

TESTING INTERNATIONAL

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PRESIDENTS LETTER



Dear ITC members and friends,

I am very happy to be able to provide an update of the work of the ITC after its noticeable presence during the 11th European Congress of Psychology from July 7-10, 2009 in Oslo, Norway. At this conference, a separate strand was developed by the ITC in cooperation with EFPA's Standing Committee on Tests and Testing and this strand of the program contained many papers, symposia and other test-related events. I believe it was an excellent contribution to the science and practice of testing by the ITC and I want to thank all of those who contributed.

The 2010 General Meeting of the Membership of the ITC

Full, affiliate, and individual ITC members and non-members who are interested in the work of the ITC may attend. **The ITC general meeting will be held during the ITC Conference in Hong Kong on Tuesday July 20, as per our amended constitution.** During this meeting we will hold elections for the new President-elect and several other ITC council positions. Please take note of this meeting and we certainly hope to see you. Our last general meeting in Berlin in 2008 was well-attended.

The 2012 and 2014 ITC Conferences

The 2012 ITC conference will be held in Amsterdam, The Netherlands, from July 3-5 with pro-conference workshops on July 2. The theme of the conference is Modern Advances in Assessment: Testing and Digital Technology, Policies, and Guidelines.

Please check out www.itc2012ams.com for more details on the 2012 conference. Until now, all ITC conferences have been organized by the ITC Council. For 2014, we decided to try out a new procedure—full and affiliate members were invited to submit proposals to host the conference. We are very happy to announce that the 2014 ITC Conference will be held in San Sebastian, Spain, with Prof. Paula Elosua from the University of the Basque Country as chair of the organizing committee. More on this conference will follow later.

The International Journal of Testing

Under the leadership of Professor Stephen Sireci from the University of Massachusetts in the United States and Professor Rob Meijer from the University of Groningen, The Netherlands (co-

editors) IJT has thrived. As a significant and timely improvement, IJT has become an online journal (<http://www.tandf.co.uk/journals/>) too. With the help of high-quality manuscripts coming from authors from many parts of the world and our two co-editors, and the service of many reviewers, I am convinced that the IJT will continue to flourish and serve our members and the international testing community well. I strongly invite you to consider the IJT as an important outlet for your research initiatives in the area of testing. The IJT is dedicated to publishing manuscripts that are interesting to an international audience in all domains of testing, such as testing issues in work, educational and clinical settings.

ITC Membership

I am very happy to observe how prominent the topic of testing is in many parts of the world. Our 20 full, 44 affiliate, and 400 individual members come from all over the world. With the upcoming conference hosted in Hong Kong, I hope the ITC and its members will have a major impact on testing in Asia, as well as other parts of the world.

The topic of testing cannot be underestimated, as it is having a major impact on people's lives.

Dear members and friends, I would like to end this ITC update by thanking you for your interest and contributions to the work of the ITC. Such interest and support is essential for the ITC to continue to influence testing practices around the world.

Sincerely yours,
Marise Ph. Born, ITC President, 2008-2010

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**Write a review of test development or issues in YOUR country and send to the Editor for consideration.**

**The Editor of Testing International,  
Jan Bogg, [jbogg@liverpool.ac.uk](mailto:jbogg@liverpool.ac.uk)**



## PRESIDENT ELECT'S LETTER

Dear ITC members and friends,

The ITC is now 32 years old and so much has happened since the start in 1978. I am the 12<sup>th</sup> President and follow some of the most esteemed international measurement people. I particularly thank my predecessor Dr Marise Born who has handed over to me a lively and growing organisation plus an exciting set of issues and my aim is to continue these directions while aiming to commence some new ones.

The purpose of the ITC is to facilitate exchanges of information among members, facilitate cooperation toward the solution of problems associated with test development and use, and explore issues related to the construction, distribution, and use of tests, scales, and other methods used to assess personal and group qualities. To achieve these goals, the ITC has established and promulgated guidelines and Standards governing test development and use, organizes international meetings, fosters discussions on test development and use, advances professional development in reference to test development and use, promotes the publication of relevant information (e.g., through its Journal, website, and newsletter), stimulates international cooperation on research and other forms of scholarship in ways that promote scientifically and ethically sound testing practices, and consults with others on the development and use of tests. There has been an impressive history of achievements in these domains. The current website outlines many of these, and more initiatives are in process.

Of most importance are the development of Standards and Guidelines, and these have gained wide international acceptance. They relate to: *The ITC Guidelines on Adapting Tests*, *The ITC Guidelines on Test Use*, *The ITC Guidelines on Computer-Based and Internet-delivered Testing*, and there are sub-groups of the Council working on three new sets of guidelines: *The Test-Taker's Guide to Technology Based Testing*, *A Guideline on Test Security*, and *A Guideline on Scoring and Reporting*.

The Journal (International Journal of Testing) is in excellent hands (editors: Steve Sireci and Rob Meijer). As the past-editor I know the work that goes into preparing each issue, seeking manuscripts, working with an editorial board and reviewers, and communicating with authors. The Board of IJT has been exemplary, the support from the ITC board most sustaining, and the comments from authors, reviewers and readers most welcomed. Steve and Rob are moving the Journal to even higher standards and keeping the focus on the international use of testing and tests.

The bi-annual conference has grown, yet still maintains a friendly atmosphere. This year's event in Hong Kong aims to raise the level of debate

among a very international membership. The Council is considering further publications (e.g., Handbook on Testing), and much more is planned. Two meetings ago, the Council set up various sub-committees and this has led to more ITC members being part of running the organisation. These sub-committees concern Publications, Conferences, Membership, Research and Guidelines, ITC Policies, and Marketing. Each of these groups has a work program, and I intend to make their work more transparent to members during the next years.

Much has been achieved in many areas, but many of the core missions remain and the Council will remain actively promoting these: assisting in increasing the number and quality of graduate-level programs throughout the world, encouraging regional cooperation with ITC in preparing future professional, mentor new members into ITC, increasing the number of national test associates, facilitating access to information about testing and test use, working to increase the success of IJT and other publications, assist in meeting the needs of developing countries, advancing measurement models, methods and their applications, broadening the base of theory and research, further disseminating guidelines and standards, and remaining an advocate for tests relevant to society's needs. The advances in communication technology has made many of these tasks easier, but in turn has raised new issues (hence the most recent Guidelines).

A success over the past years has been the growth in the number of individual members, and the Council is committed to serving these members and having them involved in the development and dissemination of ITC activities and resources. During the next years I am particularly keen to hear more from the full and affiliate members. These members have been pivotal in encouraging the ITC to improve testing practices around the world, and our recent forays into South America and parts of Eastern Europe supporting local organisation are but two examples. My aim is to enhance the involvement of these members and continue to provide them with excellent services and resources. This is two way – the ITC can provide resources for these member, and these members can provide input into furthering the international testing communities. At the moment services include providing an opportunity to support ITC in improving testing practices around the world, receiving ITC publications (e.g. IJT, newsletter, President's report, etc), receiving a reduction in the fees to attend biennial ITC conferences, learning about the ITC activities in a timely way, and having the opportunity to participate in ITC activities.

As incoming President I need to remind you that this is your organisation and thus welcome all ideas, criticisms, initiatives, and suggestions for new directions. Email me or any Council member please!

John Hattie, ITC President Elect



**Brazilian Psychological Assessment Association (Instituto Brasileiro de Avaliação Psicológica – IBAP):  
Objectives, Actions, and Projects**

Carlos Henrique Sancineto da Silva Nunes,  
Universidade Federal de Santa Catarina  
Claudio Simon Hutz,  
Universidade Federal do Rio Grande do Sul  
Maiana Farias Oliveira Nunes,  
Universidade Federal do Rio Grande do Sul  
Brazil

The Brazilian Psychological Assessment Association (Instituto Brasileiro de Avaliação Psicológica -IBAP) é is a national society founded in 1998 that has as its main objectives the integration of psychologists, researchers, and students interested in the field of psychological assessment and psychometrics, and to help develop these areas. To accomplish these objectives, IBAP has been working together with other scientific associations in Brazil and abroad and also with the Brazilian Federal Council of Psychologists.

IBAP is acting in strategic areas to promote the development of psychological assessment in Brazil. Among other initiatives, IBAP offers or sponsors continuing education courses in psychological assessment, testing, psychodiagnosis in regions of the country where there are no other possibilities to obtain this kind of training. In the (near) future, these courses will be offered at the Internet.

One important achievement was providing assistance to the federal Council of Psychologists to develop legislation to regulate the use of psychological tests. All tests used in Brazil must be approved by a commission of the Federal Council that examines the test manual and determines if the instrument's psychometric characteristics and validity evidences are adequate. The parameters used for such judgments are those adopted internationally (APA, AERA, NCME, 1999).

IBAP's website ([www.ibapnet.org.br](http://www.ibapnet.org.br)) is a source of information for psychologists, students and researchers. News, technical materials about psychological assessment, and, of course, the journal *Avaliação Psicológica* are also available on line, free of charge, since 2002. This Journal is the main journal of psychological assessment in Brazil and has been publishing papers from researchers from Portugal and Argentina, too. Now, the Journal is going through a process of internationalization. Its name will change to *Interamerican Journal of Psychological Assessment*, and it will start to publish papers in English and Spanish. The first number of the new journal is due in 2011 and the first call for papers will be at the ITC meeting in Hong Kong.

Finally, IBAP organizes a meeting every two years. Usually around 1,000 participants attend this

meeting. Among them, the main Brazilian researchers in the field are present and many important foreign researchers do attend. The next meeting will be in the city of Bento Gonçalves, in the state of Rio Grande do Sul, in south Brazil. This is a beautiful mountain region that was colonized by Italian immigrants. The meeting will take place from July 1-4 and more information will be available in English, Spanish, and Portuguese at:

<http://www.ibapnet.org.br/congresso2011/>

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**International Delegates at ITC HONG KONG
CONFERENCE July, 2010**



The ITC conference has an excellent line up of speakers, with 108 papers, 151 posters and 38 symposiums. It will be an ideal opportunity to discuss and network with international colleagues.

At the time of writing, there were 373 delegates registered for the conference from 31 Countries, ranging from Albania to Zambia!

**A-Z of Countries
represented at the conference:**

Algeria Belgium Brazil Canada
China Croatia Cyprus Denmark
France Germany Greece Hong Kong
India Indonesia Iran Israel Italy Ja-
pan Latvia Malaysia Mexico Nether-
lands Norway Pakistan Philippines
Romania Singapore Spain Taiwan
Tanzania Thailand UK USA Zambia

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**ITC Update on *The Test-Taker's Guide to Technology-Based Testing***

Dragos Iliescu and the TT-Guide Working Group

One of the reasons why the ITC has such a positive impact on the testing community is its active involvement in the production of guidelines of good practice in testing. Excellent examples for the past involvement of the ITC are *The ITC Guidelines on Adapting Tests*, *The ITC Guidelines on Test Use* and *The ITC Guidelines on Computer-Based and Internet-delivered Testing*.

Among other, newer, projects, which are based on this initial set of good testing practice guidelines, directed at those developing, supplying and using tests, the ITC has tackled the project

known as *The Test-Taker's Guide to Technology-Based Testing*. This project is directed at individuals about to take a technology based test and is motivated by the rapid advancement of technology and its impact upon the forms and use of psychological and educational tests. Such rapid evolutions might possibly create an environment where test agencies are unsure about the best solutions and test takers are unsure about what to expect from the testing process.

*The Test-Taker's Guide to Technology-Based Testing* was begun as a project in 2008, under the leadership of two members of the ITC Council, Iain Coyne and Dave Bartram. Its explicit intent was that of providing test takers with a clear, short and structured guide about what they should expect and about what is expected from them when they have to take a computerized test, especially in the case where tests are administered over the internet without direct supervision or proctoring. The basis for this Guide was the more technical set of Guidelines the ITC had already developed for Computer-based and Internet-delivered testing (ITC, 2006). It was intended that this list of test taker rights and responsibilities would be published, after approval by the ITC Council, as a glossy leaflet, and made available to both test-takers and test agencies, with the intent of promoting good practice and setting realistic expectations for both these parties in the testing process.

The original name of the project referred to "Computer-Based Testing", but the advent and penetration of computer technology into virtually all areas of communications has encouraged the project team to change the name to "Technology-Based", thus referring not only to computers and the Internet, but also to testing done through other devices of high technology, like cell phone and other mobile devices (smartphone, netbook, tablet etc.).

*The ITC Guidelines on Computer-Based and Internet-delivered Testing* define four modes of test administration: Open, Controlled, Supervised and Managed. Since they were published, we have seen a great deal of development within the category of 'Controlled' mode. This mode refers to tests that are administered remotely without direct human supervision, but where there is control over access (typically through password entry). Open mode is generally confined to low-stakes testing. Given the changes that have occurred, the revision of the *the Test-Taker's Guide to Technology-Based Testing* addresses three different scenarios for taking technology-based tests and refers throughout the text to parts of these three scenarios. The three scenarios are defined as (a) remote unsupervised testing, (b) remote supervised testing, and (c) locally supervised testing. The first two of these represent different levels of control within what had been referred to as 'controlled mode'. In the first two of the scenarios (a and b) a person may be invited to take a test re-

motely, in the person's home or place of work, or anywhere where the technological (hardware and infrastructure) conditions for electronic access to the test exist. There is a difference between remote testing situations, and the difference is made by the amount of authentication, supervision, and monitoring the test-taker is subjected to, while being tested. In the last scenario (c), test-takers are invited to go to a location where someone will be present to check their identity by viewing personal identification documents and to oversee the taking of the test; the test may still be delivered over the Internet, but in this case the test-taker cannot access the test on his/her own outside of the testing centre. This third scenario encompasses both the 'supervised' and 'managed' modes referred to in the Guidelines.

The Test-Taker's Guide is structured in two sections. The first section discusses what the test-taker should expect of the technology-based test session and outlines by and large rights of the test-taker, in a number of 10 paragraphs. The second section discusses what is expected of the test-taker during the technology-based test session and concentrates rather on the obligations of test-takers, in a similar number of 10 paragraphs. This apparent symmetry is unintended: the current form of the Guide has incidentally 10 and 10 paragraphs in each section. There is no intent of symmetry or equivalence between the two sections. However, both sections cover problems like:

- the release of information to the test-taker, prior to the actual testing, including information aimed to ensure the suitability of the testing system in terms of hardware and software requirements;
- providing technical support for the test-taker and instructions about actions to be taken in case of a system or connection crash;
- providing clear instructions about response formats, on-screen help, system log-on and log-off;
- providing the opportunity to the test taker to familiarize him/herself with requirements of the test session, including the obligation to go through tutorials and training on the interaction with the test items and the test format;
- reasonable system adjustments which might be made for test takers with a documented disability or medical condition;
- providing instructions to the test taker for the creation of the right kind of environment for taking the test;
- the authentication of the test taker, as well as the security of his/her data;
- the feedback (electronic generated report or other kind) to the test taker;
- consequences of improper conduct on behalf of the test-takers, including fraudulent test taking practices

*The Test-Taker's Guide to Technology-Based Testing* is at this point of time still in development. The project has just gone through a public consulta-

tion phase, which has confirmed a very active involvement from behalf of the ITC membership: in only 4 weeks of consultation, the project team has received a total number of 46 reactions to its invitation to comment on the last draft of the Guide.

After implementation of all the comments and suggestions received, the next meeting of the project team will probably be held during the ICAP 2010 at Melbourne, with the possibility that *The Test-Taker's Guide to Technology-Based Testing* will be voted and accepted by the ITC Council at its meeting prior to the ITC Conference in Hong Kong (July 19-21 2010).

## Reference

ITC (2006). International Guidelines on Computer-based and Internet-Delivered Testing. *International Journal of Testing*, 6, 143-172.

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Investigating the Reliability of Results from National Tests and Public Examinations in England - the Ofqual Reliability of Results Programme

Qingping He, Andrew Boyle and Dennis Opposs
Office of Qualifications and Examinations Regulation, UK

Reliability, in educational assessment terms, refers to the consistency of results on a given measure from repeated measurements under equivalent conditions. Although results have a huge impact on learners' lives, as with any measurements, test and examination results contain errors. Test reliability is an important indicator of the quality of the test. It is important that the degree of consistency of test results is investigated, interpreted and understood appropriately. There has been little large-scale research to monitor the reliability of results from England's test and examination systems and little understanding of the public's knowledge of and attitudes towards reliability. To address this, the Office of Qualifications and Examinations Regulation (Ofqual) in England initiated a two-year research programme. The primary aim of this programme was to gather evidence to inform Ofqual on developing policy on reliability from a regulatory perspective.

The main objectives included the following:

- To generate evidence of reliability of results from a number of major national tests, public examinations and qualifications offered by test agencies and awarding bodies in England
- To stimulate, capture and synthesise technical debate on the interpretation of reliability evidence generated from this programme and other reliability studies
- To investigate how results and the associated errors are reported internationally and what procedures are adopted by assessment provid-

ers to communicated results and measurement errors to the users

- To explore public understanding of, and attitudes towards, assessment inconsistency
- To stimulate national debate on the significance of the reliability evidence generated by this programme and by other reliability studies
- To help improve public understanding of the concept of reliability
- To develop Ofqual policy on reliability

The programme had 3 strands:

- 1 Generating evidence on the reliability of results from a selection of national qualifications, examinations and tests in England.
- 2 Interpreting and communicating evidence on reliability.
- 3 Investigating public perceptions of reliability and developing policy on reliability from a regulatory perspective.

A Technical Advisory Group (TAG), made up of educational assessment experts and a Policy Advisory Group (PAG), made up of representatives from a wide range of stakeholders (including assessment experts, assessment providers, employers, communications experts, teachers, students, and parents) were appointed. PAG has been advising us on engagement with key stakeholders and communication of reliability evidence to the public.

Programme Progress Update

Activities undertaken include:

Commissioning research projects to awarding bodies and research institutions to generate reliability evidence, review measurement theories and models used to study reliability, review techniques used for producing and interpreting reliability measures, gauge public perceptions on reliability, and investigate international approaches to the reporting of assessment results and measurement errors.

Participating in national and international conferences to exchange ideas and experiences with other assessment researchers, policy makers and practitioners.

Organising technical seminars involving assessment experts and communications experts to discuss issues related to reliability to reach consensus on the interpretation, evaluation and communication of reliability evidence.

Participating in and organising public events to raise public awareness of assessment reliability and to help the public to understand the concept of reliability.

A number of research reports have been published from the commissioned projects (available

from the Ofqual website) and include:

- Partial estimates of reliability: parallel form reliability in Key Stage 2 science tests.
- Parallel universes and parallel measures: estimating the reliability of test results.
- Conceptualising and interpreting reliability" by Assessment Europe.
- Estimating the reliability of composite scores
- International survey of public perceptions of reliability

Further Work

Ofqual intends to conduct further research in the area of teacher assessment reliability and has called for research projects from awarding bodies and other research organisations. Findings from the reliability programme will be analysed and their implications for Ofqual will be evaluated. Ofqual will develop policy on reliability based on these findings.

Further Information about Ofqual's Reliability Programme and the Reports

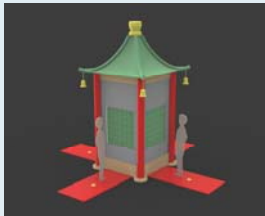
<http://www.ofqual.gov.uk/research-and-statistics/research-reports/92-articles/20-reliability>

Email: Qingping.He@Ofqual.Gov.UK

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### Exhibition on Testing & Measurement

Avi Allalouf, NITE  
Diana Alderoqui Pinus, BSMJ  
Jerusalem



The National Institute for Testing & Evaluation (NITE) and the Bloomfield Science Museum (BSMJ), both based in Jerusalem, are currently developing a scientific exhibition on testing and measurement,

aimed at the general public. Their partners in this project are ETS (Educational Testing Service) and the Franklin Institute, Philadelphia. The exhibition will address, among others, the following topics: the history of testing and its role in society, reliability, validity, intelligence testing, psycho-physiological measurement, psychological assessment, selection and vocational assessment, international comparisons, gender impact, test preparation and coaching, cultural aspects of testing, fairness and bias, adaptive testing, technology and the future of testing. We conceive of the exhibition as an innovative means of familiarizing the public, particularly the youth, with educational and psychological measurement concepts. Dissemination of measurement concepts is one of the ITC's main goals. The Three Primary Goals of the Exhibition:

1. To expose the public to the scientific field of testing and measurement

This is an important, developing, scientific field with both theoretical and practical aspects. However, until now, the fundamental concepts underlying testing have received little public exposure. The exhibition will deliver a message regarding the importance of professionalism in testing, namely: precision, standards and fairness.

2. To increase public awareness

An informed public will be able to demand that tests meet the highest standards. This will benefit the public, since improving the quality of measurement will make it possible to draw more reliable and accurate conclusions from the test results. Familiarity with the field will also reduce test anxiety, make test-taking easier and improving test performance.

3. To encourage discussion

Tests and exams are frequently the subject of fierce political and media debates about the needs of individuals versus the needs of society. The exhibition will encourage dialogue between visitors and measurement experts on issues related to testing and society.

Museums are equipped to deal effectively with challenging, controversial issues and sensitive topics. The project will enable the public to address measurement professionals in the neutral arena of the science museum, thus facilitating discussion of public measurement policies and strategies. The exhibition will travel between museums in different countries and maintain an Internet site.

We are consulting with measurement experts in order to formulate a list of relevant issues, but we are also keen to hear from the public. Among the debates that have arisen – be they current, past, or pertaining to the future of testing are alternatives to testing, misinterpretation and misuse of data, over-examination and test fairness.

### What are the relevant issues in your country?

Please let us know.

Avi Allalouf [avi@nite.org](mailto:avi@nite.org)

Diana Alderoqui Pinus [dianap@mada.org.il](mailto:dianap@mada.org.il)

View sample exhibits: [www.mada.org.il/testing](http://www.mada.org.il/testing)

The exhibition consists of some 25 exhibits, most of them interactive. Several of the activities are designed for groups. The exhibition will also include posters, videos, photographs and old test forms. Delegates of the ITC Honk Kong conference will have the opportunity to attend a session on this project. The session will begin with a short presentation

about the purpose, audience, and structure of the exhibition, followed by brief observations from several distinguished measurement experts. The audience will then be given the opportunity to examine sample exhibits. The remainder of the time will be used for a general discussion, during which those present can express their opinions and contribute to this important project.

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Meet the ITC Sponsored Scholars 2010

The scholars will be presenting at the Hong Kong conference and their work will be featured following this introduction section.

Happy Zulu



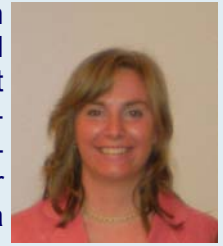
I am Happy Zulu, 26 years old. I am Zambian. I completed my secondary education in 2001. I enrolled for the Bachelor of Arts with Education (BA. Ed) degree at the University of Zambia (UNZA) in 2004 with a major in Psychology and graduated in July, 2008. In the same year in October, I got a scholarship to pursue a programme of Master of Science in Clinical Neuropsychology which I am still currently doing. The scholarship is offered by the NORAD Masters programme (NOMA). Since my undergraduate years in university, I have always been fascinated with psychological tests and that is the main reason I applied for this programme I am currently pursuing. It is the first time (UNZA) is offering this programme and I am one of the first cohort of students to pursue this particular programme.

I am based at UNZA, School of Medicine, Department of Physiological Sciences under which the Msc. in Clinical Neuropsychology falls. The programme is collaboratively conducted by two other schools of UNZA – Humanities and Social Sciences; and Education.

My research is basically aimed at examining the performance of urban and rural adult populations on neuropsychological tests in Zambia. Other than focusing on the comparative aspect of the performance of these populations on the urban-rural dichotomy, my research is part of a larger study which currently running which is aimed at formulating the normative data in neuropsychology specifically for Zambia. There is currently no standardized data for neuropsychological tests in Zambia and hence the rationale for undertaking this study so as to eventually be able to appropriately, effectively and efficiently utilize various tests in the area of neuropsychology. This is the research I will be presenting at the 7th ITC Conference in Hong Kong.

Natalija Curkovic

My name is Natalija Curkovic from Zagreb, Croatia. I am 27 years old and I've completed my degree at Department of Psychology at Faculty of Humanities and Social Sciences, University of Zagreb four years ago. At the present, I'm a Ph.D. student on the same Department.



During my BA study I was awarded the University of Zagreb scholarship, Ministry of Science and Technology scholarship, Rector's and Dean's awards. After finishing my degree, I started to work in National Centre for External Evaluation of Education that was just established. My main responsibility has been to organize the way of analyzing the psychometric characteristics of data gathered in national assessments. At that time Croatia was just introducing the system of external evaluation. The only way to fulfil this duty was to learn from the experience of my foreign colleagues. One of the biggest progresses in my knowledge had happened during my participation in the 6th ITC Conference in Liverpool. During that time I exchanged valuable experiences, especially with professor Zumbo and professor Hambleton whose workshops I attended. Attendance at this conference was an encouragement to start learning IRT intensively and today, I'm happy to say, that the team in which I work is analyzing the data within IRT frame.

Beside the psychometric analysis of the data, I also worked in experimental educational programs evaluation and I was a coordinator of psychometric group in international project "Development of Instruments in Croatian National Assessment". This project was realized in cooperation with the Dutch Institute for Educational Measurement CITO. My everyday work includes test quality review and scientific research as well. The main interests of my research are related to implementation of IRT, test quality assurance, taxonomies of knowledge and other topics that are relevant for development of Croatian system of external evaluation of education.

Tatjana Turilova-Mišcenko



I have obtained my Professional Bachelor in Social Psychology at the University of Latvia in 2005 and my master degree in Educational Psychology at the University of Latvia in 2007. I started my doctoral studies at the University of Latvia in 2008. My theme of my doctoral thesis is "Bilingual adolescents' verbal comprehension and working memory".

I have two years of experience as a school psychologist. Now I am working at school for children with special needs. Moreover, I have one year of experience in giving lectures for bachelor pro-

gramme students (the course – children’s social and emotional development; the lectures – psychometric properties of tests, memory). I have participated as a researcher in the research project about addictive substances use problems in specific children groups (the publication of this research is available on www.sva.gov.lv/atkaribas_spec_grupas_14_04.pdf).

I have been developing three tests for my doctoral research since 2009 (Working memory test, Scientific vocabulary test and Vocabulary test in two language forms – Latvian and Russian).

In 2008 my first article „Psychometric Properties of Classmates’ Friendship Relationships Questionnaire” was published in *Baltic Journal of Psychology*. In 2009 I gave an oral presentation on the same subject at 67 Conference of University of Latvia. I gave an oral presentation on the object of psychometric properties of Scientific vocabulary test at 68 Conference of University of Latvia in 2010. In 2009 I made a poster presentation at XIV European Conference on Developmental Psychology in Lithuania, Vilnius about “Bilingual adolescents’ verbal comprehension and working memory”.

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Elmer Dasig dela Rosa

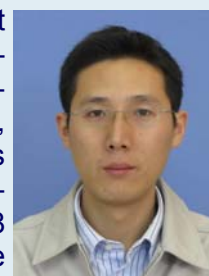
Elmer Dasig dela Rosa is a faculty of the College of Education, Central Luzon State University, Philippines. He obtained both his Bachelor of Secondary Education, major in Mathematics and Master of Science in Educational Management degrees at the same institution in 1999 and 2003, respectively. He handles courses in College Algebra, Assessment of Student Learning and Principles and Strategies of Teaching and at the same time a Student Teaching Supervisor of the



Department of Secondary Education Department where he served as Chairperson in 2006-2007. He has attended various seminars, workshops and trainings particularly in the areas of test development and teaching strategies. As a recipient of the Commission on Higher Education (CHED) Faculty Development Scholarship Program, he graduated with the degree Doctor of Philosophy in Educational Psychology with concentration in Quantitative Analysis at the De La Salle University-Manila in 2010, where he worked with Filipino students’ achievement goals, study strategies, achievement emotions and academic achievement for his dissertation. His research interests include test construction, scale validation and evaluation of student and teacher performance.

Zhongquan Li

Dr Zhongquan Li is now an assistant professor at Department of Psychology, School of Social and Behavioral Sciences, Nanjing University, P.R. China. He has received his Doctorate’s degrees in Psychological Testing and Evaluation in 2008 from Beijing Normal University. He teaches Psychological Testing, Personnel Assessment, and Advanced Psychological Statistics. His primary research interests focus on test security and privacy concerns, aiming to make psychological tests fairer to test-takers. For example, how test exposure can be partly dealt with by automatic item generation, and how cheaters can be captured with identification of unusual responses. He is also interested in how to have a better understanding of individual and organizational behaviors through more sophisticated and more appropriate research methods and statistical techniques (SEM, HLM, LCA et al.).



Jian LI

Dr. Jian LI is an assistant professor in School of Psychology of Beijing Normal University. He began to study psychological testing and assessment under Houcan Zhang’s direction from 2001, who has served the Vice-President of IUPsyS, and she is taking charge of psychological measurement in China. Dr. Li have organized or participated in many projects, and is skillful in the techniques of psychometrics, experimental design, and statistics. He focused on the measurement of metacognitive regulation during his PhD period. Those results have been published in peer reviewed journals.



Now Dr. Li has worked in Beijing Normal University for almost three years, and he is interested in personnel and selection. His current research centers on the effect of self-regulation on students' success in college. His side project is associated with the measurement of vocational interest. He also took part in researches about the measurement of Parent-Adolescent Trust. In addition, he has expertise in computer graphic processing, and audio/video processing etc. Besides, due to his knowledgeable and heuristic teaching was highly welcomed by students, last year he won the first class award in the competition of instruction for young teachers of Beijing Normal University.

To be chosen by the ITC scholarship, Dr. Li is looking forward to the opportunities of collaborate research with other ITC scholars during and after the Hong Kong conference.

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### Assisting our Brazillian colleagues

The ITC would like to assist Brazilian scholars by reviewing manuscripts prior to their submission to the International Journal of Testing. Reviewing would consist of providing advice to authors on style, content, methodology, and other critical publication features. If you can assist, please email Carlos Nunes [carloshnunes@mac.com](mailto:carloshnunes@mac.com), the President of the Brazilian Association of Psychological Assessment, or Solange Wechsler [wechsler@lexxa.com.br](mailto:wechsler@lexxa.com.br), the Association Past President.

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**Comparison of Rasch Model and One Parameter Logistic Model on Croatian National Assessment Data**

CURKOVIC, N., SABIC, J., BULJAN CULEJ, J.

National Centre for External Evaluation of Education, Zagreb, Republic of Croatia

**Introduction**

In the international project “Development of Instruments in Croatian National Assessment” Croatian National Centre for External Evaluation of Education cooperated with the Dutch Institute for Educational Measurement CITO. One Parameter Logistic Model (OPLM) and Rasch model were applied in analysis of data gathered in knowledge testing in Mathematics. In the Rasch model, the probability of a correct response is modeled as a logistic function of the difference between the person and item parameter (Ayala, 2009). OPLM is a model where difficulty parameters are estimated and discrimination indices are imputed as known constants, which is an extension of the Rasch model. The aim of this paper is to compare two different IRT models: Rasch model and OPLM in the terms of fitting statistics.

**Methodology**

Results of 1229 gymnasium students on Mathematics test were used for the purpose of this research. Mathematics test is composed of 26 items. OPLM software was used in the analysis of results (Verhelst, Glas & Verstralen, 2005). The goodness-of-fit of an item set with the OPLM is investigated with three goodness-of-fit statistics.

**Results**

Estimation of the data was done through Conditional Maximum Likelihood method. Comparison of Rasch model and OPLM was done based on three goodness-of-fit statistics. The first is  $M_i$  that is test item oriented. Values closest to zero indicate better fitting of the model to the results (Verhelst, Glas & Verstralen, 2005). Eighteen items have  $M_i$  statistics closer to zero in OPLM than in Rasch model, and eight items have better fitting statistics under the Rasch model.

$S_i$  test is defined at the item level and is based on the differences between the observed and expected proportion of responses in homogeneous score groups (Verhelst, Glas & Verstralen, 2005). Majority of low p-values is indicative for one or more model violations. As it is shown in Table 1, low p-values are more frequent in Rasch model than in OPLM.

Table 1. Results of  $S_i$ -tests for Rasch-model and OPLM

| Distribution of p-values for $S_i$ -tests |      |    |    |    |    |    |    |    |    |    |   |
|-------------------------------------------|------|----|----|----|----|----|----|----|----|----|---|
| MOD                                       | ≤.05 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 | 1 |
| Rasch                                     | 9    | 4  | 4  | 4  | 1  | 2  | 0  | 1  | 0  | 2  | 0 |
| OPL                                       | 2    | 5  | 0  | 2  | 4  | 3  | 6  | 0  | 2  | 0  | 2 |

$R_{1c}$  goodness-of-fit statistic can be interpreted approximately as a  $\chi^2$  – test (Verhelst, Glas & Verstralen, 2005). According to values of  $R_{1c}$  test for the data that were modeled with OPLM and Rasch, it's clear that OPLM fits the data much better than Rasch model.

Table 2. Results of  $R_{1c}$  tests for Rasch-model and OPLM

| MODEL | $R_{1c}$ | df  | p     |
|-------|----------|-----|-------|
| Rasch | 199.91   | 127 | 0.001 |
| OPLM  | 151.98   | 138 | 0.20  |

**Conclusion**

Estimation through Conditional Maximum Likelihood method showed superiority of OPLM in compare to Rasch model for the data that were used when the fitting statistics were compared. It is possible to find a model that will have better fitting statistics when using OPLM rather than Rasch model. OPLM combines attractive mathematical properties of the Rasch model with the flexibility of the two-parameter model.

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***Immigrant status – the same definition, the different meaning : Comparative analysis of immigrant status in PISA 2006 research in UK and Croatia***  
CURKOVIC, N., SABIC, J., BULJAN CULEJ, J., ELEZOVIC, I.

**Introduction**

International studies of school achievement mostly use the immigrant status as an important variable in a prediction of student's success. In PISA, immigration background is based only on three variables: student's and their mother's and father's country of birth and not on the time spent in the host country or language that student speaks. The aim of this paper is to compare meaning and functioning of the immigration background variable in two different national contexts.

**Methods**

Results of PISA 2006 of Croatian and UK students were used. Both samples were of the same size, N=5000. Structure of immigration background variable was analysed.

**Results**

Unexpectedly, results showed that there were more immigrants in Croatian sample than in the UK sample (Table 1). Analysis of nationality structure for both immigrants samples indicate that in Croatian sample immigrants are dominantly Croatian people from Bosnia and Herzegovina whose mother language is Croatian. Only 1% of students in Croatian sample don't speak Croatian language at home. In UK sample almost 6% of students speak non-indigenous languages at home.

Table1. Percent of students within different immigration statuses in PISA 2006 research (N= 5000 for both samples

|         | Native | 2 <sup>nd</sup> Generation | 1 <sup>st</sup> Genera- |
|---------|--------|----------------------------|-------------------------|
| Croatia | 87,6   | 5                          | 7,4                     |
| UK      | 95,5   | 2,5                        | 2                       |

**Discussion and Implications**

In spite of the same definition of immigrant status for all participating countries in PISA research, the meaning of the obtained results is not the same for different countries. Most of the Croatian immigrants have Croatian national identity, Croatian citizenship and speak Croatian language so they do not see themselves as immigrants. Situation with UK immigrants is totally opposite. Immigrants are dominantly from countries with different culture and language.

The immigrant status is obviously a variable that cannot be simply used as variable for comparative analysis of the PISA results between different countries because of its diverse meaning. Experiences in different countries show that a definition of immigrant status in PISA research is more appropriate for western countries in which dominate immigrants are those who came from various cultures and speak various languages. Mother language (Zehr, 2007), time spent in host country, immigration policy of the host country and cultural differences between origin and host country (Van Tubergen & Kalmijn, M, 2009), and not only the country of birth, should be taken into account when using immigration status as predictor variable.

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# Psychometric Properties of Classmates' Friendship Questionnaire

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University of Latvia, Latvia

## Introduction

The purpose of this research was to determine the psychometric properties of the Classmates' Friendship Questionnaire (CFQ). A review of publications on friendship in terms of cooperation and trust did not reveal the existence of any questionnaire suitable for use in research on adolescents in the classroom environment (Mendelson & Aboud, 1999; Aldridge, Fraser & Huang, 1999; Hunter, Boyle, & Warden, 2006). Various methods are used in order to investigate relationships among pupils in a class and narrow aspects of this construct (Kutnick & Kington, 2005; Hamm & Faircloth, 2005). Friendly relationships are often investigated in the context of other broader constructs, for example, in self-concept questionnaires (Hunter, Boyle, & Warden, 2006). The domain of friendly relationships is a psychological one that is firmly connected to the cultural environment (Hinde, 1997 as mentioned in Kutnick & Kington, 2005).

In a newly-developed questionnaire, friendly relationships were regarded as involving social relationships characterized by collaboration, support and trust (Parker & Asher, 1993; Sharabany, Gershoni & Hofman, 1981, as mentioned in Heiman, 2000; Heiman, 2000; Ladd et al., 1996, as mentioned in Hamm & Faircloth, 2005; Hamm & Faircloth, 2005; etc.). Based on theories of friendly relationships and taking into consideration the specific environment in Latvian schools, the items with three kinds of content were included in the questionnaire:

1. *Support and collaboration* – can a student receive help from his or her classmates or not, can he or she render help, can he or she collaborate (Crosnoe & Needham, 2004; Hamm & Faircloth, 2005; Heiman, 2000);
2. *Trust* – is there a person in a class to whom a student can disclose all secrets and to whose opinion he or she listens (Guralnick, 1992; Parker & Asher, 1993; Wenz-Gross & Siperstein, 1997; Sharabany et al., 1981, as mentioned Heiman, 2000);
3. *Hostility* (as the opposite of friendly relations) – can a student feel hostility or not, can he or she be aggressive to other people (Aikins et al., 2005; Jones & Newman, 2005; Landsford et al., 2003; Cillesen, Jiang, West & Laszkowski, 2005).

Item psychometric analysis and exploratory component analysis were carried out (Cronbach, 1984; Standards for Educational and Psychological Testing, 1985; Crocker & Algina, 1986; Kline, 2000). The research question: Do psychometric properties of the Classmates' Friendship Questionnaire satisfy reliability and validity criteria of psychometrics?

## Method

### Participants

The sample consisted of 264 participants from Latvian schools aged from 13 to 15 years (boys – 40 %, girls – 60 %).

### Instruments and procedure

*The Classmates' Friendship Questionnaire* (CFQ) consists of 26 items with a 5-point Likert scale. The first version of the CFQ consisted of 48 items.

The *Peer-Relations subscale* (PRs) of the Self-Esteem Questionnaire (Hunter, Boyle, & Warden, 2006) was used in order to verify the concurrent and convergent validities of the CFQ. The internal consistency of the Latvian version of the PRs was .72 (Turilova-Miščenko, 2007). Testing was carried out in groups.

## Results

Using principal component method with varimax rotation four factors with eigenvalues above 1 were extracted and these explained 50.23 % of total item variance (26-item matrix). The determinant is more than .0001, KMO measure is .85. The Bartlett test is significant  $\chi^2(325) = 2185.848$  ( $p < .001$ ). The names of the factors were: Social Contacts out of School; Trust; Support and Cooperation; Lack of Hostility. These significant correlation coefficients between all scales of the PRs and the CFQ (from  $r = .25$  till  $r = .47$ ,  $p < .01$ ) confirm the *concurrent and convergent validity* of the CFQ, especially for three of its scales. Additional study is necessary for the Trust scale ( $r = .25$ ,  $p < .01$ ).

Cronbach's alpha coefficients for all scales are acceptably high, above .73. Test-retest reliability for all scales, except the Lack of Hostility scale ( $r = .51$ ,  $p < .01$ ), was above .78. All items of the CFQ showed good reaction ( $M = 2.94$ ) and discrimination indices ( $M = .69$ ) from the standpoint of psychometric theory. The psychometric properties of the CFQ confirm that it is a reliable and valid instrument.

## Discussion

The main aim of this work – to create a reliable and valid CFQ, whose psychometric parameters satisfy psychometric theory's general criteria – has been met. Further work with the newly created CFQ is possible in several areas. It would be helpful to carry out confirmatory factor analyses based on data from a larger and more representative sample (including gender subsamples) than in this study. In further research it would be preferable to examine divergent validity and predictive validity too, and to test convergent validity using special scales, for example, the Hostility and Trust scales. The CFQ is good and short instrument for studies of friendly relationships.

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Validating the Factors of the English and Filipino Versions of the Sense of Self Scale

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Introduction

The Sense of Self (SOS) Scale measures different aspects of a learner's sense of purpose and self-concept that are related to their motivations to strive in their academic endeavors, and is designed to have four dimensions: sense of purpose, sense of reliance, negative self-esteem, and positive self-esteem. In this study, we developed a (conversational) Filipino version of the SOS using a translation process that combined a committee approach with back-translation. To assess the validity of the four-factor structure of the Filipino and English versions of the SOS, 765 high school students were asked to complete one of the two versions. Confirmatory factory analysis indicated a good fit between the four-factor structure and

the data from the two language versions. The scales corresponding to the four factors also showed adequate internal reliability for both versions. Finally, the pattern of correlations among the four factors were similar for both versions. The discussion focused on the viability of the four-factor structure of the Filipino and English SOS Scales for use in various research explorations on Filipino students' motivations in school.

As a psychological construct, sense of self has received substantial attention in psychology research because of its strong association with positive outcome variables including promotion of happiness and mental health in general, optimal functioning, achievement, resilience, acceptance, among others (see Baldwin & Sinclair, 1996; Taylor & Brown, 1988 for reviews). In spite of the availability of the Sense of Self Scale, its validity for use in the Philippine context is still in question. In connection with this, in the present study, we translated the Sense of Self Scale which is within the ISM (McInerney et al., 2001) into Filipino, and then validated the factor structure of the translated Filipino and the original English scale with Filipino-English bilingual students. Our purpose for undertaking this study is to develop Filipino and English versions of the Sense of Self Scale that could be used for different types of Filipino students, both for assessment and for research purposes.

Method

Translation Phase

Instrument. The 26 items in the original English version of the Sense of Self Scale within the Inventory of Student Motivation (ISM) Questionnaire (McInerney et al, 2001) was used in the study. The items were organized into four factors: Factor 1 – Sense of Purpose (SOP), Factor 2 – Sense of Reliance (SOR), Factor 3 – Negative Self-Esteem (NEGSE), and Factor 4 – Positive Self-Esteem (POSSE).

Translation. We combined back-translation with a committee approach and a modified bilingual technique. The committee considered the readability, comprehensibility, linguistic equivalence, and conceptual closeness of the translations.

Validation Phase

A modified bilingual technique was used to test the translations. The bilingual technique typically involves administering the two language versions to bilingual participants; however, in the present study, the two language versions were presented to two groups of bilingual participants.

Participants. The participants in the validation phase were 765 (301 males, 464 females) high school students from 5 public and private schools

Instrument. The original English version and the translated Filipino version of the Sense of Self Scale were used in the validation phase. Both language versions of the scale were posited to have four factors represented by four subscales.

Results

Confirmatory factor analysis (CFA)

The CFA procedure was used to assess the extent to which the observed data reflected or fit the proposed four-factor model or structure of the 26-item Sense of Self Scale. As suggested by Bagozzi and Heatherton (1994) we used item “parcels” as indicators in the CFA (Little, Cunningham, Shahar, & Widaman, 2002).

Table 1: *Summary of the Goodness-of-Fit Statistics*

| Version | c^2 | df | c^2/df | RMSEA | NFI | NNFI | CFI | GFI | AGFI |
|----------|-------|------|----------|-------|-------|-------|-------|-------|-------|
| English | 24.47 | 14 | 1.75 | .009 | 0.978 | 0.981 | 0.991 | 0.984 | 0.959 |
| Filipino | 17.61 | 14 | 1.26 | .036 | 0.976 | 0.990 | 0.995 | 0.972 | 0.972 |

Note: df = degrees of freedom; RMSEA = root mean square error approximation; NFI = normed fit index, NNFI = non-normed fit index; CFI = comparative fit index; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index.

The results showed good fit between the data from the English and Filipino versions and the hypothesized four-factor structure of the Sense of Self Scales.

Figure 1. Confirmatory factor analysis of 8 parcels of English version of Sense of Self Scale with 4 factors. Inter-factorial correlations indicated are significantly different from zero at $p < .05$

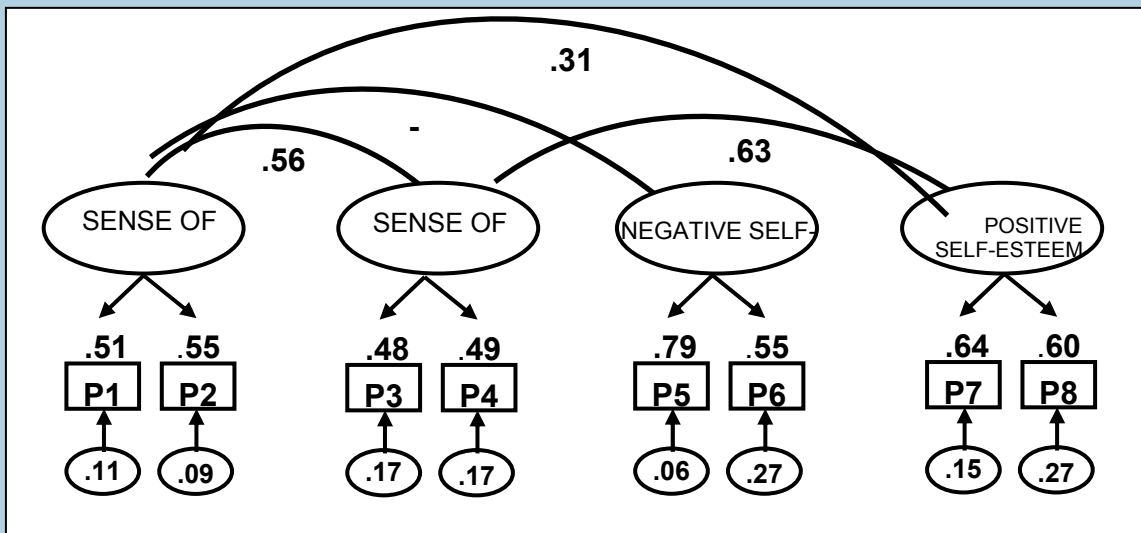
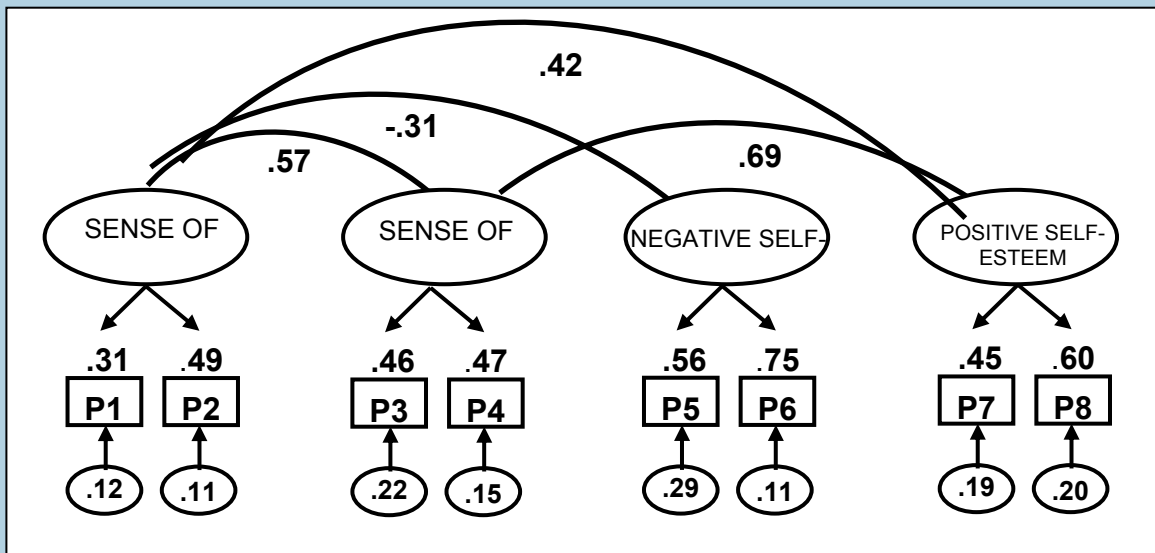


Figure 2. Confirmatory factor analysis of 8 parcels of Filipino version of Sense of Self Scale with 4 factors. Inter-factorial correlations indicated are significantly different from zero at $p < .05$



Conclusions

- Confirmatory factor analysis indicated a good fit between the four-factor structure and the data from the two language versions.
- The scales corresponding to the four factors showed adequate internal reliability for both versions.
- The pattern of correlations among the four factors were similar for both version.
- With this consistent set of evidences, we now have two possible measures to assess Filipino high school students' sense of self – their sense of purpose, sense of reliance, and positive and negative self esteem.

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The 2 x 2 Achievement Goal Framework and Intrinsic Motivation among Filipino Students: A Validation Study

Elmer Dasig dela Rosa, Faculty of the College of Education,
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Abstract

In Western studies, the applicability of the 2 x 2 achievement goal framework (Elliot & McGregor, 2001) was established from within diverse samples (e.g. Cury, et.al., 2006; Witkow & Fuligni, 2007). However, there is not much evidence for the theoretical and psychometric validity of the 2x2 framework among Asian populations, where some research suggests problems with some of the basic conceptual categories underlying the model. This study explored the applicability of the four-factor achievement goal model (mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance) among Filipino high school students, with particular emphasis on the reliability and validity of the measure; and examined the predictive utility of the framework on intrinsic motivation. Reliability estimates of the 2 x 2 achievement goal measure was moderate. Exploratory factor analysis showed only three distinct factors as against the hypothesized four-factor model. All items representing avoidance goals (mastery-avoidance and performance-avoidance) significantly loaded on a single factor. Confirmatory factor analysis was performed using both absolute and incremental fit indices and results indicate that the data did not fit the model under investigation. Nevertheless, all of the achievement goals except performance-avoidance goals were significant predictors of student's intrinsic motivation.

Background

The 2 x 2 achievement goal framework (mastery-approach, mastery-avoidance, performance-approach and performance-avoidance) has received considerable attention in Western achievement goal literature (Cury, Elliot, Fonseca, & Moller, 2006; Elliot & McGregor, 2001; Finney, Pieper, & Barron, 2004; McGregor & Elliot, 2002; Witkow & Fuligni, 2007). Meanwhile, studies among Filipino samples (i.e Bernardo, 2003) linked achievement goals and learning among Filipino samples, but focused on adopting the mastery-performance distinction. The purpose of this study was to explore the fit or applicability of the 2 x 2 achievement goals framework among Filipino students and to determine whether the achievement goal framework is predictive of intrinsic motivation (Deci & Ryan, 1985).

Method

A total of 682 high school students (388 females and 294 males, *Mean Age*= 15.04, *SD*=.91) from two national secondary schools served as participants. Cronbach's alpha was used to report the reliability estimate of the measure. Factor Analysis was conducted on the twelve achievement goal items using principal components extraction with varimax rotation. Confirmatory factor analysis was performed to test the fit of the four-goal model using five fit indices. Finally, regression analysis was performed to examine the predictive utility of the achievement goals to intrinsic motivation.

Results

Exploratory Factor Analysis

Only three factors had eigenvalues exceeding unity, which accounted for a total of 51.88% of the variance explained. All the avoidance items (mastery and performance) loaded significantly on a common factor.

Factor loadings were: mastery-approach (.70-.77), performance-approach (.72-.77) and avoidance scale (.49-.72)

Descriptive Statistics, Intercorrelations and Reliabilities

| Goals | M | S
D | α | 1 | 2 | 3 | 4 | 5 |
|-------------------------|----------|----------|----------|----------|---------------|----------|----------|---------------|
| 1.Mastery-approach | 5.9
4 | .8
5 | .63 | ---- | | | | |
| 2.Mastery-avoidance | 4.9
6 | 1.
15 | .66 | .1
8* | ---
- | | | |
| 3.Performance-approach | 5.2
3 | 1.
13 | .65 | .4
1* | .17
* | ---- | | |
| 4.Performance-avoidance | 5.6
7 | 1.
09 | .65 | .3
8* | .
.43
* | .3
3* | ---- | |
| 5.Intrinsic motivation | 5.6
9 | .9
0 | .83 | .3
6* | .01 | .2
7* | .1
8* | --
--
- |

Confirmatory Factor Analysis

| Model | X^2 (N=341) | X^2/df | RMSEA |
|-------------------------|---------------|----------|-------|
| 2 x 2 achievement goals | 176, p=.001 | 3.54 | .07 |

Note ; X^2 chi-square – should not be significant ; X^2/df should be less than 2.0; RMSEA – root mean square error of approximation < .05; TLI – Tucker-Lewis Index ;CFI – Comparative Fit Index; (TLI and CFI should be at least .90)

Achievement Goals as Predictors of Intrinsic Motivation

Mastery-approach ($B= .33$) and performance –approach ($B=.15$) were positive predictors of intrinsic motivation, while mastery-avoidance ($B=-.12$) negatively predicts intrinsic motivation

Conclusions

The scales had moderate reliabilities and are correlated with each other, suggesting that students do not only adopt multiple goals, but also goals that are contrary to one another.

All the avoidance items (mastery and performance) loaded on a single latent construct, thus in this study, mastery-avoidance was validated not as an independent achievement goal.

The confirmatory factor analysis revealed non-fit of the data to the 2 x 2 achievement goal framework.

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Cognitive Analysis on Item Difficulty of Matrix Reasoning Test

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Matrix reasoning tests (as represented by Raven's tests) have been widely employed in recruitment and selection as an effective measure on fluid intelligence (Anastasi, & Urbina, 1997). However, findings of several studies suggest that they are not appropriated anymore for too high item exposure rate (Xiao, Miao, Zhu, & Zhang, 2006a, 2006b). Computerized automatic item generation (AIG) is gradually recognized as a promising technique in dealing with item exposure (Hambleton, 2004). Understanding sources of item variation was the initial stage for Computerized AIG (Embretson & Yang, 2007). That is, seeking the underlying processing components and the stimuli that significantly influence those components. Some studies have been conducted to explore sources of item variation, yet no clear consensus has emerged (Embretson, 1998, 2002; Primi, 2001; Arendasy, 2005; Freund, Hofer, & Holling, 2008; Meo, Roberts, & Marucci, 2007). Based on previous studies (e.g. Carpenter, Just, & Shell, 1990), the present study investigated the relationships between item difficulties and stimuli factors such as familiarity of figures, abstraction of attributes, perceptual organization, the numbers of elements as well as memory load (i.e. combination of types and number of rules; Embretson, 2002).

Eight sets of matrix reasoning tests (each with 14 items imitating items from Raven's Advanced Progressive Matrices (APM)) were constructed by manipulating familiarity of figures, abstraction of attributes, perceptual organization as well as the types and the number of rules. By using anchor-test design, these tests were administrated via internet among 1929 participants with 10 items from APM as anchor items. Each participant completed 14 items from either one set and 10 anchor items during half an hour. In order to avoid using response elimination strategy (Vodegel Matzen, 1994), participants were presented first with item stem, then alternatives in turn, and they were asked to determine which alternative was the best.

Statistics of kurtosis and skewness indicated scores on the eight sets of tests met hypothesis of normal distribution. Both results of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with binary data supported that those items measured a single dimension. Best fit to two-parameter logistic model (2PL), an item response theory model, also supported that. Those items were calibrated with BILOG-MG 3.0 (Marginal maximum likelihood estimation and 2PL model), and proved to possess good item difficulties and discriminations. In order to make items from different sets comparable, item parameters were equated using IRTEQ (Stocking and Lord's Test Characteristic Curve (TCC)-based approach) (Han, 2007) with the scale of set 1 served as the reference. By using 2×2×2 ANOVA for between group designs, main effects of abstraction of attributes and perceptual organization were found significant at 0.05 level, and main effect of familiarity of figures as well as all interaction effects were not significant ($p > .05$). Regression analysis indicated that all but familiarity of figures could significantly predict item difficulty, and memory load was the most important predictor ($\beta = .606, p < .001$).

The present study found that memory load could explain more than a half of variance in item difficulty (54.7%). It is consistent with results from previous cognitive studies of matrix reasoning problems that working memory played a key role in solving such kind of items (Carpenter, et al., 1990; Jaeggi, Buschkuhl, Jonides, & Perrig, 2008). It also indicated that abstraction of attributes, perceptual organization and the number of elements affected the processing components. And combination of those factors in item stems could predict item difficulties more efficiently. The findings are important for Computerized AIG, since new items with predicted item difficulties can be generated by manipulated those factors. However, as part of matrix reasoning tests, distractors also have some effect on item difficulties. The relationship between characteristics of distractors and item difficulties should be further investigated in future studies to improve item generation algorithm for this kind of tests.

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## **The measurement of off-line metacognitive regulation and its application to personnel selection**

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The higher level processes such as monitoring and controlling cognitive behavior have been pervasively emphasized and metacognitive regulation has been regarded as one of the hot-points of contemporary psychological studies in recent years (Otani & Widner, 2005). Metacognitive regulation is generally recognized to be a pervasive and advance cognitive mechanism, which exert huge impact on cognitive effectiveness (Bissell & Lemons, 2006). Researches on metacognitive regulation have important implications for theoretical development and practice (Saldana, 2004; Metcalfe, Schwartz & Joaquim, 1993; Spada & Wells, 2005 ).

It is believed that metacognitive regulation plays the vital role in individual's learning efficacy and job performance. In educational field, for instance, students with high metacognitive regulation ability were more likely to adopt various learning methods, and be aware of the relations between different learning factors and learning methods (Paris, Lipson & Wixson, 1983). Students with low general aptitude or learning disability could compensate for their deficits by using metacognitive regulation strategies, such as learning strategies and help seeking (Trainin & Wanson, 2005). The influence of metacognitive regulation is also stressed in occupational field. Ewell-Kumar (1999) found that metacognition affected managerial hiring decision making in the Human Resource Management area, more specifically, the experts showed higher metacognitive regulation ability than novice. Moreover, metacognitive processes influence leader thoughts and behaviors. Understanding or changing leader behavior requires flexible changes in metacognitive processes. Leaders may also affect subordinates by influencing their metacognitive processes (Lord & Emrich, 2000). Others suggested that the essential characteristics of reflective leadership style were highly correlated with metacognitive regulation processes (Looman, 2003).

Metacognitive regulation is such a supreme ability that researchers want to distinguish individuals by their regulation levels. However, its conceptual structure is still under discussion. Nelson and Narens (1994) suggested that metacognitive regulation was composed of monitoring and control processes interactively, while Yeager (1999) split metacognitive regulation into another two parts, named (a) Prediction and Planning, and (b) Study Techniques and Their Control. Both theories sound reasonable, but not convincible. According to the object, area and time of regulation, we decomposed metacognitive regulation into two components: on-line regulation and off-line regulation. On-line regulation happens in the performance of a certain task, including monitoring and control of the problem solving processes. Whereas off-line regula-

tion takes place out of a certain task situation, reflecting individual's self-regulation, planning and re-evaluation of his behaviors on a global level.

The purpose of the present study was to explore the psychometric structure of off-line metacognitive regulation, and to develop an assessing instrument with high criterion-related validity. The data of this study were collected from a large-scale IT company in Beijing. In study 1, 260 employees participated the preliminary test. By using a self-developed questionnaire, a three-factor structure of off-line metacognitive regulation was obtained, which included global-planning, insight and generalization. After a retest study with 115 participants, the structure of off-line metacognitive regulation was confirmed. In study 2, hierarchical linear regression and hierarchical logistic regression were conducted to examine the criterion-related validity of the off-line regulation questionnaire.

The results showed that managers were different from common staffs in particular regulation factors. Managers have higher generalizing level than others in sales departments, while managers in support department have higher insight level than others. But on the other hand, for the common staffs, the level of off-line metacognitive regulation failed to predict employees' performance in sales department. However, for the staffs in support department, the level of global-planning predicted the creative activities reversely. Based on the results, we may suggest that the off-line metacognitive regulation questionnaire has good psychometric quality, and the procedures of administrating and scoring are objective and standardized. It can be applied to practice such as personnel selection and promotion.

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# Performance of urban and rural adult populations on neuropsychological tests

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## Introduction

My research examines the performance of urban and rural adult populations on neuropsychological tests in Zambia; it also contributes to the formulation of normative neuropsychological test data for Zambia. The research is currently in the data collection phase. By the time of the conference in July, I am anticipating to have done the data analysis and will present the study findings. My presentation will focus on my current research in the area of neuropsychology in Zambia and issues in relation to psychological and educational tests in Zambia, such as administration, cultural-fairness, challenges and relevance. In addition, I will also highlight one of the tests in the Zambian Neurobehavioural Test Battery (ZNTB) that has been appropriately adapted to the Zambian setting. This is the Hopkins Verbal Learning Test – Revised (HVLT-R). Strauss, Sherman and Spreen (2006:760) state that “The HVLT-R is used to provide a brief assessment of verbal learning and memory.” The HVLT-R to be used in the Zambia Neurobehavioural Battery comprises 12 nouns with four words drawn from three semantic categories: four words each from four legged animals, precious stones and human dwellings. In the original HVLT-R there are six alternative forms with different semantic categories. Some changes have been made to some words to make the test more adaptive to the Zambian situation. For instance, the original items such as Emerald, Sapphire, Jade and Pearl have been replaced with Copper, Iron, Lead and Zinc respectively. The rationale for this undertaking is that most Zambians may not be familiar with the terms emerald, sapphire, jade and pearl as these are not familiar to the Zambian situation and hence may have a subtle negative effect on the actual objective of the test.

## Methods

This is a descriptive correlational study which is mainly involving administration of the ZNTB and an interview schedule. It is being conducted in both urban and rural areas of Zambia. The participants (N = 324) have been drawn from both urban and rural areas of Zambia. The age range for these participants is 20 years to 65 years old. The educational background for these participants ranges from primary education to those who have had 13 years of education or more and are literate in English. The stratified sampling method is used. The exclusion criteria include those that are HIV positive, those with any medical, neurological or mental condition that may negatively affect their performance on neuropsychological tests and those with a history of drug or alcohol abuse.

## Background

There are a number of factors that may affect how one performs on neuropsychological tests such as the ones adapted for the Zambian setting (the Zambia Neurobehavioural Test Battery - ZNTB). Some of these factors are age; level and quality of education; someone's health history; culture; socio-economic status (SES). To this effect, Ardila (2006) observed that culture (values, beliefs, styles of behavior) can affect neuropsychological testing. Silberberg and Katabira (2006) alluded to the fact that neurological disorders are increasingly prevalent in Sub-Saharan Africa, Zambia inclusive. The factors that are producing this increased burden include conditions such as adverse perinatal conditions and HIV/AIDS. Leading neurological disorders include cerebral palsy and other developmental disorders, stroke and increasingly, the central nervous system complications of HIV/AIDS, trauma and alcohol abuse. The disabling rather than fatal nature of many neurological disorders, the stigma associated with brain disorders, and the enormous difficulty in gathering epidemiologic data have resulted in their being underreported and neglected in Sub-Saharan Africa.

While previous studies have focused on the rural versus urban areas issue, this demarcation may be misleading. The fundamental issue explaining participants' performance on psychological/neuropsychological for instance may not be the rural versus urban areas issue, but the determination of variables within which differences explain the significant variation in performance in any area. In the same vein, significant discrepancy in performance on neuropsychological tests between urban and rural populations of Zambia are likely to be due to differences in accessibility to education, health care facilities and culture. Participants would be expected to perform similarly, if the associated values of explanatory variables are similar, irrespective of location.

With regard to acculturation and its impact on neuropsychological tests, it has been well demonstrated in the comparison between the test scores of black rural Pedi and black urban Pedi adults (Kendall, 1980) in South Africa. Kendall's battery consisted of non-verbal tasks, as he was attempting to

develop a 'culture-fair' test of universal application. Gaylard (2005) asserted that, the field of neuropsychological assessment therefore, is a challenging arena as it is increasingly unusual to find one ethnic group that is separated and unaffected by other cultures and each ethnic group will vary as to the amount of exposure to other cultures.

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## ITC CONFERENCES FUTURE DIARY DATES

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Date: July, 2014

Venue: Miramon Palace

Co-ordinator: Paula Elosua Department of Psychology, University of the Basque Country, San Sebastian, Spain. Email: [paula.elosua@ehu.es](mailto:paula.elosua@ehu.es)

