

# **JAHRESBERICHT 2023**

## **Allgemeine Psychologie und Methodologie**

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**Fakultät für Psychologie  
Universität Basel**

# JAHRESBERICHT 2023

## *Allgemeine Psychologie und Methodologie*

### **Mitarbeiterinnen und Mitarbeiter der Abteilung (per 31.12.2023)**

<i>Abteilungsleitung</i>	Prof. Dr. Klaus Opwis
<i>Administration</i>	B.Sc. Ariane Haller
<i>Assistierende</i>	M.Sc. Lena F. Aeschbach M.Sc. Sebastian Perrig M.Sc. Nicolas Scharowski
<i>Hilfsassistierende</i>	B.Sc. Antony Berbert de Castro Hüsler B.Sc. Nick von Felten B.Sc. Léane Wettstein
<i>Lehrbeauftragte</i>	Dr. Javier Bargas-Avila (HS 2023) Dr. Julia Martinis-Bopp (FS 2023, HS 2023) Dr. Florian Brühlmann (HS 2023) Prof. Dr. Andreas Gold (FS 2023, HS 2023) Dr. Chri Hübscher (FS 2023) Prof. Dr. Christian Rösler (FS 2023, HS 2023) Dr. Mirjam Seckler (FS 2023) Dr. Beat Vollenwyder (HS 2023)

## **Kurze Chronologie des Jahres 2023**

*Kurzer chronologisch geordneter Gesamtüberblick über bemerkenswerte Vorkommnisse im Jahr 2023 Sicht der Abteilung für Allgemeine Psychologie und Methodologie*

Besonders bemerkenswerte Vorkommnisse sind für 2023 keine zu berichten.

### **Personalia in 2021**

*Mai 2023*

*Zgjim Memeti* beendet seine Tätigkeit als Hilfsassistent in der Abteilung.

*Juni 2023*

*Florian Brühlmann* beendet seine Tätigkeit als PostDoc in der Abteilung.

*Oktober 2023*

*Melanie Svab* beendet ihre Tätigkeit als Hilfsassistentin in der Abteilung.

### **Drittmittel in 2023**

Auch 2023 konnten wieder Drittmittel im Umfang von rund CHF 40'000 erfolgreich eingeworben werden, die insbesondere zur Finanzierung zusätzlicher Personalanstellungen (Lehrbeauftragte, Assistierende, Doktorierende, Hilfsassistentierende) genutzt wurden.

## **Lehrveranstaltungen**

### ***Frühlingssemester 2023***

#### *Bachelorstudium*

Denken, Problemlösen, Expertise (Vorlesung; Opwis)

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

Empirisch-Experimentelles Projektseminar (Scharowski)

Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?

(Aeschbach, Bopp, Brühlmann, Opwis, Perrig, Scharowski)

#### *Masterstudium*

Aktuelle Forschungsthemen der Mensch-Maschine Interaktion I (Aeschbach, Perrig)

Online Forschung in der MMI: Fragebogenkonstruktion und Analyse (Brühlmann, Perrig)

Usability-Testing: Evaluation der Mensch-Maschine Interaktion (Brühlmann, Scharowski & Seckler, LA)

Konzeption und Design von User Interfaces II (Hübscher, LA)  
Einführung in die Analytische Psychologie C.G. Jung (Roesler, LA)  
Praxis der analytischen Psychotherapie C.G. Jungs: Anwendung und Vertiefungen (Roesler, LA)

#### *Masterprojekte*

Mensch-Maschine Interaktion (Aeschbach, Brühlmann, Opwis, Perrig, Scharowski)

#### *Doktoratskolloquium am 7. Juni 2023*

Understanding player experience in digital games: Investigating theory and methods (Lena Aeschbach)

A multi-method approach to capture quality of collaborative group engagement (Lisa Paneth)

Digitale und irreversible Technologien im Kontext der Arbeit und Lehre (Thomas Wyssenbach)

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

Psychologie: Einführung in die Kognitive Psychologie (Opwis)

### ***Herbstsemester 2023***

#### *Bachelorstudium*

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

Einführung in die Mensch Maschine Interaktion (Bargas-Avila, LA)

Empirisch-Experimentelles Projektseminar (Scharowski)

Wie schreibe ich eine Bachelorarbeit in der Mensch Maschine Interaktion?

(Aeschbach, Brühlmann, Opwis, Perrig, Scharowski & Martinis-Bopp, LA)

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)

Zentrale Konzepte und Konstrukte der User Experience (Perrig)

Lesen und Lernen mit digitalen Medien (Gold, LA)

Web Accessibility and Inclusive Design (Vollenwyder, LA)

#### *Masterprojekte*

Mensch Maschine Interaktion (Aeschbach, Brühlmann, Opwis, Perrig, Scharowski)

## Publikationen in 2023

### Peer-Reviewed Artikel und Beiträge

*Aeschbach, L.F., Kayser, D., De Castro Hüsler, A.B., Opwis, K., Brühlmann, F. (2023). The psychology of esports players' ELO hell: Motivated bias in league of legends and its impact on players' overestimation of skill. Computers in Human Behavior, 147 (14 pages).*

This paper examines the folk theory of ELO Hell, which stems from the community of esports players. ELO Hell is a causal explanation for the failure to achieve which is prominent but controversial in esports. Within the community, the belief in the existence of ELO Hell associated with lower skill. We aim to explain the persistence of this folk theory despite the debate within the community using psychological theories. We find this folk theory relevant for investigation because the blame placed on other players could escalate to patterns of harmful behavior, known as toxicity. Given the association with lower-ranked players, we predict this could be an operationalization of the Dunning–Kruger effect, a tendency for lower-skilled performers to overestimate themselves, and its associated motivational biases. Surveying 267 players of the esports League of Legends and triangulating the quantitative, qualitative, and mined data collected, we find evidence of lower-skilled players overestimating their skills more so than higher-skilled players. Further, we find that motivational biases regarding causal attributions for failure and success did explain significant variance in the degree of overestimation. However, we also found some players withdraw their effort from competitive play and we use self-determination theory to categorize their reason for losing motivation. Taken together, we show the psychological mechanisms which lead to the formation of the folk theory of ELO Hell and the motivational biases that uphold the conflict about its existence.

*Perrig, S.A.C., Ueffing, D., Opwis, K. & Brühlmann, F. (2023). Smartphone app aesthetics influence users' experience and performance, Frontiers in Psychology, 14 (18 pages).*

Past research has demonstrated that aesthetics affect users' experiences in various ways. However, there is little research on the impact of interface aesthetics on user performance in a smartphone app context. The present paper addresses this research gap using an online experiment (N = 281). Two variants of the same web app were created and manipulated in their aesthetics. Participants were randomly assigned to either variant and asked to explore the app before answering questions concerning the app's content. Results showed a significant positive effect of aesthetics on perceived usability and aesthetics. Furthermore, results point toward a positive impact of interface aesthetics on performance (i.e., the number of questions answered correctly). Thus, results indicate that a visually appealing smartphone web app increases users' subjective experience and objective performance compared to an unaesthetic app. This suggests that user interface aesthetics impact users' experiences and provide stakeholders with quantifiable value and competitive advantage.

*Perrig, S.A.C., Von Felten, N., Honda, M., Opwis, K. & Brühlmann, F. (2023). Development and validation of a positive-item version of the visual aesthetics of websites inventory: The VisAWI-Pos, International Journal of Human-Computer Interaction (25 pages).*

Despite its importance, few validated scales exist to measure aesthetics in HCI. One notable exception, the Visual Aesthetics of Websites Inventory (VisAWI), has never been validated in English. Furthermore, the VisAWI contains negatively formulated items, which adversely impact the psychometric quality of survey scales. Consequently, this paper's aim was the development of a positive-item version of the VisAWI, the VisAWI-pos, as a viable alternative to the original scale. Positive alternatives for the negative items of the VisAWI scale were developed and evaluated in a first study (N=41). Afterward, a pre-registered second study (N=966) was conducted to validate the VisAWI-pos. In addition, the VisAWI's English version was formally validated for the first time. Results showed that the English VisAWI has comparable psychometric qualities to validated versions in other languages. Furthermore, the VisAWI-pos provided matching results to the original VisAWI while exhibiting equal or improved psychometric quality.

Reymond, C., Vornhagen, J. B., Pelowski, M., Opwis, K. & Mekler, E. D. (2023). Images influencing images: How pictorial context effects the emotional interpretations of art photographs. *Psychology of Aesthetics, Creativity, and the Arts (Online First Publication)*.

Images are never seen in isolation. Instead, they are perceived within a spatial and temporal tapestry of neighboring images. What impact do other images have on our emotional response toward a particular image? Answers to this basic question have vital implications for a range of fields—especially for visual communication and for curating art, where resources are invested in arranging images within a visual context. Previous studies have provided mixed results, suggesting that juxtaposed images may lead to contrast or assimilation processes increasing and decreasing our liking of an image. But how specific image features in neighboring images (image’s ambiguity or formal similarities between images) modulate our affective interpretation of an image has almost never been explored. In Study 1, we compared the emotion perceived in art photographs (“target” images) when displayed on their own versus when displayed in juxtaposition with negatively or positively valenced nonart (“context”) images. Additionally, we analyzed the influence of the artwork’s perceived ambiguity. In Study 2, we examined the effect of the perceiver’s expertise and the formal similarity between the images on the rated valence of the target image. Our results show that the emotion perceived in the artwork contrasted away from or assimilated toward the valence perceived in the context image depending on which evaluative dimension was activated. Moreover, the influence of negative contextual material on the target image’s valence was more pronounced. We conclude by saying that the evaluative dimension is part of the pictorial context that influences the affective interpretation of an image.

Ruf, A., Zahn, C., Roos, A.-L. & Opwis, K. (2023). How do enhanced videos support generative learning and conceptual understanding in individuals and groups? *Educational Technology Research and Development, 71 (27 pages)*.

Videos are an increasingly popular medium for supporting learning in various educational settings. Nowadays, newly designed video-based environments contain enhanced tools that allow for specific interactions with video materials (such as adding annotations and hyperlinks) which may well support generative learning and conceptual understanding. However, to exploit the potentials of such enhanced tools, we need to gain a deeper understanding on the learning processes and outcomes that go along with using these tools. Thus, we conducted a controlled laboratory experiment with 209 participants who were engaged in learning a complex topic by using different enhanced video tools (annotations vs. hyperlinks vs. control group) in different social learning settings (individual vs. collaborative learning in dyads). Findings revealed that participants who learned with hyperlinks and participants in collaborative settings created hypervideo products of higher quality than learners in other conditions. Participants who learned with annotations assessed their knowledge gain higher and had higher results in conceptual understanding when they experienced low cognitive load. With our study we contribute new original work to advance cognitive research on learning with enhanced video learning environments. Limitations and recommendations for future research are discussed.

Vollenwyder, B., Petralito, S., Iten, G., Brühlmann, F., Opwis, K. & Mekler, E. D. (2023). How compliance with web accessibility standards shapes the experiences of users with and without disabilities. *International Journal of Human Computer Studies, 170, 14 pages*.

Benefits for all user groups is one of the most prominent motivations to provide accessible information and services on the web. Designing digital technologies in a more inclusive manner for users with sensory, motor, or cognitive impairments enhances their overall quality. In practice, work on web accessibility often relies on complying with standards. But whether standards lead to improved usability and a satisfying user experience for all user groups is controversial. The present study aims at deepening our understanding of how compliance with web accessibility standards shapes the experiences of both users with and without disabilities. In a randomised controlled experiment, 66 participants with visual impairments and 65 participants without visual impairments solved tasks on an online shop built with either low (NA) or high (AA) conformance to web accessibility standards. The results show no statistically significant effects on outcomes related to usability and user experience. However, analysis of open-ended answers suggests that participants with visual impairments reported more positive experiences, and participants without visual impairments fewer negative experiences while using the online shop conformant to web accessibility standards. We therefore recommend adopting a more differentiated perspective on what can be achieved through compliance with web accessibility standards and emphasise that conformance-based approaches should be complemented with user-centred and participatory design methods. Further, since most participants reported being experienced users and an online shop is often a familiar context, more research in other settings is required.

Scharowski, N., Benk, M., Kühne, S.J., Wettstein, L. & Brühlmann, F. (2023). Certification labels for trustworthy AI: Insights from an empirical mixed-method study. *FACCT '23: Proceedings of the 2023 ACM Conference on Fairness, Accountability, Transparency*, pp. 248-260 (14 pages).

Auditing plays a pivotal role in the development of trustworthy AI. However, current research primarily focuses on creating auditable AI documentation, which is intended for regulators and experts rather than end-users affected by AI decisions. How to communicate to members of the public that an AI has been audited and considered trustworthy remains an open challenge. This study empirically investigated certification labels as a promising solution. Through interviews ( $N = 12$ ) and a census-representative survey ( $N = 302$ ), we investigated end-users' attitudes toward certification labels and their effectiveness in communicating trustworthiness in low- and high-stakes AI scenarios. Based on the survey results, we demonstrate that labels can significantly increase end-users' trust and willingness to use AI in both low- and high-stakes scenarios. However, end-users' preferences for certification labels and their effect on trust and willingness to use AI were more pronounced in high-stake scenarios. Qualitative content analysis of the interviews revealed opportunities and limitations of certification labels, as well as facilitators and inhibitors for the effective use of labels in the context of AI. For example, while certification labels can mitigate data-related concerns expressed by end-users (e.g., privacy and data protection), other concerns (e.g., model performance) are more challenging to address. Our study provides valuable insights and recommendations for designing and implementing certification labels as a promising constituent within the trustworthy AI ecosystem.

Scharowski, N., Perrig, S.A.C., Svab, M. Opwis, K. & Brühlmann, F. (2023). Exploring the effects of human-centered AI explanations on trust and reliance. *Frontiers in Computer Science*, 5 (15 pages).

Transparency is widely regarded as crucial for the responsible real-world deployment of artificial intelligence (AI) and is considered an essential prerequisite to establishing trust in AI. There are several approaches to enabling transparency, with one promising attempt being human-centered explanations. However, there is little research into the effectiveness of human-centered explanations on end-users' trust. What complicates the comparison of existing empirical work is that trust is measured in different ways. Some researchers measure subjective trust using questionnaires, while others measure objective trust-related behavior such as reliance. To bridge these gaps, we investigated the effects of two promising human-centered post-hoc explanations, feature importance and counterfactuals, on trust and reliance. We compared these two explanations with a control condition in a decision-making experiment ( $N = 380$ ). Results showed that human-centered explanations can significantly increase reliance but the type of decision-making (increasing a price vs. decreasing a price) had an even greater influence. This challenges the presumed importance of transparency over other factors in human decision-making involving AI, such as potential heuristics and biases. We conclude that trust does not necessarily equate to reliance and emphasize the importance of appropriate, validated, and agreed-upon metrics to design and evaluate human-centered AI.

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

Perrig, S. A.C., Scharowski, N. & Brühlmann, F. (2023). Trust issues with trust scales: Examining the psychometric quality of trust measures in the context of AI. *CHI EA '23: Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems*, Article No. 297 (7 pages).

Trust is crucial for human interaction with artificial intelligence (AI) and is frequently measured through questionnaires or rating scales. One commonly used questionnaire in AI research is the *Trust between People and Automation scale* (TPA). However, its psychometric quality has yet to be examined in the context of AI. More recently, a *Trust Scale for Explainable AI* (TXAI) was recommended but not empirically evaluated. In this study, we assessed the psychometric qualities of both scales, using confirmatory and exploratory factor analyses to test the scales' validity and coefficients  $\alpha$  and  $\omega$  for reliability estimation. Our results suggested good psychometric quality for the TXAI after removing one item. Concerning the TPA, acceptable quality was only achieved when using a two-factor model (trust and distrust) and after removing two items. We provide recommendations for using the two scales and evidence to distinguish trust and distrust as separate psychological constructs.

## Qualifikationsarbeiten (Abschluss in 2023)

### Dissertationen

- Vollenwyder, Beat (2023). *Why Web Professionals Design for Accessibility: The importance of User Involvement and Product*. (Datum der Disputation: 27. Januar 2023).
- Linxen, Sebastian (2023). *Perspectives on Human-Computer Interaction and Culture*. (Datum der Disputation: 10. März 2023).
- Wüest, Alexandra (2023). *Neuropsychological study in older adults: A comprehensive MMSE-MoCA conversion table – Prevention of postoperative delirium – Cognitive sequelae of atrial fibrillation*. (Datum der Disputation: 9. Juni 2023).
- Buser, Daniela (2023). *Measuring and maintaining performance in X-ray baggage inspection at security checkpoints: Methodological and practical considerations*. (Datum der Disputation: 4. Oktober 2023).

### Masterarbeiten

- Jeker, Rahel (2023). *The unleashed feeling of (art)ificial. Investigating the emotions AI-generated artworks evoke in comparison*.
- Marty, Linus (2023). *Revisiting the Privacy Paradox: Why observed privacy behavior is perfectly reasonable*.
- Memeti, Zgjim (2023). *If-Then planning: Exploring its potential as a method to mitigate careless responding in online surveys*.
- Stalder, Marion (2023). *“This stupid e-banking”: A mixed methods study of older women’s digital engagement and its challenges*.
- Thomaser, Marika (2023). *Analysis of three standardized UX questionnaires: The measurement practice of a construct lacking consensus*.

### Bachelorarbeiten

- Bongartz, Clara Luise Josefa (2023). *Acceptability, user engagement, and effectiveness of the AI-based chatbot Tess: A systemativ review*.
- Bannwart, Geraldine (2023). *Basic psychological needs in video games: A comparison of single-player and multiplayer games*.
- Bühler, Cyrill (2023). *The rise and potentially looming problems of excessive screen-time and on Online-Persona*.



- Cooper, Dylan Mercury (2023). *Needs, passions and loot boxes: Exploring reasons for problembehavior in relation to loot box engagement.*
- Doshi, Damien (2023). *Automated vehicle systems and humans: How being on-the-loop influences trust and behavior of individuals.*
- Francis, Johnathan (2023). *Der Effekt von Farbe auf User Engagement mit als kompliziert wahrgenommenen Benutzeroberflächen.*
- Gehlen, Charlotta (2023). *The Chatbot - Human relationship: Influence of anthropomorphism on bulding trust.*
- Goetz, Fabienne (2023). *What effect has background music in games on the stress level of the player?*
- Hänggi, Lars (2023). *Exploring the emotional player experience: Searching for the relationship between sadness and being moved.*
- Leyre, Macias (2023). *Report Noob: The persistence of toxic behavior in multiplayer online games.*
- Natsch, David (2023). *Systematic review of the impact of entertainment and cognitive training video games on the cognitive function in older adults.*
- Quiroga, Antonio Cortinas (2023). *Influence of different video game reward types on the player's motivation.*
- Schwarz, Linda (2023). *Influence of serious video games on cognitive skills of attention in children with attention-deficit/hyperactivity disorder (ADHD).*
- Schwizer, Tijana (2023). *The positive effects of exergaming on psychological well-being.*
- Tognola, Cecilia (2023). *To what extent can video games benefit adults with Autism Spectrum Disorder (ASD)?*
- Wetzel, Ava (2023). *Why people deceive their self-presentation in Online Dating based on the adult attachment theory.*

## **Masterstudierende (per 31. Dezember 2023)**

Alt, Roman  
Bader, Joel  
Bornand, Elea  
Felten von, Nick  
Graf, Simon Andreas  
Haller, Ariane  
Honda, Marimo  
Kaufmann, Yannick  
Küttel, Enola  
Mullis, Sara  
Oswald, Nikolas  
Pasche, Eva Sophia  
Sinnathurai, Sukirthan  
Sivananthan, Lacshigan  
Treichler, Christoph  
Wettstein, Léane  
Ziba, Erjon

## **Doktorandinnen und Doktoranden (per 31. Dezember 2023)**

Aeschbach, Lena F.  
Catarci, Daniele  
Henzen, Nicolas  
Laasner, Lea  
Paneth, Lisa  
Perrig, Sebastian  
Riz à Porta, Robin  
Scharowski, Nicolas  
Schmid, Birgit  
Wyssenbach, Thomas