia Giulia Region, Italy, Who-FIC Network Annual Meeting, Cape Town 2011

Acknowledgements

DIGITAL, MOBILE, NOW!

Scan this to get a digital version