A Cross-Cultural Analysis of Relationships between Disability Self-Evaluation and Individual Predisposition to Use Assistive Technology

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Abstract – The main hypothesis of this work is that the disability selfrepresentation could be related to individual coping strategies and to assistive technology predisposition.
The WHODASII, Endler and Parker's CISS, and Scherer's MPT-SOTU were administered to two samples of 100 University students with disability in Italy and U.S.A., in order to allow a cross-cultural comparison.
The WHODAS II is a psychometric tool that let the selfevaluation of disability to be scored: both the English and the Italian version of the instrument were supplied by the WHO. The Coping Inventory for Stressful Situations was administered according to the current English and Italian versions. As regards the individual's predisposition of technology use, we administered the SOTU, *Survey of Technology Use*.
By data analysis the first step was the verification of the Italian adaptation of the English tests versions by comparing the factorial structures of the 2 versions through the Everett test.
Afterward the relationships between the three measures were computed on the 2 samples and differences in correlation amplitudes were also evaluated.
Results generally confirm the hypothesis notwithstanding interesting cross-cultural differences, supplying suggestions for training professional counselors (enabling managers) for university students with disability.

Introduction

The *World Health Organization – Disability Assessment Schedule* has been revised as WHODAS II a psychometric measure (36-item, interviewer administered) which provides a profile of functioning across six activity domains ("*Understanding and communicating*", "*Getting around*", "*Self care*", "*Getting along with people*", "*Life activities*", and "*Participation in society*") as well as a general disability score. Respondents are asked to state the level of difficulty experienced, while taking into consideration how they usually do the activity, including the use of any assistive device and/or help of a person.
While performing, on behalf of the WHO, a standardization of WHODAS II on a university student population, we have designed a cross-cultural research project on the university life of students with disabilities enrolled in Italian and American universities. Related to this research, we are investigating. personal factors affecting the selection, use, and outcomes of technology use as well as coping strategies students with disabilities adopt in university environments..

Both topics are included in a common field of research, shared by "*The Institute for Matching Person & Technology – (USA)*" and the "CIRID – *Interdisciplinary Research Centre on Disability and Technologies for Autonomy – University of Rome 'La Sapienza'* ", in order to develop and disseminate the "biopsychosocial" disability model promoted by the *International Classification of Functioning, Disability, and Health – ICF* (WHO, 2001).
The "biopsychosocial" model originated at the University of Rochester (NY) Medical Center (Frankel, Quill & McDaniel, 2003) and is based on an integration of the "medical" and the "social" models.
The ICF has succeeded in introducing a classification of the environmental factors correlated with health conditions and individual functioning. The ICF not only offers a multidimensional model of disability, which is defined as an outcome of a complex relationship among body structures and functions, as well as environmental and personal factors, but much more it provides, in an operational way, a systematic coding scheme for environmental factors as well.
Without discarding the assumptions of the medical model, the ICF has strictly connected environmental factors, as potential disabling causes, with individual functioning as allowed by health conditions. Moreover, from the perspective of the medical model, the ICF embraced the concept of "neutrality" in both an etiological and terminological sense. In the first sense, neutrality points out that (except in few instances) the relationships between health conditions and experienced disability are not predictable and, therefore, there is not any hierarchical precomprehension of disability manifestations. From a terminological point of view, neutrality refers to the adoption of non-discriminant terms in the classification.
Even though the ICF has incorporated the social and medical models in the international policies of the WHO, the consideration of the third dimension, that is the personal one, is still lacking. The personal factors, as a component of contextual factors, are still not classified in the ICF «because of the large social and cultural variance associated with them» (ICF, § 3.2). Therefore, the psychological dimension of the model is lacking a systematic tool for an operational coding.
In this framework we aim to offer a contribution that allows personal factors to be implemented in the model according to the ICF perspectives.

Hypothesis
The main hypothesis of this work is that the disability self-representation could be related to individual coping strategies and to assistive technology predisposition.

Method
The WHODAS II, Endler and Parker's CISS, and Scherer's MPT-SOTU were administered to two samples of 100 University students with disabilities in Italy and in various regions of the U.S.A. in order to allow a cross-cultural comparison.
The WHODAS II is a psychometric tool that scores respondents' self-evaluation of disability: both the English and the Italian versions of the instrument were supplied by the WHO. The *Coping Inventory for Stressful Situations* (Endler & Parker, 1999) was administered according to the current English and Italian

versions. As regards the individual's predisposition of technology use, we administered the SOTU, *Survey of Technology Use*.

Data analyses

On the complete sample of 100 Italian students with disabilities and 100 U.S. students with disabilities; 100 Italian students without disabilities and 100 U.S. students without disabilities (as controls) the following analyses will be computed.
The first step of the data analyses will be the verification of the Italian adaptation of the WHODAS II and of the SOTU by computing exploratory factor analyses (Principal Component Analyses). For selecting factors, the scree test suggested by Cattel will be followed. The relevant factors resulting from these analyses will be compared through the Everett test to that resulting from the same analyses conducted on the English version.
The relationships between the WHODAS II, the SOTU and the CISS will then be computed, separately on the Italian and English samples, and differences in the correlations evaluated.
Here only preliminary results obtained from 21 students with a disability and 58 respondents from the general student population will be presented. Since they are less than 100 subjects, factor analyses have not yet been computed.
As a measure of the reliability of the scales, Chronbach's alpha was computed for the WHODAS II, considering both samples together.
The hypothesis that the self-representation of students with disabilities could be related to individual coping strategies and to assistive technology predisposition was tested by computing Pearson correlation coefficients between the measures.

Preliminary Results

The following results are preliminary only as they are based only on part of the total sample.
Chronbach's Alpha for each of the 6 sections of the WHODAS II are as follows:

Sections	**Cronbach Alpha**
1. Understanding and Communicating	.73
2. Movements	.83
3. Personal care	.87
4. Interacting with others	.69
5. Daily activities	.88
6. Social life	.79

Since all alphas are satisfactory, 6 scores were computed.
Correlation coefficients between WHODAS II scores and SOTU scores were computed (see table 1). The following significant correlations were found. The *movements* score was negatively related ($r=-.252$; $p<.05$; $N_{(valid)}= 68$) to the experiences of *indifference* toward the technologies used (1.I scale of the SOTU). The

Personal care score was negatively related to the total *Personal characteristics* evaluated as neutral (r=-.247; p<.05; $N_{(valid)}$= 68; 4.I scale of the SOTU) and positively related (r=.237; p<.05; $N_{(valid)}$= 68) to the *personal characteristics* evaluated negatively (4.N scale of the SOTU). The *Interacting with others* score was negatively related to the *Personal characteristics* evaluated positively (r=-.300; p<.05; $N_{(valid)}$= 68; 4.P scale of the SOTU), positively related to the *Personal characteristics* evaluated negatively (r=.325; p<.05; $N_{(valid)}$= 68; 4.N scale of the SOTU) and to the negative evaluation of the *Use of technologies* (r=.264; p<.05; $N_{(valid)}$= 68; Total Negative scale of the SOTU). The *Social life* score of the WHODAS II was positively correlated with the positive *Experiences with the technologies* used (r=.354; p<.05; $N_{(valid)}$= 68; 1.P scale of the SOTU) and negatively correlated with the experiences of indifference with the technologies used (r=-.379; p<.05; $N_{(valid)}$= 68; 1.I scale of the SOTU) and with the attitudes of indifference towards the use of technologies (r=-.258; p<.05; $N_{(valid)}$= 68; Total Indifferent scale of the SOTU).

Table 1: Correlation coefficients (Pearson) between WHODAS II scores and SOTU scores. Only the SOTU Categories significantly correlated to WHODAS are reported.

SOTU		WHODAS 1. Understanding/ Communicating	2. Movements	3. Personal Care	4. Interacting with Others	5. Daily Activities	6. Social Life
1. Experiences with Current Technologies	POS.	,214	,171	,060	,181	,171	**,354***
	IND.	-,218	**-,252***	-,191	-,190	-,223	**-,379***
	NEG.	-,067	,087	,188	-,037	,060	-,032
4. Personal/ Social Characteristics	POS.	-,056	-,048	,054	**-,300***	,008	,032
	IND.	,079	-,088	**-,247***	,164	-,107	-,153
	NEG.	,009	,127	**,237***	**,325***	,112	,118
SOTU Total Score	POS.	-,049	,092	,065	-,197	,036	,207
	IND.	,036	-,146	-,191	,052	-,079	**-,258***
	NEG.	,021	,103	,200	**,264***	,045	,063

***=p<.05**

Correlation coefficients between the CISS scores and the SOTU scores (see table 2) and between WHODAS II scores and the CISS scores were also computed. Significant correlations evidenced by the analyses are the following. The *task*-oriented coping score is positively related to the positive evaluation of the use of technologies (r=.266; p<.05; $N_{(valid)}$= 57; T_P scale of the SOTU) and negatively related to the negative evaluation of the use of technologies (r=-.258; p<.05; $N_{(valid)}$= 57; Total Negative scale of the SOTU). The *emotion*-oriented coping score is positively related to the positive evaluation of the experiences with technologies (r=.459; p<.05; $N_{(valid)}$= 61; 1.P scale of the SOTU) and to the negative evaluation of the *Personal characteristics* (r=.338; p<.05; $N_{(valid)}$= 61; 4.N scale of the SOTU) while is negatively related to the experiences of indifference with the use of technologies (r=-.417; p<.05; $N_{(valid)}$= 57; 1.I scale of the SOTU).

Table 2: Correlation coefficients (Pearson) between CISS scores and SOTU scores. Only the SOTU Categories significantly correlated to CISS are reported.

SOTU		CISS		
		1. Task	2. Emotion	3. Avoidance
1. Experiences with Current Technologies	POS.	,182	**,459***	,050
	IND.	-,115	**-,417***	-,204
	NEG.	-,152	-,201	,189
4. Personal/ Social Characteristics	POS.	,223	-,229	,012
	IND.	-,195	,014	-,098
	NEG.	-,117	**,338***	,089
SOTU Total Score	POS.	**,266***	,006	,005
	IND.	-,109	-,135	-,140
	NEG.	**-,258***	,162	,163

***=p<.05**

Furthermore, the *task*-oriented coping score was significantly and negatively correlated with the *Understanding and communicating* score of the WHODAS II ($r=-.284$; $p<.05$; $N_{(valid)}= 65$).

Concluding remarks

At present, the preliminary results coherently confirm our general hypothesis about the relationship among disability self-representation, coping strategies and predispositions to technology use.

In particular:

- *task*-oriented coping strategies are positively related to a positive evaluation of use of technologies (SOTU), and negatively related to disinterest in or indifference toward the use of technologies (SOTU) and to cognitive concentrating and communicating abilities (WHODAS II);
- *emotion*-oriented coping strategies are positively related to a positive evaluation of experiences with technologies (SOTU) and to a negative evaluation of *Personal characteristics* (SOTU), and negatively related to disinterest in or indifference toward the use of technologies (SOTU);
- Moreover it appears quite evident that the dimensions of the WHODAS II, as a tool assessing different dimensions of personal disability, are related and perhaps might predict individual coping strategies and personal predispositions to technology use.

This research supplies some suggestions for training professional counselors (*enabling manager*) to university students with disability. Moreover, on the basis of our results it will be possible to understand if training in technology use is needed when students with disability when they enroll at the university. By means only the new international disability measurement WHODAS II it will be possible to predict how students with different score in health and health-related domains cope with the university environment and how they face technological supports and educational technology devices.

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