

# **JAHRESBERICHT 2014**

## **Allgemeine Psychologie und Methodologie**

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**Fakultät für Psychologie  
Universität Basel**

# JAHRESBERICHT 2014

## *Allgemeine Psychologie und Methodologie*

### **Mitarbeiterinnen und Mitarbeiter der Abteilung (per 31.12.2014)**

<i>Abteilungsleitung</i>	Prof. Dr. Klaus Opwis
<i>Administration</i>	M.Sc. Silvia Heinz
<i>Wissenschaftliche Mitarbeitende</i>	PD Dr. Iris-Katharina Penner (Drittmittel) Dr. Markus Stöcklin
<i>Assistierende</i>	M.Sc. Glena Iten M.Sc. Elisa Mekler M.Sc. Mirjam Seckler Dr. Alexandre Tuch
<i>Hilfsassistierende</i>	B.Sc. Thomas Keller B.Sc. Anja Martig B.Sc. Livia Müller B.Sc. Gian-Marco Schmid
<i>Lehrbeauftragte</i>	Dr. Javier Bargas-Avila (FS 2014, HS 2014) Prof. Dr. Andreas Gold (FS 2014) Christian Hübscher (FS 2014) Dr. Stefan Leuthold (HS 2014) Prof. Dr. Christian Rösler (FS 2014, HS 2014)
<i>IT-Mitarbeiter</i>	Lars Frasseck

## Kurze Chronologie des Jahres 2014

*Kurzer chronologisch geordneter Gesamtüberblick über bemerkenswerte Vorkommnisse im Jahr 2014 Sicht der Abteilung für Allgemeine Psychologie und Methodologie*

*Februar 2014*

Der ZeGo Bericht 2013 wird veröffentlicht. Nach 2006, 2008 und 2011 wurde bereits zum vierten Mal die Umfrage zur *Zufriedenheit im E-Government in der Schweiz* durchgeführt.

*August 2014*

*Alexandre N. Tuch* wird im Rahmen der Vorbereitung zur *ACM Conference on Human Factors in Computing Systems (CHI 2015, Seoul, Südkorea)* als *Associate Chair (User Experience and Usability)* ins *Program Committee* berufen.

## Ehrungen/Auszeichnungen

Die Masterarbeit von Glena Iten mit dem Titel *Impact of interactive visualization in statistics: The role of interactive visualization in improving knowledge and understanding of statistics* wird vom renommierten Wissenschaftsverlag *Springer* (Heidelberg) im Rahmen seiner Initiative *Psychologie BestMasters 2014 Award* zur Förderung des wissenschaftlichen Nachwuchses als eine der besten Masterarbeiten der Psychologie aus Deutschland, Österreich und der Schweiz prämiert (September 2014).

Die beiden Lehrveranstaltungen *Empirisches Projektseminar I & II* (Heinz, Hubacher, Mekler) und *Game on! Psychologie der digitalen Spiele* (Mekler) wurden für den *Credit Suisse Award for Best Teaching* zum Thema *Modern Scholarship* nominiert (September 2014).

## Öffentlichkeitsarbeit

Die *Stefanie und Wolfgang Baumann Stiftung* unterstützt im FS 2014 und im HS 2014/15 eine Reihe von mehreren Vorträgen zum Thema *Glücksforschung im Dialog*.

## Nennungen in den Medien

Deterding, S. (2014). *Gamification Absolved?* Blog post on Gamification Research Network, <http://gamification-research.org/2014/08/gamification-absolved-2/>

Zichermann, G. (2014). *Conducting Gamification Research with Elisa Mekler*. Gamification Revolution Webinar, <http://www.gamification.co/2014/10/02/conducting-gamification-research-elisa-mekler/>

## **Personalia in 2014**

### *Januar 2014*

Glena Iten beginnt nach ihrem erfolgreichen Studienabschluss als neue Doktorandin in der Abteilung.

Markus Hug beendet seine Tätigkeit als Forschungsassistent und wechselt auf eine ausseruniversitäre Stelle.

### *Juni 2014*

Florian Brühlmann beendet seine Tätigkeit als Hilfsassistent in der Abteilung und wechselt für zunächst sechs Monate zu Google in Zürich.

### *Juli 2014*

Dominik Zwahlen beendet seine Tätigkeit als Doktorand in der Abteilung und wechselt in die Pharmaindustrie (Roche).

Mirjam Seckler unterbricht ihre Tätigkeit als Assistentin und geht für drei Monate zu Google in San Francisco (USA).

### *August 2014*

Glena Iten beginnt ihre Tätigkeit als universitäre Assistentin in der Abteilung.

Gian-Marco Schmid beginnt seine Tätigkeit als Hilfsassistent in der Abteilung.

### *Oktober 2014*

Martina Hubacher und Natalia Adamski beenden ihre Tätigkeit als Assistentinnen/Doktorandinnen.

### *Dezember 2014*

Anja Martig und Livia Müller beenden ihre Tätigkeit als Hilfsassistenten der Abteilung.

## **Drittmittel in 2014**

2014 konnten Drittmittel im Umfang von rund CHF 100'000 erfolgreich eingeworben werden, die insbesondere zur Finanzierung zusätzlicher Personalanstellungen (Lehrbeauftragte, Assistierende, Doktorierende, Hilfsassistenten) genutzt wurden.

## Lehrveranstaltungen

### *Frühlingssemester 2014*

#### *Bachelorstudium*

Forschungsmethoden und Statistik II (Propädeutische Vorlesung mit Übung; Stöcklin, Opwis & Meyer)

Kognitive Neuropsychologie und Entwicklungsneurowissenschaften (Penner)

Lernschwierigkeiten: Ursachen, Diagnose, Prävention und Intervention (Gold, LA)

Empirisch-Experimentelles Projektseminar (Hubacher, Heinz, Mekler)

Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?

(Heinz, Mekler, Opwis, Seckler & Tuch)

Wie schreibe ich eine Bachelorarbeit in der kognitiven Neuropsychologie und Entwicklungsneurowissenschaften? (Hubacher, Opwis & Penner)

Einführung in die Analytische Psychologie C.G. Jung (Roesler, LA)

Praxis der analytischen Psychotherapie C.G. Jungs: Anwendung und Vertiefungen (Roesler, LA)

#### *Masterstudium*

Game on! Psychologie der digitalen Spiele (Mekler)

User experience research methods (Seckler, Heinz & Tuch)

Usability-Testing: Evaluation der Mensch-Maschine Interaktion (Bargas-Avila, LA & Tuch)

Konzeption und Design von User Interfaces I (Hübscher, LA)

Praxis der empirischen Forschung: Explorative multivariate Verfahren (Stöcklin)

Einführung in erkenntnis- und wissenschaftstheoretische Fragen (Stöcklin)

#### *Masterprojekte*

Kognitive Neuropsychologie und Entwicklungsneurowissenschaften (Hubacher, Opwis & Penner)

Mensch Maschine Interaktion (Heinz, Mekler, Opwis, Seckler & Tuch)

Experimentelle Kognitionsforschung über die Lebensspanne (Opwis)

### *Herbstsemester 2014*

#### *Bachelorstudium*

Kognitive Psychologie I: Wahrnehmung, Aufmerksamkeit Gedächtnis  
(Propädeutische Vorlesung; Opwis)

Forschungsmethoden & Statistik I (Propädeutische Vorlesung mit Übung; Stöcklin, Opwis & Meyer)

Einführung in die MMI (Bargas-Avila, LA)

Forschungsmethoden & Statistik III (Stöcklin, Opwis & Meyer)

Empirisch-Experimentelles Projektseminar (Iten, Mekler)

Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?

(Iten, Mekler, Opwis, Seckler & Tuch)

Wie schreibe ich eine Bachelorarbeit in der kognitiven Neuropsychologie und  
Entwicklungsneurologie? (Hubacher, Opwis & Penner)  
Einführung in die Analytische Psychologie C.G. Jung (Roesler, LA)  
Praxis der analytischen Psychotherapie C.G. Jungs: Anwendung und Vertiefungen (Roesler, LA)

#### *Masterstudium*

Ästhetik: Wahrnehmungsforschung aus kognitionspsychologischer Sicht (Opwis & Tuch)  
Experimentelle Ansätze in der Neuropsychologie über die Lebensspanne (Penner)  
Theoretische Grundlagen und Modelle der Mensch-Maschine-Interaktion (Leuthold)  
Aktuelle Forschungsthemen der Mensch-Maschine Interaktion (Iten, Seckler & Tuch)  
Eye-Tracking Methoden in der Mensch-Maschine Interaktion (Mekler & Tuch)  
Online Forschung: Verfahren der Datenerhebung (Seckler)  
Praxis der empirischen Forschung: Strukturgleichungsmodelle (Stöcklin)

#### *Masterprojekte*

Kognitive Neuropsychologie und Entwicklungsneurologie (Opwis/Penner)  
Mensch Maschine Interaktion (Iten/Mekler/Opwis/Seckler/Tuch)  
Experimentelle Kognitionsforschung über die Lebensspanne (Iten/Opwis)

#### *Doktoratskolloquium am 17. September 2014*

Partizipations-Verhalten in Online Communities (Esther Federspiel)  
Der Einfluss interaktiver visueller Stimulationen auf das Lernen statistischer Konzepte (Glena Iten)  
X-Ray screening (Marcia Mendes)  
Kenne Deinen Nutzer: Kulturelle Unterschiede bei Erwartungen an unterschiedliche Website-Typen  
(Sebastian Linxen & Silvia Heinz)  
Cognitive rehabilitation of working memory by children with multiple sclerosis  
(Martina Hubacher)

#### *Master of Advanced Studies in Human Computer Interaction Design (MAS-HCID)*

Psychologie: Einführung in die Kognitive Psychologie (Opwis)  
Eye-Tracking and Usability (Tuch & Heinz)  
Praxisprojekte Requirements Engineering (Seckler)  
Praxisprojekte Interaction Design (Tuch)

## Publikationen in 2014

### In der bibliometrischen Datenbank SCOPUS erfasste Artikel und Beiträge <sup>1</sup>

Faiss, J.H., Dähne, D., Baum, K., Deppe, R., Hoffmann, F., Köhler, W., Kunkel, A., Lux, A., Matzke, M., Penner, I.K., Sailer, M., Zettl, U.K. (2014). Reduced magnetisation transfer ratio in cognitively impaired patients at the very early stage of multiple sclerosis: A prospective, multicenter, cross-sectional study. *BMJ Open*, 4 (4), Article number e004409. <sup>2</sup>

*Objectives:* Cognitive impairment belongs to the core symptoms in multiple sclerosis (MS) and can already be present at the very early stages of the disease. The present study evaluated cognitive functioning after the first clinical presentation suggestive of MS and brain tissue damage in a non-lesion focused MRI approach by using magnetisation transfer imaging (MTI).

*Setting and participants:* 47 patients (15 men and 32 women; mean age: 31.17 years) after the first clinical event suggestive of MS were recruited in six different MS centres in Germany and underwent a neuropsychological test battery including tests for attention, memory and executive function as well as depression and fatigue. MTI and conventional MRI measures (T1/T2 lesion load) were assessed. In addition, Magnetisation Transfer Ratio (MTR) maps were calculated. Primary outcome measure was the investigation of cognitive dysfunction in very early MS in correlation to MRI data.

*Results:* 55.3% of patients with MS failed at least one test parameter. Specifically, 6% were reduced in working memory, 14.9% in focused attention, 25.5% in figural learning and up to 14.9% in executive function. When the sample was subdivided into cognitively impaired and preserved, MTR scores within the cognitively impaired subgroup were significantly lower compared with the preserved group ( $t(43) = 2.346, p = 0.02^*$ ). No significant differences between the two groups were found in T2-weighted and T1-weighted lesion volume.

*Conclusions:* After the first MS-related clinical event, 55.3% of patients showed distinct cognitive deficits. Cognitively impaired patients had significantly lower whole brain MTR, but no differences in focal brain lesion volumes supporting the idea that early cognitive deficits may be related to diffuse loss of brain tissue integrity.

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<sup>1</sup> Nachfolgende Angaben zu den einzelnen Zeitschriften sind entnommen einerseits dem *Journal Citation Reports (JCR) Science Edition* resp. *Social Science Edition* aus dem *ISI Web of Science (Impact Factor der Zeitschrift / durchschnittlicher Impact Factor der letzten 5 Jahre / Kategorie: Rangplatz - Anzahl Zeitschriften - Quartil)* respektive andererseits - nach dem doppelten Trennstrich (//) - dem *SCImago Journal & Country Rank Portal* auf der Grundlage von *SCOPUS (Bereich/Schwerpunkt: Rangplatz - Anzahl Zeitschriften - Quartil)*.

*Erläuterung:* Beispielsweise hat die Zeitschrift *Computers in Human Behavior* laut JCR für das Jahr 2010 einen *Impact Factor (IF)* von 1.9. Der durchschnittliche IF der vorausgegangenen fünf Jahre (2006 bis 2010) beträgt 2.3. Die Zeitschrift ist im JCR in zwei verschiedenen Kategorien gelistet: In der Kategorie *Psychology, Experimental*, wo sie nach ihrem IF den Rangplatz 37 von den dort insgesamt 81 gelisteten Zeitschriften belegt und damit einen Rangplatz im 2. Quartil (Q2). Ebenfalls gelistet ist die Zeitschrift in der Kategorie *Psychology, Multidisciplinary*. Dort belegt sie mit ihrem Rangplatz 26 von insgesamt 120 Zeitschriften einen Platz im 1. Quartil (Q1). SCImago listet die Zeitschrift *Computers in Human Behavior* in drei verschiedenen Kategorien (Angaben für das Jahr 2010): Im Bereich (*subject area*) *Computer Science* und dort im Schwerpunkt (*subject category*) *Computer Science Applications* (Rangplatz 54 von 194 Zeitschriften, Q2); im Bereich *Psychology* und dort im Schwerpunkt *Developmental and Educational Psychology* (Rangplatz 29 von 91 Zeitschriften, Q2) sowie im Bereich *Psychology* und dort im Schwerpunkt *Experimental and Cognitive Psychology* (Rangplatz 36 von 53 Zeitschriften, Q3). Die Rankreihung erfolgt jeweils auf der Grundlage des *SCImago Journal Rank Indicator (SJR)*, einem speziell normierten Mass für den Impact einer Zeitschrift auf Basis der Einträge in SCOPUS.

Durch Fettdruck im folgenden hervorgehoben sind **Rangplätze im 1. Quartil (Q1)**.

<sup>2</sup>  $IF(2013) = 2.1 / IF(5\text{-Year}) = 2.1 / \textit{Medicine, General \& Internal}: 43 - 156 - Q2 // \textit{Medicine: Medicine (miscellaneous)}: 274 - 1827 - Q1$ .

Hofstetter, L., Naegelin, Y., Filli, L., Kuster, P., Traud, S., Smieskova, R., Mueller-Lenke, N., Kappos, L., Gass, G., Sprenger, T., Penner, I.-K., Nichols, T.E., Vrenken, H., Barkhof, F., Polman, C., Radue, E.-W., Borgwardt, S.J. & Bendfeldt, K. (2014). Progression in disability and regional grey matter atrophy in relapsing–remitting multiple sclerosis. *Multiple Sclerosis Journal*, 20, 202-213. <sup>3</sup>

*Background.* In multiple sclerosis (MS) regional grey matter (GM) atrophy has been associated with disability progression.

*Objective.* The aim of this study was to compare regional GM volume changes in relapsing–remitting MS (RRMS) patients with progressive and stable disability, using voxel-based morphometry (VBM).

*Methods.* We acquired baseline and 1-year follow-up 3-dimensional (3D) T1-weighted magnetic resonance imaging (MRI) data of RRMS patients, using two 1.5-Tesla scanners. Patients were matched pair-wise with respect to age, gender, disease duration, medication, scanner and baseline Expanded Disability Status Scale (EDSS) into 13 pairs, with either progressive EDSS ( $\geq 1$  point change y-1) or stable EDSS, as well as into 29 pairs with either progressive Multiple Sclerosis Functional Composite (MSFC) at  $\geq 0.25\%$  decrease in y-1 in any component, or stable MSFC. We analysed longitudinal regional differences in GM volumes in the progressive and stable EDSS and MSFC groups, respectively, using VBM.

*Results.* Significant GM volume reductions occurred in the right precuneus, in the progressive EDSS group. Differential between-group effects occurred in the right precuneus and in the postcentral gyrus. Further longitudinal GM volume reductions occurred in the right orbicular gyrus, in the progressive MSFC group, but no between-group differences were observed (non-stationary cluster-wise inference, all  $P_{corrected} < 0.05$ ).

*Conclusion.* These results suggested a direct association of disability progression and regional GM atrophy in RRMS.

Iten, G.H., Hübscher, R., Heinz, S., Opwis, K. & Stöcklin, M. (2014). The impact of visual simulations on learning statistics. *Proceedings of the 32th Annual Conference on Human Factors in Computing Systems (Extended Abstracts CHI 2014, Toronto, Canada, 26. April - 1. May 2014)*, 2251-2256. <sup>4</sup>

In previous studies non-interactive visual simulations in learning tasks have improved learners' conceptual understanding of statistical principles. To explore the impact of interactive visual simulations on conceptual understanding of statistical principles, an online tutorial where students could either manipulate or only observe changes of statistical graphs was developed. Overall, the tutorial supports students in learning statistical concepts immediately after working with the tutorial and two weeks after. In addition, if students could manipulate the graphs on their own, they were faster. Implications and opportunities for further investigations of interactive simulations are discussed.

Linxen, S., Tuch, A.N., Heinz, S., Opwis, K. & Müller, L.J. (2014). Mental models for web objects in different cultural settings. *Proceedings of the 32th Annual Conference on Human Factors in Computing Systems (Extended Abstracts CHI 2014, Toronto, Canada, 26. April - 1. May 2014)*, 2557-2562. <sup>5</sup>

"Know your users!" A short request but a challenging one. Studies have shown that the positioning of web objects according to the users' mental models can prevent errors and increase the efficiency of interaction. Therefore an

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<sup>3</sup> IF(2013) = 4.9 / IF(5-Year) = 4.3 / *Clinical Neurology*: 23 – 194 – Q1 // *Medicine: Neurology (clinical)*: 36 – 341 – Q1 // *Neuroscience: Neurology*: 24 – 146 – Q1

<sup>4</sup> Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction*: 62 – 424 – Q1 / *Computer Science: Software Computer Graphics and Computer-Aided Design*: 48 – 395 – Q1.

<sup>5</sup> Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction*: 62 – 424 – Q1 / *Computer Science: Software Computer Graphics and Computer-Aided Design*: 48 – 395 – Q1.



important aspect of the design of websites is to take the expectations of the users into account. However the results of these studies are based on research with limited target groups and neglected to consider cultural aspects. To approach this issue the currently being conducted study aims primarily to (1) identify and visualize mental models for different websites types for different countries, (2) highlight differences and similarities in the mental models of the subjects based on their nationality and (3) show the influence of experience with international websites on the mental models of the user. The results gained will be helpful during the design and localization process for international target groups.

Mekler, E., Bopp, J. A., Tuch, A. N. & Opwis, K. (2014). A systematic review of quantitative studies on the enjoyment of digital entertainment games. *Proceedings of the 32th Annual Conference on Human Factors in Computing Systems (CHI 2014, Toronto, Canada, 26. April - 1. May 2014)*, 927-936. <sup>6</sup>

Enjoyment has been identified as a central component of the player experience (PX), but various, overlapping concepts within PX make it difficult to develop valid measures and a common understanding of game enjoyment. We conducted a systematic review of 87 quantitative studies, analyzing different operationalizations and measures of game enjoyment, its determinants, and how these were related to other components of PX, such as flow, presence and immersion. Results suggest that game enjoyment describes the positive cognitive and affective appraisal of the game experience, and may in part be associated with the support of player needs and values. Further, we outline that enjoyment is distinct from flow in that it may occur independently of challenge and cognitive involvement, and argue that enjoyment may be understood as the valence of the player experience. We conclude with a discussion of methodological challenges and point out opportunities for future research on game enjoyment.

Obrist, M., Tuch, A. & Hornbæk, K. (2014). Opportunities for odor: Experiences with smell and implications for technology. *Proceedings of the 32th Annual Conference on Human Factors in Computing Systems (CHI 2014, Toronto, Canada, 26. April - 1. May 2014)*, 2843-2852. <sup>7</sup>

Technologies for capturing and generating smell are emerging, and our ability to engineer such technologies and use them in HCI is rapidly developing. Our understanding of how these technologies match the experiences with smell that people have or want to have is surprisingly limited. We therefore investigated the experience of smell and the emotions that accompany it. We collected stories from 439 participants who described personally memorable smell experiences in an online questionnaire. Based on the stories we developed 10 categories of smell experience. We explored the implications of the categories for smellenhanced technology design by (a) probing participants to envision technologies that match their smell story and (b) having HCI researchers brainstorm technologies using the categories as design stimuli. We discuss how our findings can benefit research on personal memories, momentary and first time experiences, and wellbeing.

Oser, N., Hubacher, M., Specht, K., Datta, A. N., Weber, P. & Penner, I.-K. (2014). Default mode network alterations during language task performance in children with benign epilepsy with centrotemporal spikes (BECTS). *Epilepsy and Behavior*, 33, 12-17. <sup>8</sup>

Benign epilepsy with centrotemporal spikes (BECTS) is the most common idiopathic epileptic disorder in children. Besides reported cognitive deficits, functional alterations mostly in the reorganization of language areas have also been described. In several publications, it has been reported that activation of the default mode network (DMN) can be reduced or altered in different neuropsychiatric and neurological disorders in adults. Whether this also holds true

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<sup>6</sup> Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction: 62 – 424 – Q1 / Computer Science: Software Computer Graphics and Computer-Aided Design: 48 – 395 – Q1.*

<sup>7</sup> Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction: 62 – 424 – Q1 / Computer Science: Software Computer Graphics and Computer-Aided Design: 48 – 395 – Q1.*

<sup>8</sup> IF(2013) = 2.1 / IF(5-Year) = 2.2 / *Behavioral Sciences: 32 – 49 – Q3 / Clinical Neurology: 104 – 194 – Q3 / Psychiatry: 70 – 136 – Q3 // Medicine: Neurology (clinical): 99 – 341 – Q2 // Neuroscience: Neurology: 63 – 146 – Q2 / Behavioral Neuroscience: 29 - 57 - Q3*

for children with epilepsy has so far not been clarified. To determine the functional activation of the DMN in children with BECTS, 20 patients and 16 healthy controls were examined using functional magnetic resonance imaging (fMRI), while a sentence generation task and a reading task were applied in a block design manner. To study the default mode network and the functional alterations between groups, an independent component analysis (ICA) was computed and further analyzed using SPM5. Compared with controls, children with BECTS showed not only significantly less activation of the DMN during the rest condition but also less deactivation during cognitive effort. This was most apparent in the precuneus, a key region of the DMN, while subjects were generating sentences. From these findings, we hypothesize that children with BECTS show a functional deficit that is reflected by alterations in the DMN.

Penner, I.K. (2014). Kognitive Dysfunktion bei Multipler Sklerose. *Nervenheilkunde*, 33, 505-510. <sup>9</sup>

With a prevalence of 50%, cognitive impairment belongs to the major symptoms in multiple sclerosis affecting patients irrespective of their disease course, disease severity as measured by the Expanded Disability Status Scale (EDSS) or their disease duration. Cognitive deficits can already occur at the very early stages of the disease such as in patients with clinically isolated syndrome (CIS) or radiologically isolated syndrome (RIS). Further, even in patients with a so-called "benign" disease course, cognitive dysfunction has been described. Although the progression of the deficits can be regarded as moderate, cognitive impairment at all stages negatively impacts on quality of life. From a diagnostic point of view we have made progress in developing sensitive screening instruments to reliably assess the cognitive core deficits in MS. However as often seen in medicine development of therapeutic approaches lags behind the progress of diagnostics. Thus at present there is no reliable evidence-based symptomatic treatment for cognitive impairment in MS. However, non-pharmacological approaches targeted towards supporting cognitive brain reserve look promising though large methodologically precise effectiveness studies are still an unmet need.

Ruf, A.P., Opwis, K. & Seckler, M. (2014). Long-term modality effect in multimedia learning. *Proceedings of the NordiCHI 2014: The 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational* (Helsinki, Finland, 26.-30. October 2014), 963-966. <sup>10</sup>

Cognitive theories of multimedia are seeking the best way of creating materials to enhance learning outcomes. The so-called modality effect accords that learning outcomes are better if visual material such as images is presented together with auditory rather than with visual information such as text. However, previous research on this effect is conflicting. There is also some evidence that the modality effect can be reversed if the learning environment is self-paced. Finally, there is little research about the modality effect over time, and its impact on long-term memory. There is a lack of studies comparing multimodal learning in a system-paced as well as in a self-paced environment over time. Therefore, the aim of this study is (1) to compare auditory and visual learning conditions, (2) to examine the relationship between self- and system-paced learning time, and (3) to analyze the modality effect over time (immediate and after one week).

Seckler, M., Heinz, S., Bargas-Avila, J., Opwis, K. & Tuch, A. (2014). Designing usable web forms: Empirical evaluation of web form improvement guidelines. *Proceedings of the 32th Annual Conference on Human Factors in Computing Systems (CHI 2014, Toronto, Canada, 26. April - 1. May 2014)*, 1275-1284. <sup>11</sup>

This study reports a controlled eye tracking experiment (N = 65) that shows the combined effectiveness of 20 guidelines to improve interactive online forms when applied to forms found on real company websites. Results

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<sup>9</sup> IF(2013) = 0.3 / IF(5-Year) = 0.2 / Clinical Neurology: 186 – 193 – Q4 / Psychiatry: 128 – 135 – Q4 // **Medicine: Neurology (clinical): 290 – 341 – Q4.**

<sup>10</sup> Keine Angaben vorhanden // **Computer Science: Human-Computer Interaction: 219 – 424 – Q3 / Computer Science: Software: 606 – 1193 – Q3.**

<sup>11</sup> Keine Angaben vorhanden // **Computer Science: Human-Computer Interaction: 62 – 424 – Q1 / Computer Science: Software Computer Graphics and Computer-Aided Design: 48 – 395 – Q1.**

indicate that improved web forms lead to faster completion times, fewer form submission trials, and fewer eye movements. Data from subjective questionnaires and interviews further show increased user satisfaction. Overall, our findings highlight the importance for web designers to improve their web forms using UX guidelines.

Weier, K., Penner, I.-K., Magon, S., Amann, M., Naegelin, Y., Andelova, M., Derfuss, T., Stippich, C., Radü, E.-W., Kappos, L. & Sprenger, T. (2014). Cerebellar abnormalities contribute to disability including cognitive impairment in multiple sclerosis. *PLoS ONE*, 9 (1), Article number e86916. <sup>12</sup>

The cerebellum is known to be involved not only in motor but also cognitive and affective processes. Structural changes in the cerebellum in relation to cognitive dysfunction are an emerging topic in the field of neuro-psychiatric disorders. In Multiple Sclerosis (MS) cerebellar motor and cognitive dysfunction occur in parallel, early in the onset of the disease, and the cerebellum is one of the predilection sites of atrophy. This study is aimed at determining the relationship between cerebellar volumes, clinical cerebellar signs, cognitive functioning and fatigue in MS. Cerebellar volumetry was conducted using T1-weighted MPRAGE magnetic resonance imaging of 172 MS patients. All patients underwent a clinical and brief neuropsychological assessment (information processing speed, working memory), including fatigue testing. Patients with and without cerebellar signs differed significantly regarding normalized cerebellar total volume (nTCV), normalized brain volume (nBV) and whole brain T2 lesion volume (LV). Patients with cerebellar dysfunction likewise performed worse in cognitive tests. A regression analysis indicated that age and nTCV explained 26.3% of the variance in SDMT (symbol digit modalities test) performance. However, only age, T2 LV and nBV remained predictors in the full model ( $r^2 = 0.36$ ). The full model for the prediction of PASAT (Paced Auditory Serial Addition Test) scores ( $r^2 = 0.23$ ) included age, cerebellar and T2 LV. In the case of fatigue, only age and nBV ( $r^2 = 0.17$ ) emerged as significant predictors. These data support the view that cerebellar abnormalities contribute to disability, including cognitive impairment in MS. However, this contribution does not seem to be independent of, and may even be dominated by wider spread MS pathology as reflected by nBV and T2 LV.

Yaldizli, Ö., Penner, I.-K., Frontzek, K., Naegelin, Y., Amann, M., Papadopoulou, A., Sprenger, T., Kuhle, J., Calabrese, P., Radü, E.-W., Kappos, L., & Gass, A. (2014). The relationship between total and regional corpus callosum atrophy, cognitive impairment and fatigue in multiple sclerosis patients. *Multiple Sclerosis Journal*, 20, 356-364. <sup>13</sup>

*Objective.* The objective of this paper is to investigate the relationship between total and regional corpus callosum (CC) atrophy, neuropsychological test performance and fatigue in multiple sclerosis (MS) patients.

*Methods.* We conducted a cross-sectional study in 113 MS patients: mean age  $48 \pm 11$  years, 75/113 women, 84/113 relapsing–remitting MS, mean disease duration  $21 \pm 9$  years, mean Expanded Disability Status Scale (EDSS) score  $3.2 \pm 1.7$ . All patients underwent brain magnetic resonance imaging, standardised neurological assessment and comprehensive cognitive testing including assessments for fatigue and depression. Total and regional CC atrophy was assessed using the corpus callosum index (CCI).

*Results.* CCI correlated more strongly with T2- and T1-lesion volume and whole brain volume than with disease duration or EDSS score. CCI correlated strongly with the verbal fluency test (VFT), Symbol Digit Modalities Test (SDMT) and Paced Auditory Serial Addition Test (PASAT). Multivariate regression analysis revealed that atrophy of the posterior CC segment was significantly associated with poor outcome in the PASAT, VFT and SDMT. In contrast, atrophy of the anterior CC segment was significantly associated with fatigue severity and poor outcome in the long-term memory test.

*Conclusions.* Atrophy of the CC is associated with cognitive impairment and fatigue. Regional CCI results indicate that these associations are partially spatially segregated.

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<sup>12</sup> IF(2013) = 3.5 / IF(5-Year) = 4.2 / *Multidisciplinary Sciences: 8 – 55 – Q1 / Medicine: Medicine (miscellaneous): 149 – 1827 – Q1.*

<sup>13</sup> IF(2013) = 4.9 / IF(5-Year) = 4.3 / *Clinical Neurology: 23 – 194 – Q1 // Medicine: Neurology (clinical): 36 – 341 – Q1 // Neuroscience: Neurology: 24 – 146 – Q1*

**Weitere peer reviewed Zeitschriftenartikel und Beiträge in internationalen Conference Proceedings mit Peer-Review (nicht in der bibliometrischen Datenbank SCOPUS erfasst)**

Mekler, E. D., Tuch, A. N., Martig, A. L. & Opwis, K. (2014). A Diary Study Exploring Game Completion and Player Experience. *Proceedings of the First ACM SIGCHI annual symposium on Computer-human interaction in play*. (CHI PLAY 2014, Toronto, 19 – 22 October 2014), 433-434.

This work-in-progress describes a three-month diary study, exploring how 25 players experienced the puzzle platformer FEZ over several gaming sessions. Following each 30 - 60 minute gaming sessions, players wrote a diary entry describing their game experience and rated their intrinsic motivation. Preliminary findings showed that intrinsic motivation significantly decreased over the course of several sessions. Interestingly, while all players reported comparable experiences during the first few sessions, players who would later finish the game, were less likely to experience this loss of motivation, even before actual completion of the game. Further steps for data analysis are discussed.

Schmid, Gian-Marco (2014). Measuring *Musician's Playing Experience: Development of a questionnaire for the evaluation of musical interaction*. Proceedings of the Practice-Based Research Workshop at NIME'14, June 30 – July 03, 2014, Goldsmiths, University of London, UK.

**Kapitel in Büchern, Sammelbänden und Handbüchern, Beiträge in wissenschaftlichen Zeitschriften ohne Peer Review, Forschungsberichte**

Mekler, E. D. (2014). *Gamification Considered Harmful?* Blog post on Gamification Research Network, <http://gamification-research.org/2014/08/gamification-considered-harmful/>

Penner, I.K. (2014). Multiple Sklerose: Neurokognitive Beeinträchtigungen – Symptome, die man ernst nehmen sollte. *InFo Neurologie & Psychiatrie*, 12 (6), 10-14.

Penner, I.K. (2014). Krankheitsaspekte bei Multipler Sklerose: Neurologischer Status, soziale und kognitive Auswirkungen. *InFo Neurologie & Psychiatrie*, 12 (6), Editorial.

Reimer, T., Bornstein, A.-L. & Opwis, K. (2014). Positive and negative transfer effects in groups. In T. Betsch & S. Haberstroh (Eds), *The routines of decision making* (pp. 175-192). Oxford: Taylor & Francis.

**Kurzbeiträge / Vorträge / Poster/Publizierte (peer-reviewed) Abstracts**

Heinz, Silvia (2014). *Kulturelle Unterschiede bei mentalen Modellen für Webobjekte*. Vortrag auf der Tagung experimentell arbeitender Psychologen (Teap 2014) in Giessen, Deutschland (31. März – 2. April 2014).

Heinz, Silvia (2014). *Kulturelle Unterschiede bei mentalen Modellen für Webobjekte*. Vortrag am 49. Kongress der Deutschen Gesellschaft für Psychologie in Bochum (21.-25. September).

- Hubacher, M., Weber, P., Specht, K., Kappos, L., Opwis, K., & Penner, I.K. (2014). *Effects of working memory training on functional network connectivity in patients with juvenile multiple sclerosis*. Jahrestagung der Schweizerischen Gesellschaft für Pädiatrie (SGP 2014, Basel, Switzerland, 12-13 June).
- Hubacher, M., Weber, P., Steinlin, M., Kappos, L., Opwis, K., & Penner, I.K. (2014). *Long-term effects of working memory training in juvenile Multiple Sclerosis – a pilot study*. Proceedings of the 3rd Conference of the International MS Cognition Society (IMSCOGS 2014, Barcelona, Spain, 13-14 June).
- Hübscher, C. & Seckler, M. (2014). *Divide and Conquer - How to Subdivide and Test Design Problems*. Talk at Last Thursday UX Event of Software Ergonomics, SwissCHI and Swiss UPA, March, 27 2014 in Zurich, Switzerland.
- Iten, G. & Heinz, S. (2014). *Über den Einfluss interaktiver visueller Simulationen auf das Verständnis statistischer Begriffe*. Vortrag am 49. Kongress der Deutschen Gesellschaft für Psychologie (DGPs) in Bochum (21.-25. September).
- Mekler, Elisa (2014). *A systematic review of quantitative studies on the enjoyment of digital entertainment games*. Vortrag an der 32th Annual Conference on Human Factors in Computing Systems (CHI'14), Toronto, Canada (26. April - 1. May 2014).
- Mekler, Elisa (2014) *Exploring the Player Experience over Several Game Sessions*, Talk at the University of Ontario Institute of Technology (UOIT), Oshawa, ON, Canada (October 2014).
- Opwis, Klaus (2014). *Das menschliche Gedächtnis: Plastizität und Trainierbarkeit*. Vortrag an der Hochschule für Angewandte Psychologie in Zürich (24. Februar 2014).
- Opwis, Klaus (2014). *Gehirnjogging: Fit durch Training?!* Vortrag vor dem Management Club beider Basel (29. April 2014).
- Opwis, Klaus (2014). *Rätsel des Geistes: Wie erkennen wir Gesichter?* Vortrag an der Senioren Universität beider Basel (3. & 4. Dezember 2014).
- Penner, I.K. (2014). *Debate: Can clinical or MRI measures alone be used reliably to make treatment decisions or do we always need them both to make treatment decisions?* The 8th World Congress on Controversies in Neurology, Berlin, Germany.
- Penner, I.K. (2014). *Connectomics in MS-related cognitive impairment*. 3rd Annual Conference of IMSCOGS, Barcelona, Spain.
- Penner, I.K. (2014). *Kognitive Dysfunktion bei MS*. 78. Kongress der DGN, München, Germany.
- Penner, I. K. & Sastre-Garriga, J. (2014). One step forward in the quest for evidence of the efficacy of cognitive rehabilitation in multiple sclerosis (Editorial). *Multiple Sclerosis Journal*, 20, 2.
- Seckler, Mirjam (2014). *Designing usable web forms: Empirical evaluation of web form improvement guidelines*. Vortrag an der 32th Annual Conference on Human Factors in Computing Systems (CHI'14), Toronto, Canada (26. April - 1. May 2014).

Seckler, M. (2014). *Vertrauen und Misstrauen auf Webseiten*. Vortrag am 49. Kongress der Deutschen Gesellschaft für Psychologie (DGPs) in Bochum (21.-25. September).

Seckler, M. (2014). *Vertrauen und Misstrauen auf Webseiten*. Vortrag im Rahmen DISS:KURS, 7. Oktober 2014 in Basel.

Stangel, M., Penner, I. K. & Kieseler, B. C. (2014). Defining the new end point for multiple sclerosis treatment (letter). *JAMA Neurology*, 71, 1056-1057.

Ziemssen, T., Calabrese, P., Penner, I.-K., Carroll, C.A., & Apfel, R. (2014). QualiCOP: an open-label, prospective, observational study of glatiramer acetate in patients with relapsing-remitting multiple sclerosis. *European Journal of Neurology*, 21, Supplement 1, 340-340.

## **Qualifikationsarbeiten (Abschluss in 2014)**

### **Dissertationen**

Egli, Simone C. (2014). *Die Bedeutung kognitiver Variablen und von Biomarkern bei der Frühdiagnostik der Alzheimer-Krankheit*. (Gutachter K.O., Datum der Disputation: 29. Juli 2014).

Hirni, Daniela Ingrid (2014). *Struktur und Funktion des episodischen und semantischen Gedächtnisses bei der sehr frühen Alzheimer Krankheit*. (Gutachter K.O., Datum der Disputation: 13. November 2014).

Sotirova-Kohli, M. (2014). *Empirical study of the associations between archetypal images and their meanings: Evidence of archetypal (collective unconscious) memory*. (Gutachter K.O., Datum der Disputation: 6. Februar 2014).

### **Masterarbeiten**

Adler, Matthias (2014). *Working memory training in patients with Parkinson's disease: A pilot study*.

Egloff, Laura (2014). *Effects of Anoxeria Nervosa on working memory: A sample evaluation*.

Erbacher, Barbara (2014). *Validierung der BICAMS-Testbatterie für die Schweiz*.

Furger, Stephan (2014). *How disease course, disability status, fatigue and depression impact on cognitive functions in MS: Results of a large german-speaking MS sample*.

## **Bachelorarbeiten**

Endress, Sarah (2014). *Drei... Zwei... Eins... Meins! Einfluss von psychologischem Ownership auf gaming-experience.*

Krauss, Luisa (2014). *Kunst und Gefallen: Empirische Forschung zur ästhetischen Präferenz von Kunstwerken.*

Martinis, Fabian (2014). *HCI and cognitive psychology related performance benefits and disadvantages of large high-resolution displays for single user application.*

Quintana, Laura (2014). *Cultural differences in style and usage of emoticons in computer-mediated communication.*

Troendle, Antonin (2014). *The use of virtual reality in psychotherapy for anxiety disorders. The state-of-the-art and the evaluation of its effectiveness.*

## **Masterstudierende (per 31. Dezember)**

Benz, Pascal

Bernhard, Orlando

Bopp, Julia

Brühlmann, Florian

Engel, Sarah

Forde, Seamus

Gonzalez Patallo, Yanira

Hunziker, Sebastian

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Kessler, Patrick

Martig, Anja

Merz, Benedikt

Müller, Livia

Rieser, Denise

Ruf, Alessia

Savona, Sara

Schellenberg, Marcel

Schmid, Gian-Marco

Steinemann, Sharon

Steiner, Clemens

Weidmann, Melanie

## **Doktorandinnen und Doktoranden (per 31. Dezember)**

Adamski, Natalia

Federspiel, Esther

Gsponer, Noemi

Heinz, Silvia

Hubacher, Martina

Hug, Markus

Hübscher, Christian

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Scherler, Viviane

Seckler, Mirjam