

JAHRESBERICHT 2015

Allgemeine Psychologie und Methodologie



**Fakultät für Psychologie
Universität Basel**

JAHRESBERICHT 2015

Allgemeine Psychologie und Methodologie

Mitarbeiterinnen und Mitarbeiter der Abteilung (per 31.12.2015)

<i>Abteilungsleitung</i>	Prof. Dr. Klaus Opwis
<i>Administration</i>	Dr. Silvia Heinz
<i>Wissenschaftlicher Mitarbeiter</i>	Dr. Markus Stöcklin
<i>Assistierende</i>	M.Sc. Glena Iten M.Sc. Elisa Mekler M.Sc. Sharon Steinemann Dr. Alexandre Tuch
<i>Hilfsassistierende</i>	B.Sc. Julia Bopp B.Sc. Florian Brühlmann B.Sc. Gian-Marco Schmid
<i>Lehrbeauftragte</i>	Dr. Javier Bargas-Avila (FS 2015, HS 2015) Prof. Dr. Andreas Gold (FS 2015) Christian Hauri (HS 2015) Christian Hübscher (FS 2015) Dr. Stefan Leuthold (HS 2015) Prof. Dr. Christian Rösler (FS 2015, HS 2015)
<i>IT-Mitarbeiter</i>	Lars Frasseck

Kurze Chronologie des Jahres 2015

Kurzer chronologisch geordneter Gesamtüberblick über bemerkenswerte Vorkommnisse im Jahr 2015 Sicht der Abteilung für Allgemeine Psychologie und Methodologie

Januar 2015

Das vom Kanton Basel-Stadt finanzierte Projekt *eVoting* wird mit der Abschlusspräsentation erfolgreich abgeschlossen (Umfang: ca. CHF 10'000).

Februar 2015

Glena Iten nimmt nach erfolgreicher Bewerbung für zehn Monate am Karriereförderprogramm *antelope 2015* der Universität Basel teil.

Das vom Kanton Basel-Stadt finanzierte Projekt *Eyetracking Usability Test Steuerverwaltung Basel-Stadt* wird mit der Abschlusspräsentation erfolgreich abgeschlossen (Umfang: ca. CHF 15'000).

Die Hasler-Stiftung (Bern) fördert die Reise von mehreren Mitarbeitenden und Studierenden zur *33. ACM SIGCHI Conference on Human Factors in Computing Systems* (kurz *CHI 2015*) in Seoul (Südkorea, 16. Bis 23. April 2015) mit einem Betrag in Höhe von CHF 7'500.

April 2015

Das vom Kanton St. Gallen finanzierte Projekt *E-Government Portal Kanton und Gemeinden St. Gallen* wird mit der Abschlusspräsentation erfolgreich abgeschlossen (Umfang: ca. CHF 40'000).

August 2015

Beginn einer neuen Kooperation mit der Professur *Cognitive Science* der ETH Zürich: Christoph Hölscher und sein Team (Iva Barisic, Svetlana Ognjanovic, Tyler Thrash, Verena Schnitzler) übernehmen neu einen Lehrauftrag (*HCI at ETH Zürich: An Applied Cognitive Science Perspective*) und engagieren sich in der Betreuung von Masterstudierenden des Schwerpunkts: Mensch Maschine-Interaktion (www.mmi-basel.ch).

November 2015

Das im Auftrag von Aperto Schweiz AG durchgeführte Projekt *Eyetracking Usability Test Endress + Hauser* wird mit der Abschlusspräsentation erfolgreich abgeschlossen (Umfang: ca. CHF 16'000).

Dezember 2015

Das vom Kanton Basel-Stadt finanzierte Projekt *Usability Testing der Webseiten von Basel-Stadt* wird mit der Abschlusspräsentation erfolgreich abgeschlossen (Umfang: ca. CHF 20'000).

Ehrungen/Auszeichnungen

Der bei der ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHI PLAY) eingereichte Konferenzbeitrag *Increasing donating behavior through a game for Change: The role of interactivity and appreciation* von Sharon Steinemann, Elisa D. Mekler und Klaus Opwis wurde mit dem *CHI PLAY 2015 Best Paper Award* ausgezeichnet. Der Award wird dem besten Prozent der eingereichten Beiträge („top 1%“) zuerkannt (resp. insgesamt 2 Beiträgen).

Die Masterarbeit von Alessia Ruf mit dem Titel *Short-term and long-term modality effect in multimedia learning* wird vom renommierten Wissenschaftsverlag Springer (Heidelberg) im Rahmen seiner Initiative *Psychologie BestMasters 2015 Award* zur Förderung des wissenschaftlichen Nachwuchses als eine der besten 25 Masterarbeiten der Psychologie aus Deutschland, Österreich und der Schweiz prämiert (September 2015).

Öffentlichkeitsarbeit

Die *Stefanie und Wolfgang Baumann Stiftung* unterstützt im HS 2015/16 eine Reihe von mehreren Vorträgen zum Thema *Bewusstsein zwischen Natur und Kultur*.

Personalia in 2015

Januar 2015

Mirjam Seckler beendet ihre Tätigkeit als Assistentin und wechselt zu Google.

Florian Brühlmann nimmt seine für sein Praktikum bei Google unterbrochene Tätigkeit als Hilfsassistent in der Abteilung wieder auf.

April 2015

Iris-Katharina Penner beendet nach 14 Jahren ihre Tätigkeit an der Universität Basel per 30. April 2015 und wechselt per 1. Mai 2015 als leitende Geschäftsführerin an das neu gegründete *Zentrum für Angewandte Neurokognition und neuropsychologische Forschung (COGITO)* nach Düsseldorf. Zugleich wurde sie im Bereich Neurologie mit der Medizinischen Fakultät der *Heinrich-Heine Universität Düsseldorf* affiliert.

Juli 2015

Sharon Steinemann beginnt nach dem erfolgreichen Abschluss ihres Masterstudiums als neue Assistentin/Doktorandin.

August 2015

Thomas Keller beendet seine Hilfsassistentenz per Ende August.

Drittmittel in 2015

2015 konnten Drittmittel im Umfang von rund CHF 120'000 erfolgreich eingeworben werden, die insbesondere zur Finanzierung zusätzlicher Personalanstellungen (Lehrbeauftragte, Assistierende, Doktorierende, Hilfsassistierende) genutzt wurden.

Lehrveranstaltungen in 2015

Frühlingssemester 2015

Bachelorstudium

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

Denken, Problemlösen, Expertise (Opwis)

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

Empirisch-Experimentelles Projektseminar (Iten, Mekler)

Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?

(Iten, Mekler, Opwis & Tuch)

Wie schreibe ich eine Bachelorarbeit in der Kognitionsforschung über die Lebensspanne?

(Iten & Opwis)

Masterstudium

Zentrale Konzepte der User Experience Forschung (Tuch & Iten)

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

Game on! Psychologie der digitalen Spiele (Mekler)

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

Praxis der empirischen Forschung: Komplexere varianzanalytische Designs (Stöcklin)

Einführung in erkenntnis- und wissenschaftstheoretische Fragen (Stöcklin)

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

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

Masterprojekte

Kognitive Neuropsychologie und Entwicklungsneurologie (Penner & Opwis)

Mensch Maschine Interaktion (Mekler, Tuch & Opwis)

Experimentelle Kognitionsforschung über die Lebensspanne (Iten & Opwis)

Doktoratskolloquium am 18. Februar 2015

Visual customization as a key to enhance willpower (Glena Iten & Serge Petralito)

Veränderung der Player Experience im Spielverlauf: Motivationale Aspekte (Elisa Mekler)

Herbstsemester 2015

Bachelorstudium

Kognitive Psychologie I: Wahrnehmung, Aufmerksamkeit Gedächtnis
(Propädeutische Vorlesung; Opwis)
Forschungsmethoden & Statistik I (Propädeutische Vorlesung mit Übung; Stöcklin & Opwis)
Einführung in die MMI (Bargas-Avila, LA)
Forschungsmethoden & Statistik III (Stöcklin & Opwis)
Empirisch-Experimentelles Projektseminar (Iten, Steinemann)
Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?
(Iten, Mekler, Opwis, Seckler & Tuch)
Einführung in die Analytische Psychologie C.G. Jung (Roesler, LA)
Praxis der analytischen Psychotherapie C.G. Jungs: Anwendung und Vertiefungen (Roesler, LA)

Masterstudium

Gedächtnisforschung aus kognitionspsychologischer Sicht (Opwis & Tuch)
HCI at ETH Zürich: An Applied Cognitive Science Perspective
(Hölscher, Barisic, Ognjanovic, Thrash & Schnitzler, LA)
Mit Arbeitsanalyse und Workshopmederation zum Entwurf von Mensch-Maschine Interaktion
(Hauri, LA)
Unternehmensberatung im Bereich der Mensch-Maschine Interaktion (Leuthold, LA)
Aktuelle Forschungsthemen der Mensch-Maschine Interaktion (Iten & Steinemann)
Eye-Tracking Methoden in der Mensch-Maschine Interaktion (Heinz & Tuch)
Praxis der empirischen Forschung: Regressionsanalytische Verfahren (Stöcklin)

Masterprojekte

Mensch Maschine Interaktion (Hölscher, Iten, Mekler, Steinemann, Tuch & Opwis)
Experimentelle Kognitionsforschung über die Lebensspanne (Iten & Opwis)

Doktoratskolloquium am 16. September 2015

Young people online (Sandra Cortesi)
Visual customization as a key to enhance willpower (Serge Petralito)
Increasing donating behavior through a game for change: The role of interactivity and appreciation
(Sharon Steinemann)

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

Psychologie: Einführung in die Kognitive Psychologie (Opwis)
Eye Tracking and Usability (Tuch & Heinz)

Publikationen in 2015¹

Buchveröffentlichungen, Forschungsmonographien

Iten, G. (2015). *Impact of visual simulations in statistics: The role of interactive visualizations in improving statistical knowledge*. Wiesbaden: Springer BestMasters Psychology.

In der bibliometrischen Datenbank SCOPUS erfasste peer-reviewed Artikel und Beiträge²

Forde, S.F., Mekler, E.D. & Opwis, K. (2015). Informational vs. Controlling gamification: A study design. *CHI PLAY 2015: Proceedings of the 2015 ACM Annual Symposium on Computer-Human Interaction in Play* (pp. 517-522). London, 5.-7. October 2015. New York, NY: ACM.

Recent research suggests that gamification has the potential to increase intrinsic motivation, as well as decrease users' intrinsic motivation. However, the understanding of why gamification sometimes is successful and other times not, is still not fully understood. One reason for this is that applied research has been lacking a theoretical foundation. Therefore, we are currently designing a study in which we examine the underlying psychological mechanisms on how gamification works. Based on self determination theory, in our approach we compare how autonomy, competence and intrinsic motivation differ between an informational and a controlling condition.

Hubacher, M., Kappos, L., Weier, K., Stöcklin, M., Opwis, K. & Penner, I.-K. (2015). Case-based fMRI analysis after cognitive rehabilitation in MS: A novel approach. *Frontiers in Neurology: Multiple Sclerosis and Neuroimmunology*, 6, article no. 78 (8 pages).³

Background: Cognitive decline in Multiple Sclerosis (MS) negatively impacts patients' everyday functioning and quality of life. Since symptomatic pharmacological treatment is not yet available alternative treatment strategies such as cognitive rehabilitation are of particular interest.

¹ Abteilungsmitarbeitende als Autorinnen und Autoren sind jeweils *kursiv* gekennzeichnet.

² 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)**.

³ Keine Angaben vorhanden // *Medicine: Neurology (clinical)*: 110 – 341 – Q2 / *Neuroscience: Neurology*: 68 – 146 – Q2 /.

Objectives: To analyse the ways in which MS patients respond to cognitive training, by combining behavioural and fMRI data in a case-based triangulation approach.

Methods: Ten relapsing-remitting (RR) MS patients aged between 39 and 58 years and between one and eight years post MS diagnosis were included. EDSS ranged from 1 to 3.5. Participants had normal to high intelligence levels. Six patients were assigned to the training group (TG) and four to the control group (CG) without intervention. The training group received a 4-weeks computerized working memory (WM) training, consisting of 16 training sessions of 45 minutes duration each. Before and after the training a neuropsychological examination and fMRI investigation by using an N-Back task of different complexity was applied.

Results: Patients in the TG responded differently to cognitive training. Four participants did not meet the triangulation criteria for being treatment responders. The two responders showed two distinct changes regarding activation patterns after training: I) decreased brain activation associated with increased processing speed and II) increased brain activation associated with higher processing speed and WM performance.

Conclusion: The occurrence of different and opposed response patterns after the same training indicates a risk in applying classical group statistics. Different and especially opposed patterns within the same sample may distort results of classical statistical comparisons. Thus, underlying processes may not be discovered and lead to misinterpretation of results.

*Hubacher, M., Kappos, L., Weier, K., Stöcklin, M., Opwis, K. & Penner, I.-K. (2015). Cognitive rehabilitation of working memory in juvenile Multiple Sclerosis: Effects on cognitive functioning, functional MRI and network related connectivity. Restorative Neurology and Neuroscience, 33, 713-725.*⁴

Purpose: To assess possible effects of working memory (WM) training on cognitive functionality, functional MRI and brain connectivity in patients with juvenile MS.

Methods: Cognitive status, fMRI and inter-network connectivity were assessed in 5 cases with juvenile MS aged between 12 and 18 years. Afterwards they received a computerized WM training for four weeks. Primary cognitive outcome measures were WM (visual and verbal) and alertness. Activation patterns related to WM were assessed during fMRI using an N-Back task with increasing difficulty. Inter-network connectivity analyses were focused on fronto-parietal (left and right), default-mode (dorsal and ventral) and the anterior salience network. Cognitive functioning, fMRI and inter-network connectivity were reassessed directly after the training and again nine months following training.

Results: Response to treatment was seen in two patients. These patients showed increased performance in WM and alertness after the training. These behavioural changes were accompanied by increased WM network activation and systematic changes in inter-network connectivity. The remaining participants were non-responders to treatment. Effects on cognitive performance were maintained up to nine months after training, whereas effects observed by fMRI disappeared.

Conclusions: Responders revealed training effects on all applied outcome measures. Disease activity and general intelligence may be factors associated with response to treatment.

*Ledermann, K., Jeanmonod, D., McAleese, S., Aufenberg, C., Opwis, K. & Martin-Soelch, C. (2015). Effects of cerebellothalamic tractotomy on cognitive and emotional functioning in essential tremor: A preliminary study in 5 essential tremor patients. Stereotactic and Functional Neurosurgery, 93, 127-132.*⁵

Background: Subthalamic stereotactic interventions have recently caught renewed interest as a treatment for essential tremor (ET). However, it is not clear whether these interventions are associated with neurocognitive, mood or personality changes.

⁴ IF(2014) = 2.5 / IF(5-Year) = 3.2 / *Neurosciences: 153 – 252 – Q3 // Medicine: Neurology (clinical): 70 – 335 – Q1 / Neuroscience: Neurology: 44 – 144 – Q2 / Neuroscience: Developmental Neuroscience: 16 – 30 – Q2.*

⁵ IF(2014) = 2.0 / IF(5-Year) = 2.0 / *Neurosciences: 175 – 252 – Q3 / Neuroimaging: 10 – 14 – Q3 / Surgery: 75 – 198 – Q2 / Clinical Medicine: 1023 – 1955 – Q3 // Medicine: Neurology (clinical): 120 – 335 – Q2 / Medicine: Surgery: 70 – 375 – Q1.*

Objective: To investigate neurocognition, neuropsychiatric functions and personality variables in patients with ET and to explore the neurocognitive and neuropsychiatric effects of cerebellothalamic tractotomy (CTT), a form of subthalamotomy.

Methods: In our study, we investigated cognitive functions, frontal functions, mood and personality variables in 5 patients with intractable ET. Patients were tested before and 3 months after surgery using neuropsychological tests, clinical scales for depression, anxiety, anger regulation and a personality test.

Results: Before surgery, ET patients showed normal neurocognitive function, a slightly elevated frontal lobe score in the dimensions mental control and memory, without being indicative of a frontal lesion, and no elevated depression or anxiety scores compared to norm values. After surgery, there was no change in neurocognitive function and no increase in depression or anxiety scores.

Conclusion: In this exploratory study on 5 ET patients, CTT was not associated with alterations of mood or neurocognitive functions.

Papetti, S., Jarvelainen, H. & Schmid, G.-M. (2015). Vibrotactile sensitivity in active finger pressing. *Proceedings 10th IEEE World Haptics Conference, WHC 2015 (pp. 457-462)*. Northwestern University Evanston, IL, USA (22. – 26. June 2015). Piscataway, NJ: IEEE.

An experiment was performed to study the effect of actively applied forces on vibrotactile thresholds. The task consisted in pressing the fingertip against a flat rigid surface which provided broadband vibration noise of varying amplitude. Three force levels were considered, ranging from light touch to hard press. Possibly due to the concurrent effect of large contact area, spectrally complex stimuli and active pressing force, the measured sensitivity thresholds are considerably lower than what is found in most of the previous literature. Moreover, significant differences in thresholds were found between the lowest and middle force level, and the highest and middle force level.

Patejdl, R., Penner, I.-K., Noack, T.K. & Zettl, U.K. (2015). Fatigue in patients with multiple sclerosis: Pathogenesis, clinical picture, diagnosis and treatment. *Fortschritte der Neurologie: Psychiatrie*, 83 (4), 211-220.⁶

Fatigue is a frequent and restricting symptom of multiple sclerosis (MS). Starting from its pathogenetic mechanisms, the article develops an approach to the differential diagnosis of fatigue in MS patients. Over the past years, the use of functional imaging techniques has given important information on the mechanisms of this highly variable clinical picture. Considering our improved understanding of the interdependency of immune pathology and the clinical presentation of neuropsychological disorders, the relationship between immunomodulatory treatments and fatigue is receiving increased attention. Therefore, this article not only reports on the most recent data on pharmacological, physical and psychological interventions in the symptomatic treatment of fatigue, but also puts a special accent on data concerning the interactions between the rapidly growing number of immunomodulatory treatments in MS.

Penner, I.-K. et al. (2015). Improvement in fatigue during natalizumab treatment is linked to improvement in depression and day-time sleepiness. *Frontiers in Neurology: Multiple Sclerosis and Neuroimmunology*, article no. 18 (5 pages).⁷

Background: Fatigue is a frequent symptom in multiple sclerosis (MS) and often interrelated with depression and sleep disorders making symptomatic treatment decisions difficult. In the single-arm, observational phase IV TYNERGY study, relapsing-remitting MS patients showed a clinically meaningful decrease in fatigue over 1 year of treatment with natalizumab.

Objective: To evaluate whether fatigue improvement might be directly linked to improved depression and day-time sleepiness. *Methods:* Patients were assessed regarding fatigue, depression, and day-time sleepiness. The relation between changes of the two latter symptoms and changes in fatigue was analyzed.

⁶ IF(2014) = 0.6 / IF(5-Year) = 0.5 / *Clinical Neurology*: 181 – 192 – Q4 / *Psychiatry*: 128 – 140 – Q4 // *Medicine: Neurology (clinical)*: 238 – 335 – Q3 / *Neuroscience: Neurology*: 108 – 144 – Q3 /.

⁷ Keine Angaben vorhanden // *Medicine: Neurology (clinical)*: 110 – 341 – Q2 / *Neuroscience: Neurology*: 68 – 146 – Q2 /.

Results: After 1 year of natalizumab treatment, the majority of patients ($\geq 92\%$) remained stable or improved in total, motor, and cognitive fatigue. Proportion of patients without depression increased by 17% while proportions of mildly depressed patients or patients with potential major depression decreased by 5 and 12%, respectively. Proportion of patients classified as not being sleepy increased by 13% while proportions of sleepy and very sleepy patients decreased by 11 and 2%, respectively. Most importantly, improved depression and sleepiness were significantly related to improved fatigue.

Conclusion: Our findings highlight the importance of patient-reported outcomes in identifying potential benefits of drug treatment beyond its well-established effects on disease activity and disability progression.

Rocca, M.A., Amato, M.P., De Stefano, N., Enzinger, C., Geurts, J.J., Penner, I.-K., Rovira, A., Sumowski, J.F., Valasina, P. & Filippi, M. (2015). Clinical and imaging assessment of cognitive dysfunction in multiple sclerosis. *The Lancet Neurology*, 14 (3), 302-317.⁸

In patients with multiple sclerosis (MS), grey matter damage is widespread and might underlie many of the clinical symptoms, especially cognitive impairment. This relation between grey matter damage and cognitive impairment has been lent support by findings from clinical and MRI studies. However, many aspects of cognitive impairment in patients with MS still need to be characterised. Standardised neuropsychological tests that are easy to administer and sensitive to disease-related abnormalities are needed to gain a better understanding of the factors affecting cognitive performance in patients with MS than exists at present. Imaging measures of the grey matter are necessary, but not sufficient to fully characterise cognitive decline in MS. Imaging measures of both lesioned and normal-appearing white matter lend support to the hypothesis of the existence of an underlying disconnection syndrome that causes clinical symptoms to trigger. Findings on cortical reorganisation support the contribution of brain plasticity and cognitive reserve in limiting cognitive deficits. The development of clinical and imaging biomarkers that can monitor disease development and treatment response is crucial to allow early identification of patients with MS who are at risk of cognitive impairment.

Seckler, M., Heinz, S., Forde, S., Tuch, A.N. & Opwis, K. (2015). Trust and distrust on the web: Use experiences and website characteristics. *Computers in Human Behavior*, 45, 39-50.⁹

The aim of this research is to study the content of trustful and distrustful user experiences on the web to identify website characteristics that enhance trust or cause distrust. We collected users' reports about critical incidents and quantitative questionnaire data by means of an online survey. Results from N = 221 participants suggest that distrust is mostly an effect of graphical (e.g., complex layout) and structural (e.g., pop-ups) design issues of a website, whereas trust is based on social factors such as reviews or recommendations by friends. The content of a website affects both trust and distrust: privacy issues had an effect on distrust and security signs enhanced trust. Furthermore, we show how trustful and distrustful user experiences differ in terms of perceived honesty, competence, and benevolence. High honesty and competence characterize a trustful experience, whereas a distrustful experience is associated with missing honesty and missing benevolence. We discuss how different website characteristics help to enhance trust or to prevent distrust and how this impacts the allocation of design resources.

Seckler, M., Opwis, K. & Tuch, A.N. (2015). Linking objective design factors with subjective aesthetics: An experimental study on how structure and color of websites affect the facets of users' visual aesthetic perception. *Computers in Human Behavior*, 49, 375-389.¹⁰

The present study examines how objective design factors of a website are linked to different facets of subjective aesthetic perception. Five online experiments based upon the screenshots of real-existing websites with a total of

⁸ IF(2014) = 21.9 / IF(5-Year) = 24.6 / *Clinical Neurology*: 1 – 192 – Q1 // *Medicine: Neurology (clinical)*: 1 – 335 – Q1.

⁹ IF(2014) = 2.7 / IF(5-Year) = 3.6 / *Psychology, multidisciplinary*: 20 – 129 – Q1 / *Psychology, Experimental*: 24 – 85 – Q2 // *Computer Science: Human-Computer Interaction*: 13 – 84 – Q1 / *Psychology: Psychology (miscellaneous)*: 18 – 217 – Q1 / *Arts and Humanities: Arts and Humanities (miscellaneous)*: 38 - 431 – Q1

¹⁰ IF(2014) = 2.7 / IF(5-Year) = 3.6 / *Psychology, multidisciplinary*: 20 – 129 – Q1 / *Psychology, Experimental*: 24 – 85 – Q2 // *Computer Science: Human-Computer Interaction*: 13 – 84 – Q1 / *Psychology: Psychology (miscellaneous)*: 18 – 217 – Q1 / *Arts and Humanities: Arts and Humanities (miscellaneous)*: 38 - 431 – Q1

N = 194 participants were conducted to isolate and analyze the effects of two objective structural factors (vertical symmetry, visual complexity) and three objective color factors (hue, saturation, brightness) on the different facets of subjective aesthetic perception (simplicity, diversity, colorfulness, craftsmanship) measured with the Visual Aesthetics of Website Inventory (Moshagen & Thielsch, 2010). Although all investigated factors are apparent features in website design, their effects on different facets of subjective aesthetic perception are not yet well understood. Our results show that websites of high symmetry, low complexity, blue hue, medium brightness or medium and high saturation received the highest overall aesthetics ratings. Furthermore, data reveal that structural factors compared to color factors have a manifold and greater impact on the different facets of subjective aesthetic perception than the color factors. Both structural factors have a great impact on simplicity, diversity and craftsmanship whereas the color factors have a great impact especially on colorfulness. Only complexity affects all facets of subjective aesthetic perception. The other objective design factors had effects on specific facets. Our findings shed light on the relationship between objective and subjective factors of aesthetic perception and may help designers to systematically target specific facets of visual aesthetics.

Stangel, M., Penner, I.-K., Kallmann, B.A., Lukas, C. & Kieseler, B.C. (2015). Towards the implementation of 'no evidence of disease activity' in multiple sclerosis treatment: The multiple sclerosis decision model. *Therapeutic Advances in Neurological Disorders*, 8 (1), 3-15. ¹¹

Objective: The introduction of new and potent therapies for the treatment of relapsing remitting multiple sclerosis (MS) has increased the desire for therapeutic success. There is growing doubt that the mere reduction of relapse rate, Expanded Disability Status Scale (EDSS) progression and magnetic resonance imaging (MRI) markers are exclusive and appropriate factors to monitor the new aim of 'no evidence of disease activity' (NEDA). However, there is no generally accepted definition so far.

Methods: To achieve the therapeutic aim of NEDA, a panel of MS experts searched the available literature on clinical and paraclinical outcomes to propose a test battery that is sensitive to detect disease activity in an everyday clinical setting.

Results: The panel proposed to include, besides relapse rate, disability progression and MRI, neuropsychological outcome measures such as cognitive status, fatigue, depression and quality of life. To standardize the examinations in an economic and schematic way, a multifactorial model [multiple sclerosis decision model (MSDM)] that includes the domains 'relapse', 'disability progression', 'MRI', and 'neuropsychology' is proposed. The scheme reflects the complexity of the disease even in the early stages when scales such as the EDSS are not able to distinguish low levels of progression.

Conclusion: The MSDM aims to support early treatment decisions and uncover timely treatment failure. Prospective investigations are required to prove that such a diseasemonitoring concept leads to an early and effective silencing of disease activity.

Steinemann, S.T., Mekler, E.D. & Opwis, K. (2015). Increasing donating behavior through a game for change: The role of interactivity and appreciation. *CHI PLAY 2015: Proceedings of the 2015 ACM Annual Symposium on Computer-Human Interaction in Play (pp. 319-329)*. London, 5.-7. October 2015. New York, NY: ACM. ¹²

Games for change have attracted the interest of humanitarian aid organizations and researchers alike. However, their effectiveness to promote behavior such as donating remains unclear. Furthermore, little is known about how key game properties interactivity and presentation mode impact the effectiveness of these games, or how player attitudes and experiences relate to the interplay between game properties and donating behavior. In this study, experimental conditions were systematically varied in their interactivity and presentation mode. Thereby, 234 participants played, watched, or read through one of six variations of the narrative of the game Darfur is Dying. Following this, they were asked to choose the percentage of an unexpected bonus to donate to a charity. While interactivity increased donating by an average of 12%, presentation mode had no significant impact on the percentage donated. Thus, between presentation mode and interactivity, interactivity was found to be the more impactful game property.

¹¹ IF(2014) = 3.1 / *Clinical Neurology*: 57 – 192 – Q2 // *Neuroscience: Neurology*: 51 – 144 – Q2 / *Medicine: Neurology (clinical)*: 84 – 335 – Q1.

¹² Der Beitrag wurde auf der Konferenz mit dem CHI PLAY 2015 *Best Paper Award* ausgezeichnet. Dieser Award wird dem besten Prozent („top 1%“) der eingereichten Beiträge zuerkannt.

Moreover, appreciation fully mediated the relationship between interactivity and donating, hinting at its relevance for the evaluation of the effectiveness of games for change.

Tuch, A.N. & Hornbæk, K. (2015). Does Herzberg's notion of hygienes and motivators apply to user experience? *ACM Transactions on Computer-Human Interaction*, 22, Article No. 16 (4), 24 pages.¹³

This article investigates Herzberg's [1959] notion of hygienes, factors contributing to dissatisfaction but not to satisfaction, and motivators, factors contributing to satisfaction but not to dissatisfaction, in the context of user experience (UX). Earlier work has theorized that the notion of hygienes and motivators applies to UX but has neither shown empirical evidence for this theory nor exemplified what such factors would look like in UX. We adapt Herzberg's methodology to analyze 303 events where users felt good or bad about their smartphone and derive factors that may work as hygienes or motivators. We identified technical quality and price as hygienes, and utility and convenience as motivators. These factors do not correspond to those mentioned as typical examples of hygienes and motivators in the UX literature (i.e., instrumental qualities such as usability for hygienes and non-instrumental qualities such as beauty for motivators). We discuss this discrepancy in the context of pragmatic and hedonic quality and psychological need fulfillment.

Ziemssen, T., Rauer, S. Stadelmann, C., Henze, T., Koehler, J., Penner, I.-K., Lang, M., Poehlau, D., Baier-Ebert, M., Schieb, H. & Meuth, S. (2015). Evaluation of study and patient characteristics of clinical studies in primary progressive multiple sclerosis: A systematic review. *PLoS ONE*, 10 (9), 22 pages.¹⁴

Background: So far, clinical studies in primary progressive MS (PPMS) have failed to meet their primary efficacy endpoints. To some extent this might be attributable to the choice of assessments or to the selection of the study population.

Objective: The aim of this study was to identify outcome influencing factors by analyzing the design and methods of previous randomized studies in PPMS patients without restriction to intervention or comparator.

Methods: A systematic literature search was conducted in MEDLINE, EMBASE, BIOSIS and the COCHRANE Central Register of Controlled Trials (inception to February 2015). Keywords included PPMS, primary progressive multiple sclerosis and chronic progressive multiple sclerosis. Randomized, controlled trials of at least one year's duration were selected if they included only patients with PPMS or if they reported sufficient PPMS subgroup data. No restrictions with respect to intervention or comparator were applied. Study quality was assessed by a biometrics expert. Relevant baseline characteristics and outcomes were extracted and compared.

Results: Of 52 PPMS studies identified, four were selected. Inclusion criteria were notably different among studies with respect to both the definition of PPMS and the requirements for the presence of disability progression at enrolment. Differences between the study populations included the baseline lesion load, pretreatment status and disease duration. The rate of disease progression may also be an important factor, as all but one of the studies included a large proportion of patients with a low progression rate. In addition, the endpoints specified could not detect progression adequately.

Conclusion: Optimal PPMS study methods involve appropriate patient selection, especially regarding the PPMS phenotype and progression rate. Functional composite endpoints might be more sensitive than single endpoints in capturing progression.

¹³ IF(2014) = 1.1 / IF(5-Year) = 1.5 / *Computer Science: Information systems*: 62 – 139 – Q2 / *Computer Science: Cybernetics*: 14 – 24 – Q3 // ***Computer Science: Human-Computer Interaction*: 9 – 84 – Q1.**

¹⁴ IF(2014) = 3.2 / IF(5-Year) = 3.7 / ***Multidisciplinary Sciences*: 9 – 57 – Q1 // *Medicine: Medicine (miscellaneous)*: 176 – 1775 – Q1.**

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

Bopp, J., Mekler, E. & Opwis, K. (2015). „It was sad still good“: Gratifications of emotionally moving game experiences. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (Extended Abstracts CHI 2015, Seoul, Korea, 18. –23. April 2015)*, 1193-1198. ¹⁵

Players have increasingly become interested in emotional game experiences beyond simple "fun". Although previous research has identified several gratifications of fun experiences, still little is known about whether and what gratifications players derive from emotionally moving game experiences. Interviews with 12 Japanese and Western players revealed several gratifications, such as liking to experience strong emotions, whereas other players did not enjoy being emotionally moved, but appreciated that the emotional experience stimulated reflective thought or allowed them to engage more with the game. Based on these findings, we discuss opportunities for future research.

Brühlmann, F. & Schmid, G.-M. (2015). How to measure the game experience? Analysis of the factor structure of two questionnaires. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (Extended Abstracts CHI 2015, Seoul, Korea, 18. –23. April 2015)*, 1181-1186. ¹⁶

We describe and report the analysis of two widely used questionnaires to measure the player experience in digital games. In order to contribute to the further validation and meaningful application of the PENS and GEQ we examined the underlying factorial structure of both questionnaires. 447 participants played two different games and rated them on a set of various variables including the PENS and GEQ. Consistent with previous research we gained additional insight into optimization of both measurements. While the factor structure of the PENS appears to be consistent and invariant across two different games, the GEQ reveals weaknesses in fulfilling these requirements.

Müller, L., Mekler, E. & Opwis, K. (2015). Facets in HCI: Toward understanding eudaimonic UX: Preliminary findings. *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (Extended Abstracts CHI 2015, Seoul, Korea, 18. –23. April 2015)*, 2283-2288. ¹⁷

In recent years, researchers aimed to understand different facets of positive experiences with technology. Positive psychology, and recently also HCI, makes use of a hedonia/ eudaimonia distinction. Hedonia is understood as providing enjoyable experiences, whereas eudaimonia is associated with meaningful experiences. However, it is not clear how eudaimonia manifests in the HCI context. The aim of this explorative study is to provide empirical evidence for eudaimonia in HCI and outline what characterizes hedonic and eudaimonic user experiences. Results indicate that hedonic and eudaimonic user experiences often seem to occur at the same time. Preliminary analysis of user narratives show rich data and experiences with a huge range of different devices are described. Based on these findings further implications and research possibilities are discussed.

Mekler, E. & Bopp, J.A. (2015). Exploring the false affective dichotomy in games: Emotions and Meta-emotions. *CHI PLAY '15 Workshop „The False Dichotomy between Positive and Negative Affect in Game Play“* (London, 5.-7. Oktober 2015).

¹⁵ Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction: 25 – 84 – Q2 / Computer Science: Computer Graphics and Computer-Aided Design: 15 – 65 – Q1 / Computer Science: Software: 13 – 384 – Q2.*

¹⁶ Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction: 25 – 84 – Q2 / Computer Science: Computer Graphics and Computer-Aided Design: 15 – 65 – Q1 / Computer Science: Software: 13 – 384 – Q2.*

¹⁷ Keine Angaben vorhanden // *Computer Science: Human-Computer Interaction: 25 – 84 – Q2 / Computer Science: Computer Graphics and Computer-Aided Design: 15 – 65 – Q1 / Computer Science: Software: 13 – 384 – Q2.*

Recent studies suggest that players paradoxically positively evaluate certain gaming experiences in spite of the negative affective reactions they evoke. We argue that the false dichotomy stems in part from vague conceptualizations of what constitutes positive player experiences, which conflate emotions with more generic experiential states, such as enjoyment. Drawing from media psychology, we introduce the notion of 'meta-emotion', exemplifying its processes with previous findings from player experience research, as a means to better understand and discuss when and why affective gaming experiences will be received favourably by players.

Steinemann, S. (2015). Positive and negative experiences in games for change: Does feeling bad make you a better person? CHI PLAY '15 Workshop „The False Dichotomy between Positive and Negative Affect in Game Play“ (London, 5.-7. Oktober 2015).

Games for change are not primarily made to be fun. While recent research has highlighted their potential to have an impact on prosocial behavior, little is known about the role that positive experiences - or the enjoyment of the game - and negative experiences - such as how uncomfortable or even distressing the game is - has on this impact. In this paper we examine different ways positive and negative player experiences may affect prosocial behavior and discuss the ethical implications for both game designers and researchers exposing players to negative experiences in games for change.

Kurzbeiträge / Vorträge / Poster/Publizierte (peer-reviewed) Abstracts¹⁸

Bopp, J. A., Martig, A. L., Mekler, E. D. & Steinemann, S. T. (2015). Spielspsychologie-Forschung an der Uni Basel. Vortragsreihe an der Spielhalle Oslo, Kulturprojekt der Christoph Merian Stiftung, Münchenstein, Schweiz (Mai 2015).

Heinz, S. (2015). Konzept Bürgerportal: Studie der Universität Basel für den Kanton St. Gallen. Vortrag an der Konferenz „Kantonale Gemeindeorganisationen“ des Schweizerischen Gemeindeverbands SGV (Aarau, Oktober 2015).

Mekler, E. D. (2015). Exploring the Player Experience over Several Game Sessions – Challenges and Pitfalls. Invited Guest lecture at the University of York, York, United Kingdom (October 2015).

Penner, I.K. (2015). Methodological aspects of cognitive rehabilitation. 23rd Annual Meeting of the European Charcot Foundation, Baveno.

Penner, I.K. (2015). Neuropsychology. Meet Project – MS Educational European Talent Network. Future therapies, symptomatic therapies and recovery in MS, Düsseldorf.

Penner, I.K. (2015). Pathophysiologie kognitiver Störungen. Minisymposium: Relevanz kognitiver Störungen im neurologischen Alltag am Beispiel der Multiplen Sklerose. DGN 2015, Düsseldorf.

Penner, I.K. (2015). Therapieziele formulieren II. Merck Serono Industriesymposium: MS im Dialog. Therapieziele formulieren, kommunizieren, erreichen. DGN 2015, Düsseldorf.

Penner, I.K. (2015). Unsichtbare Symptome: Diagnostik und Therapie von Fatigue, Depression und kognitiven Störungen. Paul-Arnold-Nelles-Symposium, DGN 2015, Düsseldorf.

Penner, I.K. (2015). Neuropsychologie “bedside”: klinische Befunderhebung ohne Tests. ZNS Tag Nordrhein, BVDN.

¹⁸ Vorträge, die bereits in einer Publikation dokumentiert sind (als Extended Abstract, oder Full Paper), sind im folgenden nicht nochmals aufgeführt.

- Penner, I.K. (2015). *Lassen sich neuropsychologische Befunde in Therapieentscheidungen zur Immuntherapie einbinden?* 9. Hannoveraner MS Symposium. Die neue Therapielandschaft.
- Penner, I.K. (2015). *Kognition im therapeutischen Entscheidungsprozess bei MS: Secundarium oder Zünglein an der Waage?* ABCD Meeting, Düsseldorf.
- Penner, I.K. (2015). *Kognitive Störungen bei MS: Relevanz kortikaler und subkortikaler Netzwerke.* Jubiläumssymposium: 20 Jahre Neurologie Teupitz, Wildau.
- Penner, I.K. (2015). *Translational research related to cognitive rehabilitation.* 20th Annual RIMS Conference, Mailand.
- Penner, I.K. (2015). *Kognitive Dysfunktion bei MS.* Novartis Neuroscience Workshop, Berlin.
- Petalito, S. & Iten G. (2015) *Visual Customization As a Key to Enhance Willpower: Strengthening Willpower Through Self-Awareness.* Vortrag an der 14. Konferenz der Schweizerischen Gesellschaft für Psychologie (SSP/SGP) in Genf (8.-9. September).
- Sonderegger, A. & Tuch, A. N. (2015). *Human-Machine Interaction II: Current trends in UX research.* Symposium Vortrag an der 14. Konferenz der Schweizerischen Gesellschaft für Psychologie (SSP/SGP) in Genf (8.-9. September).
- Steinemann, S. (2015). *Can Games Save the World? The Impact of the Interactivity and Presentation Mode of Games for Change on Player Attitudes, Experiences, and Donating Behavior.* Vortragsreihe an der Spielhalle Oslo, Kulturprojekt der Christoph Merian Stiftung, Münchenstein, Schweiz (2015).
- Steinemann, S. (2015). *Can Games Save the World?* Vortrag beim Verein „Effektiver Altruismus Uni Basel“ (April 2015).
- Steinemann S. (2015). *How Games Can Encourage Prosocial Behavior and Attitude Change.* Vortrag an der University of York (England) im HCI Research Group Seminar (Oktober 2015).
- Tuch, A. N. (2015). *Aesthetics of Websites: The Formation of First Impressions and the Interplay Between Beauty and Usability.* Vortrag am IEL Seminar der École polytechnique fédérale de Lausanne (EPFL).
- Tuch, A. N. (2015). *User Experience in Leisure or at Work: The Role of Psychological Need Fulfilment in Different Activity Domains.* Vortrag an der 14. Konferenz der Schweizerischen Gesellschaft für Psychologie (SSP/SGP) in Genf (8.-9. September).

Qualifikationsarbeiten (Abschluss in 2015)

Dissertationen

- Heinz, Silvia (2015). *User research in human-computer interaction: Analyzing user's expectations and interactions to improve their experience on websites.* (Gutachter: K.O., Datum der Disputation: 6. November 2015).

- Hubacher, Martina (2015). *Cognition and cognitive rehabilitation in adult and juvenile patients with Multiple Sclerosis*. (Gutachter I.-K. P., Datum der Disputation: 7. April 2015).
- Mendes, Marcia (2015). *Human factors in aviation security X-ray screening*. (Gutachter K. O., Datum der Disputation: 18. Juni 2015).
- Mistridis, Panagiota (2015). *Aspekte der Frühdiagnostik beim Mild Cognitive Impairment und der Alzheimer-Krankheit: Die Bedeutung neuropsychologischer Variablen und des emotionalen Gedächtnisses*. (Gutachter K. O., Datum der Disputation: 4. Februar 2015).
- Seckler, Mirjam (2015). *Web design in human-computer interaction: Effects of website characteristics on users' perception of aesthetics, usability and trust*. (Gutachter K. O., Datum der Disputation: 10. Februar 2015).

Masterarbeiten

- Bernhard, Orlando (2015). *Effects of expressive and classical design aesthetics on initial trust in e-commerce*.
- Bopp, Julia Ayumi (2015). *Negative emotion, positive experience? Emotionally moving moments in digital games*.
- Brühlmann, Florian (2015). *The effects of framing in gamification: A study of failure*.
- Hongler, Katarzyna Iwona (2015). *Superiority of paper as text presentation medium for effective and efficient learning: Is it just an illusion?*
- Hunziker, Sebastian (2015). *How depression and fatigue impact cognitive performance in chronic neurodegenerative diseases: A comparison study between systemic Lupus Erythematosus and Multiple Sclerosis*.
- Keller, Thomas (2015). *Learning with digital maps: Does touch matter?*
- Kessler, Patrick (2015). *PETER: Einflussfaktoren auf den Entscheidungsfindungsprozess einer Therapieeskalation aus Sicht der Betroffenen*.
- Martig, Anja Lea (2015). *Can personality predict the importance of digital game characteristics for enjoyment?*
- Ruf, Alessia (2015). *Short- and long-term modality effect in multimedia learning*.
- Schmid, Gian-Marco (2015). *Evaluation of musical instruments from the musician's perspective: A questionnaire for assessing the musician's perception of the experiential qualities of musical instruments*.
- Steinemann, Sharon (2015). *Can games save the world? The impact of the interactivity and presentation mode of games for change on player attitudes, experiences, and donating behavior*.
- Steiner, Clemens (2015). *Gaming for good: Altruistic in-game decisions increase donation behavior and affect product preference*.

Masterstudierende (per 31. Dezember 2015)

Benz, Pascal
Bopp, Julia
Endress, Sarah
Forde, Seamus
Frese, Lisa
Gasser, Alina
Gonzalez Patallo, Yanira
Jenny, Mathias
Mall, Julia
Martinis, Fabian
Merz, Benedikt
Müller, Livia
Quintana Gomez, Laura
Rieser, Denise
Rodcharoen, Patsawee
Savona, Sara
Schellenberg, Marcel
Steiner, Clemens
Thönen, Oliver
Tröndle, Antonin
Weidmann, Melanie

Doktorandinnen und Doktoranden (per 31. Dezember 2015)

Adamski, Natalia
Cortesi, Sandra
Federspiel, Esther
Gsponer, Noemi
Hug, Markus
Hübscher, Christian
Iten, Glena
Linxen, Sebastian
Mekler, Elisa
Orsini, Sébastien
Petalito, Serge
Scherler, Viviane
Steinemann, Sharon
Sterchi, Yanik