Universita' degli Studi di PADOVA

Progetti di Ricerca di Ateneo

Anno: 2012 - prot. CPDA122733

1.0 Macroarea di Afferenza del Responsabile Scientifico del Programma di Ricerca
2 - Scienze della vita

1.1 Area Scientifica del Responsabile Scientifico del Programma di Ricerca
07 - Scienze Mediche

1.2 Responsabile Scientifico del Programma di Ricerca

BATTISTELLA	*Pier Antonio*	*M*
(Cognome)	(Nome)	(sesso)
PROFESSORE ORDINARIO	*MED/39*	*04/06/1948*
(Qualifica)	(Settore Scientifico Disciplinare)	(Data di Nascita)
BTTPNT48H04L736U	*Facoltà di MEDICINA e CHIRURGIA*	*DIP. SALUTE DELLA DONNA E DEL BAMBINO SDB*
(Codice fiscale)	(Facoltà)	(Dipartimento/Istituto)
049/8213505	*049/8215430*	*pierantonio.battistella@unipd.it*
(Prefisso e Telefono)	(Numero Fax)	(Indirizzo di Posta Elettronica)

Lingua di compilazione del progetto (inglese o lingua veicolare)
English

1.3 Area Scientifica del Programma di Ricerca

Area Scientifica Prevalente	*Scienze Mediche*	*(% di afferenza)*	*70*
Area Scientifica	*Scienze Psicologiche*	*(% di afferenza)*	*30*
Area Scientifica		*(% di afferenza)*	
Progetto Interarea	*SI*		

1.4 Titolo del Programma di Ricerca

VOCA.TIO Vocal Output Communication Aids for Temporarily Impaired Owners 2.0*: a feasibility study about children with Disorders Of Consciousness (DOC) in a Pediatric Intensive Care Unit (PICU)*

1.5 Abstract del Programma di Ricerca

The project aims at testing an Augmentative Serious Game (ASG) software in a PICU on children with DOC. Both Augmentative & Alternative Communication technology (AAC) and Serious Game software are well known technologies: we define ASG (Augmentative Serious Game) as the integration of them, where the augmentative communication facilities are "hidden" in a game-like environment to be appealing to children and parents.

Such a solution (MRS - Mind Reader Square), a "tablet based tool", has been developed in 2011 by a team of researchers of the Department of Pediatrics and of Pure Applied Mathematics of the University of Padua. Even it's only a working prototype it has been used in PICU and in NICU at Hospital of Padua

Figure 1. Film frame of the working prototype of ASG with a patient in phase 0
For the full video: http://itunes.apple.com/it/itunes-u/id515235825 --> Mindreader + Mindbuster

Objectives

1. *To define a phase 0 as emerging from coma/sedation: arousal (eye-open) but minimal and fluctuating awarness. Phase 0 is an extention of the 3 phases identified at the Children's Hospital Boston*

2. *To document the possibility that children emerging from coma or from deep sedation (Phase 0) or with stable wakefulness and able to getting attention and responding to yes/no questions (Phase 1) but incapable of completing any motor function, including speaking, can use augmentative serious games (ASG) designed to allow a very early and simple augmentative and augmented communication.*

3. *To evaluate if, in these patients, ASG can:*
    - *a) accelerate the arising phase and thus favoring, the functioning of the medical and nursing staff, and thus the quality of care and ultimately a very early rehabilitation;*
    - *improve and stimulate the communication capacity of the child with parents and the medical staff and thus ameliorate his/her quality of life as well as the one of his/her parents and of the medical staff;*

4. *To modify the existing software (MRS) and integrate it with alternative input devices to suit the needs of patients/parents/hospital staff;*
5. *To analyze the feedback related to Mind Reader Square software*

International collaboration
The project will be taken on in collaboration with Dr. J. Costello, director of the Augmentative Communication Program (ACP) at Boston Children's Hospital (www.childrenshospital.org/acp). The program provides comprehensive, state-of-the-art evaluation and treatment for children and adults with congenital or acquired disorders affecting expressive communication, comprehension and computer access. This includes children with autism.

Children's program is staffed by a team of specialists with expertise in various areas of augmentative communication. The interdisciplinary team includes speech language pathologists, occupational therapists, and computer specialists and collaborate with linguists, software programmers, MIT engineers and ergonomic specialists to create new products and innovative communication tools.

1.6 Caratteri di innovatività del progetto e del gruppo
The most innovate parts of this project can be summarized as follow:

1. ***use of ASG (Augmented Serious Game)** in a Pediatric Intensive Care Unit to stimulate/allow communication in the early stage of the arousal phase (child's coma emerging phase or deep sedation exiting);*

2. ***use of advanced technological solutions** (tablet and dedicated software) to integrate alternative input systems in a flexible framework which can be adapted to children and parents needs; low technology aids (paper material) have been already investigated as alternative and augmentative communication (AAC) tools. Actually it is because we can use high technology ASG that also children emerging from coma could be exposed to this tool.*

3. ***strong interdisciplinary environment** integrating the experience of pediatricians, Child and adolescent psychiatrists, Speech, Language and body Therapists, neurophysiologists, clinical phycholologists, computer scientists;*

4. ***the availability of Padova Hospital Pediatric Intensive Care Unit to test this new framework** and of other ICU in Veneto.*

5. ***the collaboration with The Augmentative Communication Program at Boston Children's Hospital** (www.childrenshospital.org/acp) and throught them with linguists, software programmers, MIT engineers and ergonomic specialists.*

1.7 Settori scientifico-disciplinari interessati dal Programma di Ricerca
MED/39 *MED/38* *M-PSI/04*

1.8 Parole chiave
1. *AREA 07 - Medicine - Med/38 - General And Specialistic Paediatrics - GENERAL AND SPECIALISTIC PEDIATRY*
2. *AREA 17 - Psychology - Health And Mental Health Treatment And Prevention - Psychological Evaluation*

3. *AREA 07 - Medicine - Med/39 - Paedriatic Neuropsychiatry - NERVOUS SYSTEM DISEASES*
4. *AREA 17 - APA - Physiological Psychology And Neuroscience - PSYCHOPHYSIOLOGY*

1.9 Curriculum scientifico del Responsabile Scientifico del programma di ricerca
Pier Antonio Battistella

Graduate education
- School of Medicine – University of Padua, Italy, 1967/1973. Graduated with 107/110
- Italian National Medical Licenses – 1974

Pregraduate electives
Institute of Clinical Neurology and Psychiatry (1972/1973) University of Padova, Italy.

Post-graduated Education in Italian Institutions
- Residency in Neuropsychiatry - Department of Neurology – University of Padova (1974/1977), Italy. Final score: full grades and honours
- Residency in Child Neuropsychiatry – Department of Child Neuropsychiatry – University of Firenze, Italy (1978/1981). Final score: full grades and honours.

Academic appointments
- University grant (1977/1980) Division of Child Neuropsychiatry – Department of Neurology – University of Padua Italy
- University researcher (1980/1991) and Associate Professor (from 1992 up to now) Division of Child Neuropsychiatry – Department of Pediatrics – University of Padova Italy.
Special Institutional appointments in Padova
- Chief of the Headache Service (Dept. of Pediatrics – University of Padova) from 1983 up to now.
- Chef of Child and Adolescent Neuropsychiatic Service ULSS16 Padova
- National capability for head physician in Child Neuropsychiatry (1986)
- Director of the Specialization School in Neuropsychiatry of child and Adolescent, University of Padua (2003-2008).
-
Publications*:he is the author of 624 references (including original articles, book chapters and abstracts) on general pediatric neurology,headache,neuroimaging,epilepsy and cerebrovascular disorders.*

Teaching activities
- Annual course for medical students, School of Medicine, University of Padua.
- Annual Course for students of Psychology, School of Psychology – University of Padua (1992/2008).
- Annual Course for Child Neuropsychiatry residents.
- Annual Course School of Medicine, (University of Padova) for:
Three year degree in 1) Neuro and Psychomotor education therapist, 2) audioprothesis technicians
- Residence Courses:
Child Neuropsychiatry, Pediatrics, Medical Genetics, Audiology, Clinical Psychology.

Membership of National and International Societies: member of the:
- Italian Society of Child Neuropsychiatry
- Italian Society of Paediatrics
- Italian Society of Child Neurology
- Italian Society of Headache Study
- International Child Neurology Society

Member of the board of:
- Italian Society of Child Neurology
- Italian Society of Headache Study
- The Journal of Headache and Pain
- Italian Journal of Child Neuropsychiatry
- Journal of Pediatric Neurology

1.10 Pubblicazioni scientifiche più significative del Responsabile Scientifico del Programma di Ricerca

nº	Pubblicazione
1.	*M. Gatta, L. Dal Zotto, L. Del Col, F. Bosisio, G. Melotti, R. Biolcati, BATTISTELLA P.A. (2012). Adolescents with mental disorders:the efficacy of a multiprofessional approach. . In: Luciano L'Abate. Mental Illness, Evaluation,treatments and implications. vol. book 2, p. 141-170, Rijeka: InTech , ISBN/ISSN: 9789533076454 (Articolo su libro)*
2.	*Mancin R, Cracco A, Damian G, BATTISTELLA P.A., Moro G., Pettenazzo A, Perilongo G (2012). Communication Aids for Temporarily Impaired Owners (VOCA.TIO): Digital Aids for a very early Rehabilitation Targeting Cognition, Behaviour, Communication and Motor Function in a Pediatric Intensive Care Unit: a feasibility study . In: -. Edimburgh, Scotland, March 21-25,2012 (Proceedings)*
3.	*SUPPIEJ A., MENTO G, ZANARDO V, FRANZOI M, BATTISTELLA P.A., ERMANI M, BISIACCHI PS (2010). Auditory processing during sleep in preterm infants: An event related potential study . EARLY HUMAN DEVELOPMENT, vol. 86(12); p. 807-812, ISSN: 0378-3782, doi: 10.1016/j.earlhumdev.2010.09.002 (Articolo su rivista) impact factor: 1.587*
4.	*LEONARDI C, MALACRIDA A, ZATTIN G, VETTORE P, PAVANELLO N, RAVAGNAN E, XILLO R, CANELLA L, SALVIATO C, GREGGIO LF, GASPAROTTO C, LA GAMBA A, BATTISTELLA P.A., RONCHESE M (2009). La riabilitazione nel bambino con patologia neuromotoria e disturbi associati. In: Atti del Convegno "Aspetti psicopatologici e psichiatrici nella cura del bambino e dell'adolescente" CLEUP Padova. Padova, 13-14 novembre 2009, p. 282-284 (Proceedings)*
5.	*LEONARDI C, CANELLA L, MALACRIDA A, VETTORE P, ZATTIN G M, SALVIATO C, BATTISTELLA P.A. (2009). Esperienze applicative delle tecnologie informatiche nel progetto riabilitativo della persona con disabilitÃ . In: Atti del Convegno "L'ausilio nel progetto riabilitativo della persona disabile. Autonomia, benessere e qualitÃ di vita" CLEUP Padova. Abano Terme, 5-7/11/2008, p. 104-105 (Proceedings)*

1.11 Componenti il Gruppo di Ricerca

1.11.0 Professori e ricercatori anche a tempo determinato dell'Università di Padova

nº	Cognome	Nome	Dipartimento/Istituto	Area scientifica di ateneo	Qualifica	Settore	Mesi/Persona(*) Primo anno	Mesi/Persona(*) Secondo anno	Stato della risposta
1.	*DA DALT*	*Liviana*	*DIP. SALUTE DELLA DONNA E DEL BAMBINO SDB*	*07 - Medicine*	*Prof. Associato*	*MED/38*	*1*	*1*	
2.	*FERRARI*	*Lea*	*DIP. PSICOLOGIA DELLO SVILUPPO E DELLA SOCIALIZZAZIONE*	*17 - Psychology*	*Ricercatore*	*M-PSI/04*	*4*	*4*	
3.	*BATTISTELLA*	*Pier Antonio*	*DIP. SALUTE DELLA DONNA E DEL BAMBINO SDB*	*07 - Medicine*	*Prof. Ordinario*	*MED/39*	*4*	*4*	

1.11.1 Professori a contratto di cui all'art. 23 della legge 240/2010, altro Personale dell'Università di Padova anche a tempo determinato (personale tecnico-amministrativo, Dirigenti e CEL)

nº	Nome	Dipartimento/Istituto	Qualifica	Mesi/Persona(*) Primo anno	Mesi/Persona(*) Secondo anno
1.	*MANCIN ROBERTO*	*DIPARTIMENTO DI SALUTE DELLA DONNA E DEL BAMBINO - SDB*	*CATEGORIA D POSIZIONE ECONOMICA D1 AREA TECNICA, TECNICO-SCIENTIFICA ED ELABORAZIONE DATI*	*4*	*4*
2.	*MORO GIANLUCA*	*DIPARTIMENTO DI SCIENZE STATISTICHE*	*CATEGORIA D POSIZIONE ECONOMICA D1 AREA TECNICA, TECNICO-SCIENTIFICA ED ELABORAZIONE DATI*	*2*	*2*
3.	*SEQUI GIUSEPPINA*	*DIPARTIMENTO DI SALUTE DELLA DONNA E DEL BAMBINO - SDB*	*CATEGORIA D POSIZIONE ECONOMICA D1 AREA TECNICA, TECNICO-SCIENTIFICA ED ELABORAZIONE DATI*	*1*	*1*

1.11.2 Titolari di assegni di ricerca dell'Università di Padova

nº	Cognome	Nome	Dipartimento/Istituto	Area scientifica di ateneo	Mesi/Persona(*) Primo anno	Mesi/Persona(*) Secondo anno
1.	*BIANCHIN*	*Marta*	*DIP. PSICOLOGIA GENERALE*	*17 - Scienze Psicologiche*	*4*	*4*

1.11.3 Studenti di Dottorato di Ricerca dell'Università di Padova

nº	Cognome	Nome	Dipartimento/Istituto	Area scientifica di ateneo	Qualifica	Mesi/Persona(*) Primo anno	Mesi/Persona(*) Secondo anno

1.11.4 Professori, ricercatori (anche a tempo determinato), dottorandi e assegnisti di altre Università

nº	Cognome	Nome	Università	Area scientifi	Dipartimento/Istituto	Qualifica	Settore	Mesi/Persona(*)	Mesi/Persona(*)

				ca di ateneo				**Primo anno**	**Secondo anno**

1.11.5 Dipendenti di altre amministrazioni pubbliche, di enti pubblici o privati, di imprese, di istituzioni straniere, soggetti esterni in possesso di specifiche competenze nel campo della ricerca

nº	**Cognome**	**Nome**	**Ente**	**Qualifica**	**Mesi/Persona(*) Primo anno**	**Mesi/Persona(*) Secondo anno**
1.	*AMIGONI*	*ANGELA*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*Medical Doctors, Staff Member of the PICU*	*1*	*1*
2.	*CAODURO*	*FEDERICA*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*PICU's nurce*	*1*	*1*
3.	*COSTELLO*	*JOHN*	*Boston Children's Hospital - ACP (Augmentative Communication Program)*	*MA, CCC-SLP, Director of ACP*	*1*	*1*
4.	*CRACCO*	*ALESSANDRO*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*PhD, ICT Specialist*	*1*	*1*
5.	*DAMIAN*	*GIOVANNI*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*ICT Specialist*	*1*	*1*
6.	*DE NARDI*	*PAOLO*	*Azienda ULSS 16 Padova, UOC of Information and Clinical technology*	*Chair of ICT Department*	*1*	*1*
7.	*LEONARDI*	*CARLA*	*Azienda ULSS 16 Padova,UOC di Neuropsichiatria dell' Infanzia e dell' Adolescenza*	*Speech and Language Therapist*	*1*	*1*
8.	*MALACRIDA*	*ANNA*	*Azienda ULSS 16 Padova,UOC di Neuropsichiatria dell' Infanzia e dell' Adolescenza*	*Phisioterapist*	*1*	*1*

9.	*MAGAROTTO*	*MARIELLA*	*Azienda ULSS 16 Padova, UOC of Neonatal ICU*	*Medical Doctors, Staff Member of the NICU*	*1*	*1*
10.	*MUNARI*	*MARINA*	*Azienda ULSS 16 Padova,UOC di Neurochirurgia*	*Chair of the Neuro ICU*	*1*	*1*
11.	*PERILLO*	*DAVIDE*	*Azienda ULSS 16 Padova,UOC di Ingegneria Clinica*	*Staff Member*	*1*	*1*
12.	*PETTENAZZO*	*ANDREA*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*Chair of the PICU*	*1*	*1*
13.	*STRITONI*	*VALENTINA*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*Medical Doctors, Staff Member of the PICU*	*1*	*1*
14.	*SUPPIEJ*	*AGNESE*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*Chair of Child Neurology Service*	*1*	*1*
15.	*ZAGGIA*	*CRISTINA*	*Azienda ULSS 16 Padova,UOC Clinica Pediatrica*	*PICU's Head Nurse*	*1*	*1*

2.1.0 Pubblicazioni scientifiche più significative dei componenti il gruppo di ricerca (docenti dell'ateneo di Padova)

nº	**Pubblicazioni**
1.	*CALLEGARO S, TITOMANLIO L, DONEGA S, TAGLIAFERRO T, ANDREOLA B, GIBERTINI GG, PARK SY, SMAIL A, MERCIER JC, DA DALT L. (2009). Implementation of a Febrile Seizure Guideline in Two Pediatric Emergency Departments. PEDIATRIC NEUROLOGY. vol. 40, pp. 78-83 ISSN: 0887-8994, ISI:000262574500002 PMID: 19135618 doi:10.1016/j.pediatrneurol.2008.09.008. Impact factor 1.497*
2.	*A. ZANIN, S.MASIERO, M.S. SEVERINO, M.CALDERONE, DA DALT L., A.M.LAVERDA. (2010). A delayed methadone encephalopathy: clinical and neuroradiological findings. JOURNAL OF CHILD NEUROLOGY. vol. 25(6), pp. 748-751 ISSN: 0883-0738.*
3.	*HOWARD KAS, FERRARI L., NOTA L., SOLBERG VSH, SORESI S. (2009). The relation of cultural context and social relationships to career development in middle school. JOURNAL OF VOCATIONAL BEHAVIOR. vol. 75, pp. 100-108 ISSN: 0001-8791, ISI:000273937800002 doi:10.1016/j.jvb.2009.06.013. Impact factor 1.835*
4.	*NOTA, L, SORESI, S, FERRARI L., L, WEHMEYER, ML. (2011). A Multivariate Analysis of the Self-*

	Determination of Adolescents. JOURNAL OF HAPPINESS STUDIES. vol. 12, pp. 245-266 ISSN: 1389-4978.
5.	*Bressan S, Romanato S, Mion T, Zanconato S, DA DALT L. (2012). Implementation of Adapted PECARN Decision Rule for Children With Minor Head Injury in the Pediatric Emergency Department. ACADEMIC EMERGENCY MEDICINE. pp. 1-7 ISSN: 1069-6563, PMID: 22724450 doi:10.1111/j.1553-2712.2012.01384.x.*
6.	*PRIME DR, NOTA L, FERRARI L., SCHULTHEISS DEP, SORESI S, TRACEY TJG. (2010). Correspondence of children's anticipated vocations, perceived competencies, and interests: Results from an Italian sample. JOURNAL OF VOCATIONAL BEHAVIOR. vol. 77, pp. 58-62 ISSN: 0001-8791, ISI:000279267200007 doi:10.1016/j.jvb.2010.02.012.*

2.1.1 Pubblicazioni scientifiche più significative dei componenti il gruppo di ricerca (altri partecipanti al progetto)

COSTELLO JM.

1. Costello JM, Patak L, Pritchard J. "Communication vulnerable patients in the pediatric ICU: Enhancing care through augmentative and alternative communication." J Pediatr Rehabil Med. 2010;3(4):289-301.

AMIGONI A.

1. Amigoni A, Corner P, Zanella F, Pettenazzo A. "Successful use of inhaled nitric oxide in a child with fat embolism syndrome." J Trauma.
2010 Mar;68(3):E80-2
2. Amigoni A, Mozzo E, Brugnaro L, Gentilomo C, Stritoni V, Michelin E, Pettenazzo A. "Assessing sedation in a pediatric intensive care unit using Comfort Behavioural Scale and Bispectral Index: these tools are different." Minerva Anestesiol. 2012 Mar;78(3):322-9.
3. Amigoni A, Pettenazzo A, Biban P, Suppiej A, Freato F, Zaramella P, Zacchello F. "Neurologic outcome in children after extracorporeal membrane oxygenation: prognostic value of diagnostic tests."
Pediatr Neurol. 2005 Mar;32(3):173-9.

SUPPIEJ A.

1. Suppiej A, Mento G, Zanardo V, Franzoi M, Battistella PA, Ermani M, Bisiacchi PS. "Auditory processing during sleep in preterm infants: An event related potential study."
Early Hum Dev. 2010 Dec;86(12):807-12. Epub 2010 Oct 14.

MANCIN R.

1. Mancin R. "VOCA: ausilio portatile per la comunicazione con uscita in voce sintetica" Atti del 40 Convegno Nazionale "Informatica, Didattica e Disabilita' (IDD'95)", Firenze 1995, pp. 545-548
2. Mancin R, Leonardi C, Bertocco E. "Disabilità neuromotoria in età pediatrica: Ausili informatici per giocare e crescere. Proceedings of Meeting “ausili per persone disabili” – Abano 5-7/11/2008
3. Mancin R. Corso di informatica per ragazzi con trauma cranico. Atti del 40 Convegno Nazionale "Informatica, Didattica e Disabilita' (IDD'95)", Firenze 1995, pp. 545-548

BIANCHIN M.

1. Angrilli A, Bianchin M, Radaelli S, Bertagnoni G, Pertile M. Reduced startle reflex and aversive noise perception in patients with orbitofrontal cortex lesion. Neuropsychologia 2008; 46(4): 1179-84. IF: 3.949
2. Bianchin M, Angrilli A. Decision Preceding Negativity in the Iowa Gambling Task: an ERPs study. Brain and Cognition 2011; 75, 273-280. IF: 2.838
3. Bianchin M, Bertagnoni G, Piccinni P, Bartolomei L, and Angrilli A. Neurophysiological monitoring and own name processing in disorder of consciousness. (Paper in preparation)

2.2 Curriculum scientifico dei Componenti il Gruppo di Ricerca

DA DALT LIVIANA

Professore Associato SSD Med 38 Pediatria Generale e Specialistica
Università degli Studi di Padova
Incarico dirigenziale a tempo determinato ai sensi dell’art. 15-septies DL 502, 30 dicembre 1992, di Dirigente

Medico a rapporto esclusivo, disciplina Pediatria, presso la U.O.C. di Pediatria del Presidio Ospedaliero di Treviso dell'Azienda U.L.S.S. 9.

Attività in Commissioni

- *Commissione Regionale per la gestione del bambino e del neo-nato critico in emergenza/urgenza. Direzione Regionale per i Ser-vizi Sanitari, anno 2008.*
- *Commissione Regionale per la gestione del bambino e del neo-nato critico in emergenza ed urgenza. (Attuazione Deliberazione della Giunta Regionale n 3318 del 3 novembre 2009, Giunta regionale Regione Veneto, decreto n. 00100 del 21 luglio 2010)*
- *Commissione Didattica della Facoltà di Medicina e Chirurgia dell'Università di Padova. Per il Triennio 1996-1998 e 2001-2003.*
- *Commissione Didattica della Scuola di Specializzazione in Pediatria dell'Università di Padova dal 1993 al 2010.*
- *Commissione Didattica della Scuola di Specializzazione in Neuropsichiatria Infantile dell'Università di Padova dal 1999 al 2005.*
- *"European Working Group on Pediatric Emergency Care" (European Academy of Pediatrics e "European Society of Emergency Medicine") anno 2008-2011.*
- *Consiglio Direttivo del Gruppo di Studio di Medicina d'Urgenza Pediatrica della Società Italiana di Pediatria per il triennio 1996-1999.*
- *Consiglio Direttivo della Società Italiana di Pediatria Sezione Veneto per il triennio 2000-2002.*

Congressi

- *Segreteria scientifica di 15 Congressi Nazionali ed Internazio-nali.*
- *Relazioni e moderazioni su invito ad oltre 180 Congressi Nazio-nali ed Internazionali su temi di Pediatria Generale, Pediatria d'Urgenza e Formazione in ambito pediatrico.*

Pubblicazioni

- *oltre 150 pubblicazioni per esteso su riviste nazionali ed internazionali.*
- *3 libri di testo.*
- *9 capitoli su libri di testo.*

Principali ambiti di ricerca attuali

- ***Predittori si lesione intracranica nel bambino con trauma cranico minore***
- *Predittori di infezione batterica severa nel lattante febbrile*
- *Predittori di danno renale nel bambino con prima infezione delle vie urinarie*
- *Reazioni avverse a farmaci e vaccini in pediatria*

LEA FERRARI

Academic Background
-2007 Post Phd, University of Padova
-2005 Phd in Vocational Psychology, University of Padova

-2000 Post-graduate one-year course in "Psychology of Vocational Guidance" at the University of Padova
-1998 Degree in Psychology, University of Padova

Actual position
-2007- Assistant Professor at the Faculty of Psychology, University of Padova

Teaching activities
-2008-2009, 2009-2010 Professor of Psychology of work inclusion of persons with disability, Faculty of Psychology, University of Padova
-2009 Professor of Psychology of Handicap and Rehabilitation at the course of Speech Therapy, Faculty of Medicine, University of Padova
-2009- Professor at the post-graduate Master Course in School-Career Counseling, Faculty of Psychology, University of Padova

Research Interests
-Quality of life
-Social inclusion
-Cognitive and physical disabilities
-Efficacy of intervention
-Assessment
-Career Development

Memberships
-Italian Society for Vocational Guidance
-International Member of American Psychological Association
-AIP - Associazione Italiana di Psicologia (Italian Association of Psychology)
-European Society on Family Relations (ESFR)
-Member of the Centro di Ateneo di Servizi e Ricerca per la Disabilità, la Riabilitazione e l'Integrazione (University center of services and research for disabilities,reahabilitation and inclusion), University of Padova

Member of international research projects 2007
-"Erasmus NICE - Network for Innovation in Guidance" coordinated by prof. Christiane Schiersmann, University of Heidelberg, Germany
-"Career Adaptabilty" coordinated by prof. M. Savickas, Northeastern Ohio Universities College of Medicine and Pharmacy, USA

Editorial activities
- Editorial coordinator of the Giornale Italiano di Psicologia dell'Orientamento (Italian Journal of Vocational Behavior)
- Ad-hoc reviewer: Giornale Italiano di Psicologia dell'Orientamento, Scandinavian Journal of Psychology, Educational Research Review

MARTA BIANCHIN
Position*: Research Assistant at the Department of General Psychology, University of Padova. Member of examination committee of Psychobiology and Psychopharmacology. Education and Academic Positions: 2003, graduated in Psychology, at the University of Padova, under supervision of Prof. Alessandro Angrilli. 2005 State Qualified Psychologist Examination. 2006, visiting student at the Department of Psychology, Univesity of Wuerzburg, under supervision of Prof. Paul Pauli. 2007 Young Researchers Award, Italian Association of Psychology, Section of Experimental Psychology. 2008, Doctorate School in Psychological Science, University of Padova, Ph.D in Psychobiology, under supervision of Prof. Alessandro Angrilli. 2008, Best dissertation of the year, Italian Association of Psychology, Section of Experimental Psychology. March 2008 to present, Research Assistant (Post Doc research fellowship) at the Department of General Psychology, Univesity of Padova. Ad hoc referee for Neuroscience Letters and Acta Psychologica. Research interests: Psychophysiology of emotions. Neuroanatomical correlates of startle reflex. Psychophysiology of emotional deficits in neurological patients. Neurofunctional and neuroanatomical correlates of Decision-making: role played by the prefrontal cortex and amygdala. Neurofunctional correlates of consciousness. Neurofunctional correlates of vegetative state diagnosis and prognosys. Influence of microgravity on cortical activity and mental performance on astronauts. Clinical application of Neuro- and Bio-feedback in helthy subjects and in traumatic brain injury patients.*

2.3 Stato dell'Arte: base di partenza scientifica nazionale ed internazionale

The inability to communicate because of a DOC in PICU or because of mechanical ventilation is recognized as a terrifying and isolating experience that is related to feelings of panic, insecurity, anger, worry, fear, sleep disturbances, and stress among critically ill patients of any age. Most of these feelings are also experienced by all the people taking care of these patients, such as parents, relatives and medical personnel who want but can't establish effective contacts with the affected patient. The lack of communication has also a deep influence on the quality of care because of the difficulties of interpreting patients' intimate needs. Furthermore, the impossibility of giving and receiving messages has a clear impact on the recovery or, better, on the rehabilitation phase of the affected patients and thus, possibly, on the speed and quality of the recovery. For all these reasons it becomes imperative to find alternative ways for allowing the affected patients to establish effective communication with the surrounding word.

So far alternative methods of Augmentative and Alternative Communication (AAC) systems in Intensive Care Units (ICU) with temporarily nonspeaking patients have received little attention from the researchers. Most nurse-patient communicative interactions in the intensive care unit (ICU) are brief, consisting of task or procedure-oriented information, commands, or reassurances. Voice Output Communication Aids (VOCAs) are a subset of AAC devices that produce prerecorded, digitized voice messages (recorded speech) or synthesized speech (computer-generated voice) when the communicator accesses specific locations on a dynamic display screen or membrane keyboard. Most electronic VOCAs can be pre-programmed with situationally-relevant whole messages, such as "I'm having pain," that are accessed via one location on the device display. Pre-programmed messages on additional "levels" can be added for elaboration.
The new communication technologies are permeating the attitude of children who, since the beginning of their psycho-social and motor development, are exposed to the application of these modern technologies. The computerized games are by definition the tools with which children learn, and at very early stages of their life, how to deal with the 'language' of these new communication technologies. Thus AAC systems can be 'hidden' within electronic game like tools which can easily attract children's interests other than find, in them, already expert users. These type of tools are generally defined serious games: a game designed for a primary purpose other than pure entertainment and, in this case, it is constructed to allow people 'who can't but have to' to communicate. This tool may also stimulate the child's willingness to communicate and thus may allow him/her to become the main actor of his/her own rehabilitation process.
It is proposed to call these tools Augmentative Serious Games, (ASG) - other than simply Serious Games - because indeed these are dynamic and flexible tools capable of potentiating and stimulating the emerging abilities of the sick child during the recovering phase of a severe Traumatic Brain Injury (TBI).

After years of experience, the staff at the Children's Hospital Boston, has identified three phases for providing communication access in the PICU.

- ***phase 1 - Stable wakefulness:*** *Getting attention and responding to yes/no questions*
- ***phase 2 - Increased wakefulness:*** *Communicating basic information with staff and family*
- ***phase 3 - Need for broad and diverse communication access:*** *Communicating about and beyond the hospital environment*

Even if it's very hard to detect and to valutate in real time the awareness status of an unresponsive patient with DOC, a ***phase 0 [emerging from coma/sedation:*** *arousal (eye-open) but minimal and variable awarness] should be defined as an extention of the 3 phases identified at the Children's Hospital Boston.*

2.4 Descrizione del Programma di Ricerca

Type of study *– The project is a feasibility study combining quantitative and qualitative approaches in a complementary design. Participant observation, semi-structured interviews, questionnaires, and clinical record review will be used to obtain data on the use of an Augmentative Serious Game (ASG). This work is focused on a less explored domain, that of the access to ASG by children in a "locked-in-status" (condition in which a patient sometime is minimally aware but cannot move or communicate verbally due to complete paralysis of nearly all voluntary muscles in the body except for the eyes - phase 0) because of traumatic*

brain injury (TBI) or because of mechanical ventilation (e.g. after poli-trauma, post- neurosurgical conditions, extensive body burns or other conditions - phase 1)

The locked-in SYNDROME is a clinical condition characterized by quadriplegia in combination with cranial muscle paralysis. Consciousness is full but the only retained voluntary motor activity may be limited eye movements. When also the eye movements are lost but still with some level of consciousness the condition is known as "super locked-in syndrome". This condition is usually caused by a lesion in the upper brain stem which injures the descending cortico-spinal and cortico-bulbar tracts. Actually, also patients with severely compromised level of consciousness secondary to severe but reversible neurological damages can temporarily experience a locked-in STATUS during the awakening phase even if the awareness level is floating (this situation is different from the locked-in SYNDROME where the awareness and so consciousness is always full). In these cases the inability to communicate is recognized as a terrifying and isolating experience that is related to feelings of panic, insecurity, anger, worry, fear, and stress among critically ill patients of any age and having a traumatic effect of the subsequent patient's psychological status. It is assumed that the younger is the patient the more severe and potentially irreversible are these traumatic effects.

Most of these feelings are also experienced by all the people caring for these patients, such as parents, relatives and medical staff who cannot establish effective contacts with the affected patient.
The lack of communication has also an influence on the quality of care because of the difficulties of interpreting patients' intimate needs. It can also lead to an increase in sentinel events, medical errors and extended lengths of stay. There is an increasing awareness of this issue within the medical community and thus the need of developing tools to index the level of consciousness strongly needed in order to overcome this status of non communication, to improve the quality of care for the patient and to reduce all the negative effects they the child suffer because of this dramatic neurological status.

***Clinical setting** – The study will be conducted in The Pediatric Intensive care unit (PICU) of the Department of Pediatrics of the University Hospital of Padua, Italy. The PICU is a 10-bed facility serving all the North-East part of the Veneto Region (about 500.000 children less than 18 years of age). The study has been submitted for approval by the Research Ethical Committee of the University Hospital of Padua. The particular children physical condition will guide the research team into an expansion of the Mind Reader Square to have a very flexible framework in which integrate alternative input systems as needed. Depending on such physical condition, the input devices can be standard mouse, external dedicated buttons, accelerometer to record even the smaller child movement (a finger for example) or BCI (Brain Computer Inferface) systems, depending of the medical staff indications.*

***Patient population** – All children aged between 3 and 18 years consecutive admitted to the PICU of the Department of Pediatrics of the University Hospital of Padua, Italy in the two-year period of the study or i) suffering of a "locked-in STATUS" or ii) being intubated and partially sedated incapable of completing any motor function (including speaking). No patient selection by gender, race, social status, level of education, culture or native language will be used. Patients will be identified by the medical and nursing staff of the PICU and the child enrolled into the study upon signing of the consensus form by the child's parents or legal guardian. The timing to start the use of the ASG will be decided by the medical staff, by the researchers and whenever possible after receiving the patient's approval to "play" with the ASG. All the medical and nursing staff and the child relatives will be trained on the use of ASG in the study patients and on how "to train" the patients. An instructional manual will be made available outside of the patient's room for review. The study patients will be followed until extubation or hospital discharge, whichever occurred first. Investigators during the study period will carry pagers, rotating "on call" to solve problems or answer questions about the ASG.*

***Platform** - "Mind Reader Square": an ASG developed by a team of researcher of the Department of Pediatrics and of Pure Applied Mathematics of Padua University (after having obtained preliminary data testing other Augmentative and alternative Communication (AAC) systems). This tool is a tabled based digital application designed with all the characteristic of any other pure vocal computerized game in order to facilitating the children's approach. The patient can play with the ASG interacting with the colored and multimedial screen using whatever motor movement he/she is capable of performing at that specific stage of the recovering. A series of images, sounds and video clips are stored in different levels (files) which are variably accessible according to the child's quality of performance. At every image a vocal message (in the chosen language) can be generated simulating a real dialogue. In this prospective all the language barriers are overcome (!). The different sets of images are selected according to the content of the message the patient wants to give; they may be related to the sense of hungry, thirsty, upset, of being in pain, of being cheerful. The set of images can be also personalized according to the specific patient's age, history, culture or family and whatever else can be selected. The ASG contains also real games if the sick child wants only*

to play. The games can be also constructed to stimulate the personal rehabilitation effort; for example the game can be constructed in a way that it give a prize if the child accomplishes a task which is important for his/her rehabilitation program (for example using one arm other than the other or rising legs or whatever). The ASG can be also used for distant communication with relatives at home, friends, schoolmates in class, having access to e-mail, SMS, FaceBook, Twitter.

The ASG under investigation has already been developed by a team of researchers of the Department of Pediatrics and Department of Pure and Applied Mathematics of the University of Padua (http://code.google.com/p/tiped-communication/). It won The Stage-it 2012 prize as best stage for innovation ("Miglior stage per l'innovazione") sponsored by "Camera di commercio" and "Confindustria".

Figure 3. A news about the sperimental use of a working prototype in Paduas's PICU with a machine translation of the italian text

Data:
lunedì 14.05.2012

IL GAZZETTINO PADOVA

Estratto da Pagina:
5

Il "cattura pensieri" per i **bimbi** malati

In Pediatria un elettroencefalografo portatile È capace di "leggere" le onde emesse dal cervello

Federica Cappellato

Le meravigliose potenzialità della comunicazione non verbale. Quando le parole non dicono, a scandagliare il silenzio e a captare "voci", che poi sono desideri nascosti e ritmi al di là della semantica, ci pensa l'alta tecnologia "cattura-pensieri". Come far esprimere i bambini ricoverati in terapia intensiva, temporaneamente incapaci di relazionarsi verbalmente col mondo esterno, immobilizzati o intubati? Il Dipartimento per la salute della mamma e del bambino, insieme con il Dipartimento di matematica, unendo le competenze di neurofisiologi, intensivisti, informatici, in forte sinergia con psicologi e ingegneri dell'Ateneo e l'associazione per il trauma cranico Daccapo, ha avviato un progetto di "comunicazione aumentativa": la sfida è intervenire già nella fase di risveglio in ospedale in cui nemmeno lo sguardo rivela con certezza il ritorno della consapevolezza di sè.

Il prodigio è una cuffietta sul capo dei piccoli pazienti: un elettroencefalografo portatile dotato di sensori, da indossare come un caschetto capace di misurare le onde elettriche emesse dal cervello. "Emotiv", così si chiama l'apparecchio già in sperimentazione nella nostra Pediatria, è in grado di percepire anche il minimo movimento della testa: a ogni spostamento è collegato un disegno "a faccina", visibile su una tavoletta digitale. Con un colpetto a destra il bambino può comunicare "ho caldo", a sinistra "ho freddo", in alto "ho fame", e ancora: gioia o dolore, sonno o sete, voglia di mamma e papà. Il progetto, battezzato "Vocatio", si sostanzia di un'applicazione per tablet che ha permesso a Federico Baron, studente magistrale di informatica, di vincere il premio per il "Miglior stage per l'innovazione" all'interno della settima edizione del Premio Stage.IT della Camera di commercio e di Confindustria, delle Università di Padova e Venezia. Questo avveniristico sistema di «Brain computer interfaces» verrà presentato mercoledì nel Dipartimento pediatrico (ore 15, aula Magna) durante un seminario cui interverrà, oltre a Giorgio Perilongo, Andrea Pettenazzo e Roberto Mancin, il prof. John Costello, direttore del programma per la comunicazione aumentativa del Children's Hospital di Boston che da oltre dieci anni, con la sua équipe, utilizza l'hi-tech per amplificare la volontà di chi non può parlare con la bocca ma solo con gli occhi. Perchè pare che, nel gioco della vita, «non sia importante avere delle belle carte, quanto il saper giocare bene quelle che si hanno».

CUFFIETTA
Sopra e in alto a destra l'apparecchio per i bimbi malati

Thoughts-buster for sick kids - In Padua a laptop for electroencephalography is able to "read" the waves emitted by the brain of childs *by Federica Cappellato*

The great potential of non-verbal communication. When words do not say, to fathom the silence and capture "voices", which are then hidden desires and rhythms beyond the semantics, we think high-tech "catch-thoughts." How to make children admitted to intensive care, temporarily unable to verbally interact with the outside world, immobilized or intubated? The Department for the health of women and children, together with the Department of Mathematics, combining the skills of neurophysiologists, intensivists, information technology, in synergy with psychologists and engineers of the University and the Association for Daccapo head injury, has started a project of "augmentative communication": the challenge is to intervene at an early stage of awakening in the hospital where even look reveals with certainty the return of self-awareness.

The prodigy is a cap on the head of the young patients: a portable electroencephalograph with sensors, can be worn as a helmet capable of measuring the electrical waves emitted by the brain. "Emotiv", the name of the device already being tested in our Pediatrics, is able to detect even the slightest head movement: each movement is linked to a plan "to face", visible on a digital tablet. With a flick to the right the child can communicate "I'm hot," left "I'm cold." Top "I'm hungry," and again: joy or pain, or sleep, thirst, desire to Mom and Dad. The project, dubbed "VOCA.TIO", takes the form of an application for the tablet that allowed Federico Baron, a masterful student of computer science, to win the award for "Best Stage for Innovation" in the seventh edition Prize Stage.IT Chamber of Commerce and the Confederation, of the University of Padua and Venice. This futuristic system of "Brain computer interfaces" will be presented on Wednesday in the Pediatric Department (15 hours, Main Hall) during a seminar which will intervene, as well as George Perilongo, Andrea Pettenazzo Roberto Mancin, prof. John Costello, program director for the augmentative communication at Children's Hospital in Boston who has over ten years, with his team, using the hi-tech to boost the will of those who can not speak with his mouth, but only with the eyes. Because it seems that the game of life, "is not important to have some good cards, able to play well as the ones you have."

***Outcome measures** - The actual use of the ASG by the child will be recorded daily by the parents (appropriately trained) and by the nurses. For this purpose an Observation of Communication Event Record will be developed. It will be designed also to document time, frequency of the actual use of the device, the characteristics of observed communication interactions between patient and communication partner (ie, nurses or family visitors) such as initiation of communication, position of device, methods of communication, message content, difficulties encountered and assistance required by the communication partner. Furthermore, automatically and daily the ASG will generate a report indicating the frequency, the duration and the magnitude of its use which will be stored in a central server. The data produced “manually” by the parents and the nursing staff will be collected separately for a later comparison with the automatically generated information produced by the ASG. All this will serve to produce evidence on the actual use of the device by the child. The daily reports will be also used to compare the actual use in term of time spent with the game and quality of the games played according to the patients’ clinical status. Ideally a direct relationship will be found between the level of games “played” and the improved clinical status.*
Patients, clinicians, and family members will be asked about their experience with the device, including validation of message content heard by observers. Clinical records will be also reviewed for documentation of nonvocal communication method, content, and ASG use. Finally formal interviews will be conducted with the patients, the family members and the medical personnel.

***Data analysis** - Quantitative data will be analyzed using descriptive statistics (mean, SD, frequency) and pattern identification via data matrices.*
Characteristics of communication interactions (ie, communication method(s), number of communication partners, role of communication partner, position of partner, patient, and device, initiator of message, message validation, sedation/analgesia, physical restraint use) were coded from the Observation of Communication Event Record and tabulated.

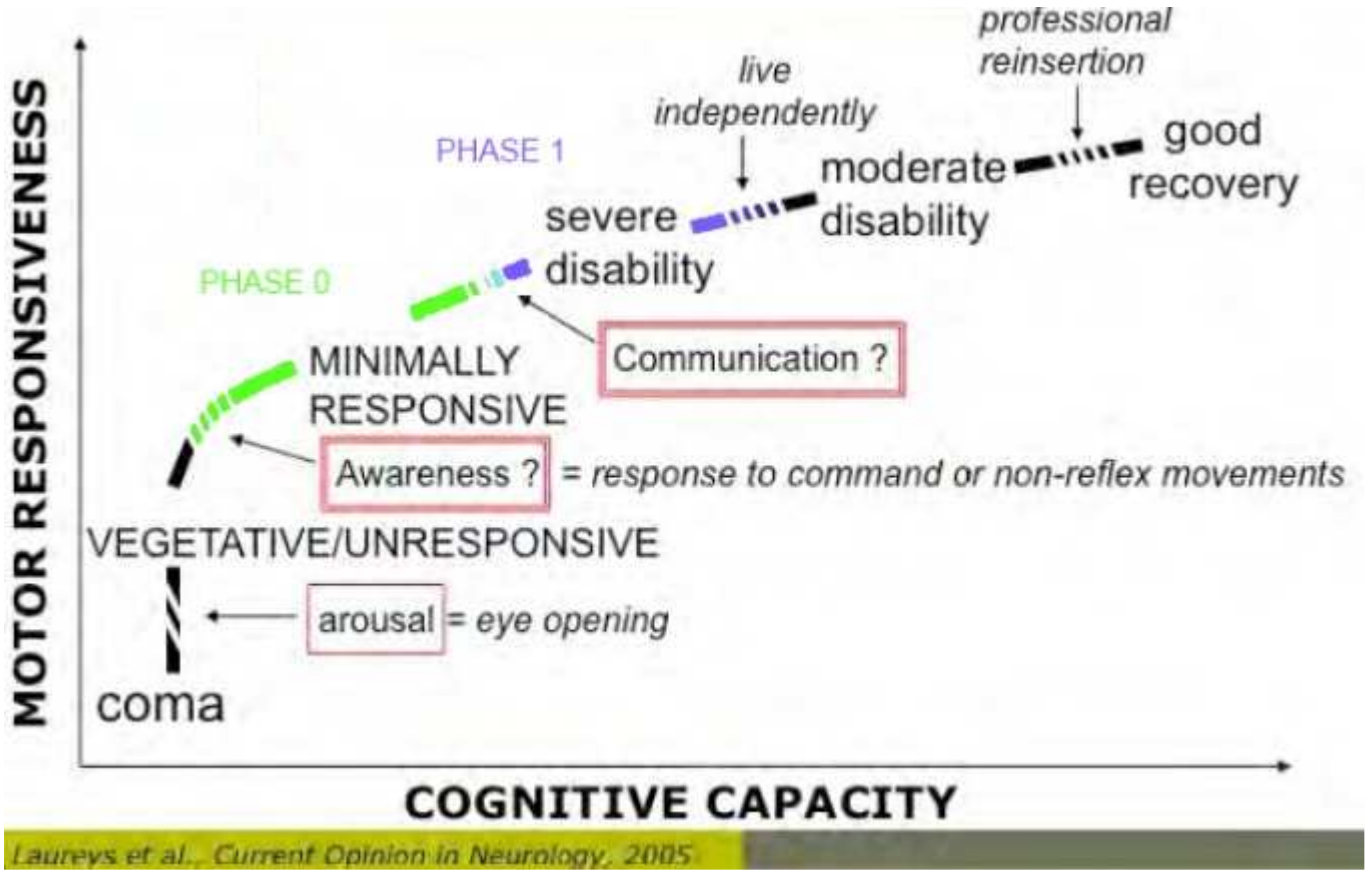
2.5 Obiettivo del Programma di Ricerca ed indicazione dei risultati previsti alla fine del primo anno e a conclusione della ricerca

Primary objectives:
1.To define a phase 0 as emerging from coma/sedation: arousal (eye-open) but minimal and fluctuating awarness. Phase 0 is an extention of the 3 phases identified at the Children’s Hospital Boston

2.To document the possibility that children emerging from coma or from deep sedation (Phase 0) or with stable wakefulness and able to getting attention and responding to yes/no questions (Phase 1) because of a

severe traumatic brain injury (TBI) or because intubated and partially sedated (thus, incapable of completing any motor function, including speaking) can use augmentative serious games (ASG) designed to to allow a very early and simple augmentative and augmented communication.

Figure 3. Different clinical entities encountered on the gradual recovery from coma, illustrated as a function of cognitive and motor capacity



adapted from [Laureys et all - Residual cognitive function in comatose, vegetative and minimally conscious states]

3.To evaluate if, in these patients, ASG can:

- *accelerate the arising phase and thus favoring, the functioning of the medical and nursing staff, and thus the quality of care and ultimately an early rehabilitation;*
- *improve and stimulate the communication capacity of the child with parents and the medical staff and thus ameliorate his/her quality of life as well as the one of his/her parents and of the medical staff;*

4.To modify the existing software and integrate it with alternative input devices (for examples buttons, accelerometers, BCI solutions) to suit the needs of patients/parents/hospital staff;

5.To analyze the patients/parents/staff feedback related to Mind Reader Square software and verify both which software enhancement can be implemented and which hardware input modules can be used for a better usability, from standard alternative inputs to BCI interfaces.

Study-end points and expected results at the end of the first year:

1. *Preliminary documentation that ASG can actually be used by the study population;*

2. *First positive judgments made by the doctors in evaluating the speed/quality of the arising phase in these children;*

3. *First positive reports on the quality of life and care perceived by the patients, by their parents and by the medical personnel.*

These study end-points will be monitored regularly. At the end of the first year a study report will be produced in order to monitor the preliminary outcome of the project. At the end of the study period qualitative and quantitative data regarding the study-end-points listed above will be produced to document the achievement of the objectives set for the research.

In brief the project here outlined is designed to produce feasibility data on the use of ASG in children admitted to a pediatric ICU and suffering from a clinical condition temporarily preventing them for being able to communicate.

It also aims at documenting their beneficial effects on the quality of life of the patients, of their relatives, and of the medical staff caring for them and, thus, on the quality of care.

***The ultimate desired outcome will be the patenting of the entire process and its diffuse use in pediatric as well as in neonatal and in adult ICUs (Neurosurgical and Medical ICU)**. Furthermore, it is predicted that these experiences will generate new ideas regarding the use of modern communication technologies in Pediatric Intensive Care Units as well as in other pediatric settings.*

To our knowledged this would represent the first clinical research regarding the use of an ASG in phase 0

3.0 Costo del Programma

Il finanziamento complessivo biennale, richiesto e assegnato, ha un limite minimo di Euro 20.000 (che può essere ridotto a Euro 15.000 nel caso in cui non si richiedano finanziamenti per attrezzature) e un limite massimo di Euro 100.000
Il costo per Assegni di Ricerca non può essere inferiore a Euro 22.946 per annualità di un assegno di ricerca.

3.1 Assegni di ricerca da attivare in questo Programma di Ricerca

nº	Attività specifica nel progetto e competenze	Durata complessiva	Costo assegno annuo (euro)	Costo totale (euro)
1.	*Coordinamento*	*BIENNALE*	*24.000*	*48.000*
	TOTALE			***48.000***

3.2 Personale a contratto

nº	Attività specifica nel progetto e competenze	Durata complessiva	Costo totale (euro)
1.	*programmer*	*4*	*9000*
2.	*data analisys and elaboration specialist*	*4*	*9000*

3.	*interface/experiment designer*	*4*	*9000*

3.3 Richiesta di attrezzature di importo superiore a 5.000 Euro

nº	Descrizione attrezzatura da acquistare	Costo previsto (euro)
1.	*8 tablet con Android 4.x (700 x 8)*	*5.200*
2.	*4 Emotiv Epoc Research license + 4 NeuroSky Academic Licenses + 4 Matlab Research License*	*6.550*
3.	*4 developing PC station (1500x4)*	*6.000*
	TOTALE	***17.750,000***

3.4 Costo complessivo del Programma di Ricerca

	Descrizione	Costo totale (euro)
Materiale inventariabile		*2.000*
Materiale di consumo e funzionamento		*1.000*
Congressi e missioni		*3.000*
Servizi esterni		*0*
Assegni di ricerca	*(vedi punto 3.1)*	*48.000*
Personale a contratto	*(vedi punto 3.2)*	*27.000*
Attrezzature scientifiche di importo superiore a 5.000 Euro	*(vedi punto 3.3)*	*17.750*
TOTALE		***98.750***

Il presente progetto NON prevede sperimentazione animale

SI DICHIARA INOLTRE QUANTO SEGUE:

1) È stata presentata richiesta di finanziamento, per lo stesso o analogo progetto, anche ad altro Ente, da parte del Responsabile o dei componenti il gruppo di ricerca: *NO*

Se sì indicare:

- a quale Ente:

NO

2) La realizzazione del presente progetto sarà sovrapposta alla realizzazione di altri rilevanti progettidi ricerca:

Se sì, indicare quali:

Il Responsabile della Ricerca: .....

Il Direttore della Struttura: .....

Per la copia da depositare presso l'Ateneo e per l'assenso alla elaborazione e diffusione delle informazioni riguardanti i programmi di ricerca presentati; decreto legislativo 196/03 sulla "Tutela dei dati personali".

Il Responsabile della Ricerca: .....

Padova lì, 31/07/2012 11:56

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