Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

ENTWICKLUNG UND VALIDIERUNG EINES ONLINE-TRAININGS ZUM THEMA KÜNSTLICHE INTELLIGENZ FÜR PSYCHOLOGIESTUDIERENDE

SABRINA GADO[1], REGINA KEMPEN[1] UND TANJA BIPP[2]

[1] UNIVERSITÄT WÜRZBURG; [2] UNIVERSITÄT HEIDELBERG

BLITZLICHT-VORTRÄGE DER DGPs-JUNGMITGLIEDER, 23.09.2021

FACHGRUPPENTAGUNG AOW-PSYCHOLOGIE UND INGENIEURSPSYCHOLOGIE 2021, CHEMNITZ

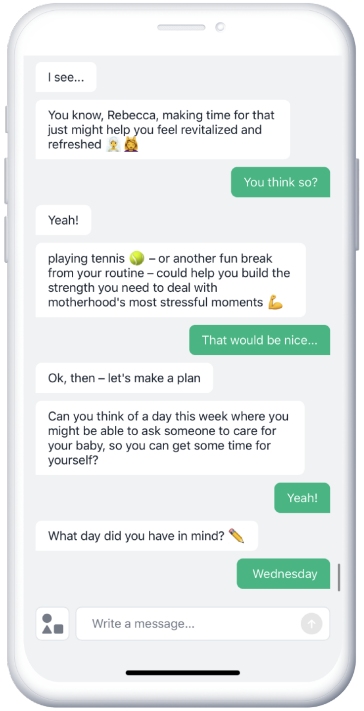
WARUM SOLLTEN SICH PSYCHOLOG*INNEN MIT KÜNSTLICHER INTELLIGENZ BESCHÄFTIGEN?

Vorkenntnisse

Vorbildung und statistisches Grundverständnis (König et al., 2020; Landers, 2019; Mruk, 1987)

Einfluss von KI in psychologischen Teilgebieten

Psychotherapie (Bendig et al., 2019; Luxton, 2014), **Bildung** (Anderson et al., 1985; Ma et al., 2014), **klinische Forschung** (Dwyer et al., 2018) und **Personalpsychologie** (Brynjolfsson & Mitchell, 2017; Langer et al., 2018; Reindl, 2016)



https://woebothealth.com/for-clinicians/

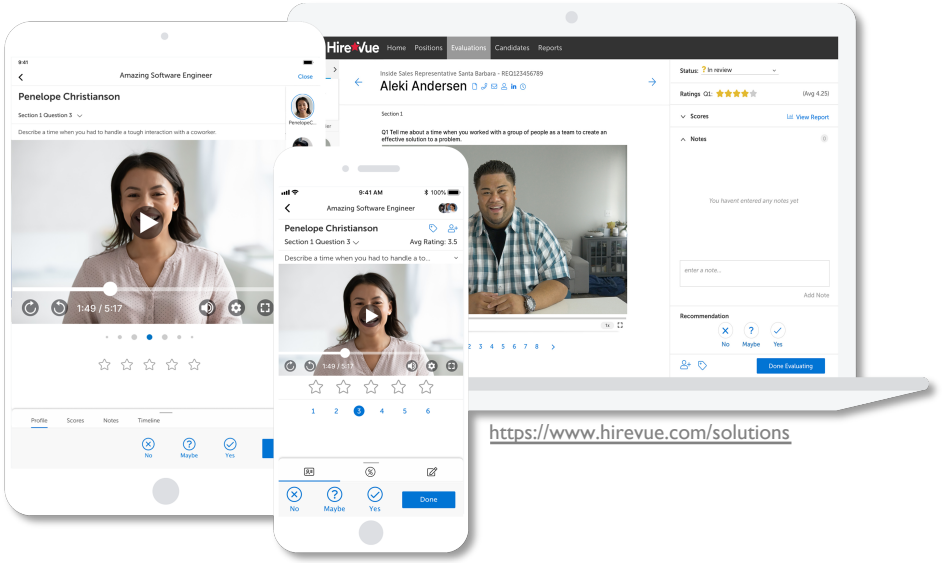
WARUM SOLLTEN SICH PSYCHOLOG*INNEN MIT KÜNSTLICHER INTELLIGENZ BESCHÄFTIGEN?

Vorkenntnisse

Vorbildung und statistisches Grundverständnis (König et al., 2020; Landers, 2019; Mruk, 1987)

Einfluss von KI in psychologischen Teilgebieten

Psychotherapie (Bendig et al., 2019; Luxton, 2014), **Bildung** (Anderson et al., 1985; Ma et al., 2014), **klinische Forschung** (Dwyer et al., 2018) und **Personalpsychologie** (Brynjolfsson & Mitchell, 2017; Langer et al., 2018; Reindl, 2016)



https://www.hirevue.com/solutions

WARUM SOLLTEN SICH PSYCHOLOG*INNEN MIT KÜNSTLICHER INTELLIGENZ BESCHÄFTIGEN?

Vorkenntnisse

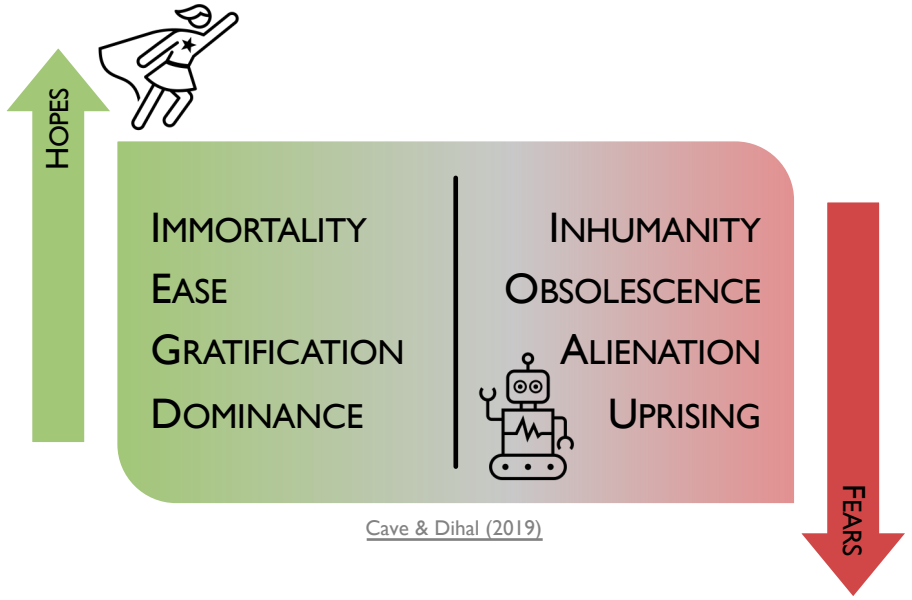
Vorbildung und statistisches Grundverständnis (König et al., 2020; Landers, 2019; Mruk, 1987)

Einfluss von KI in psychologischen Teilgebieten

Psychotherapie (Bendig et al., 2019; Luxton, 2014), **Bildung** (Anderson et al., 1985; Ma et al., 2014), **klinische Forschung** (Dwyer et al., 2018) und **Personalpsychologie** (Brynjolfsson & Mitchell, 2017; Langer et al., 2018; Reindl, 2016)

Einfluss von KI auf alle Menschen

Gemischte Gefühle: Große Hoffnungen und gleichzeitig Ängste und Befürchtungen (Cave & Dihal, 2019; Dang & Liu, 2021; Fast & Horvitz, 2017; Lichtenthaler, 2020; Maier et al., 2019)

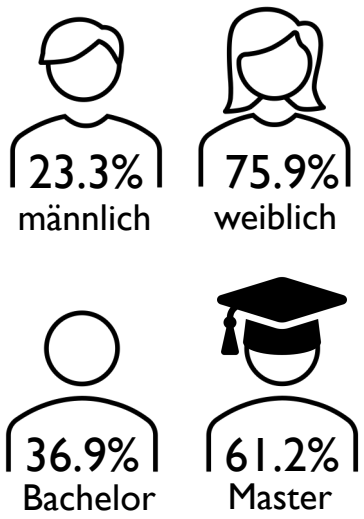


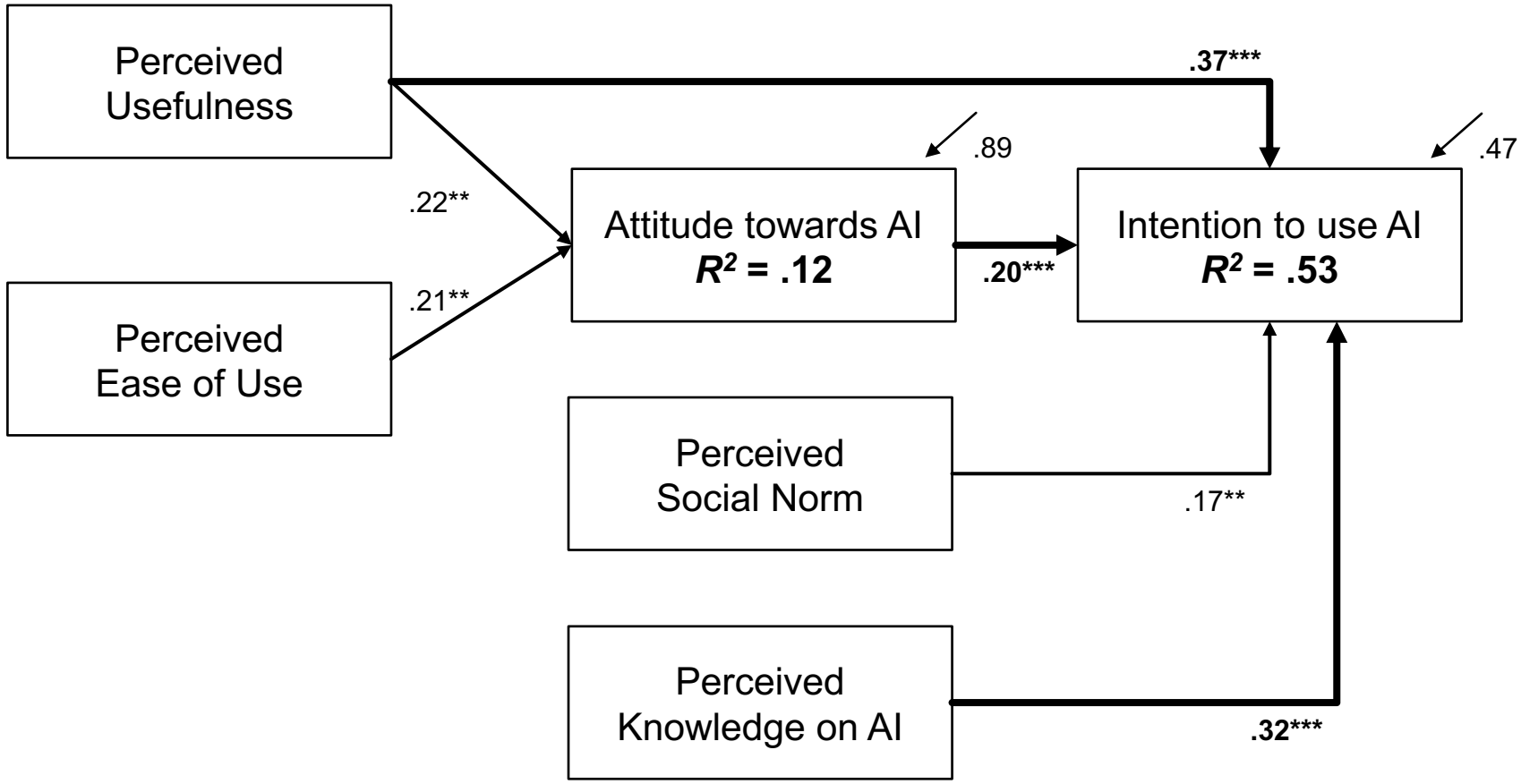
Cave & Dihal (2019)

WAS BEEINFLUSST DIE **EINSTELLUNG** VON PSYCHOLOG*INNEN GEGENÜBER KI UND DIE BEREITSCHAFT SIE **ZU NUTZEN**?

N = 216

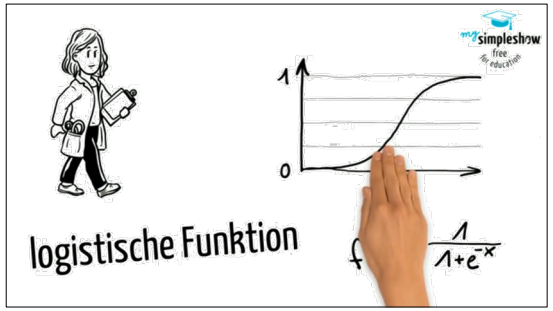
Ø 24.2 Jahre

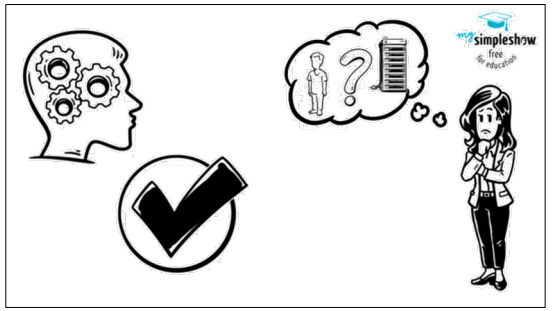




WIE KANN EINE INTERVENTION AUSSEHEN?

- Einwöchiges Online-Training





Open Minded

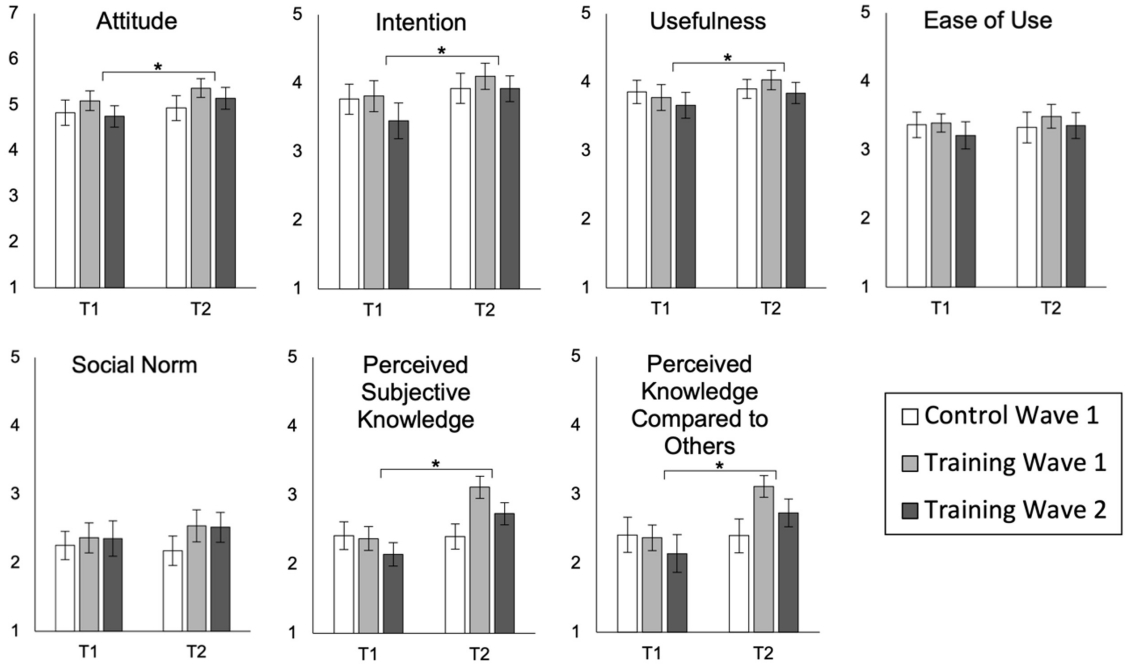
WIE KANN EINE INTERVENTION AUSSEHEN?

- Einwöchiges Online-Training
- Fünf Trainingsmodule (je ca. 30 Minuten):
  1. **Definition, Formen und Geschichte der KI**
  2. **Machine Learning und neuronale Netze**
  3. **Ethische Diskussionen in Bezug auf KI**
  4. **Heutige und zukünftige Anwendungsfelder für KI**
  5. **KI in der Psychologie**
     a) **KI in der klinischen Psychologie und Psychotherapie**
     b) **KI im HR-Bereich**
- Zwei Erhebungswellen, davon eine mit Kontrollgruppe

Open Minded

TRAININGSEFFEKTE

- Signifikante Effekte des Trainings im Prä-Post-Vergleich bei den Trainingsgruppen für
  - Perceived Subjective Knowledge on AI, $p < .001$
  - Perceived Knowledge on AI Compared to Peers, $p < .001$
  - Perceived Usefulness of AI, $p < .001$
  - Attitude towards AI, $p < .001$
  - Intention to use AI, $p < .001$
- Positives Feedback der Teilnehmenden

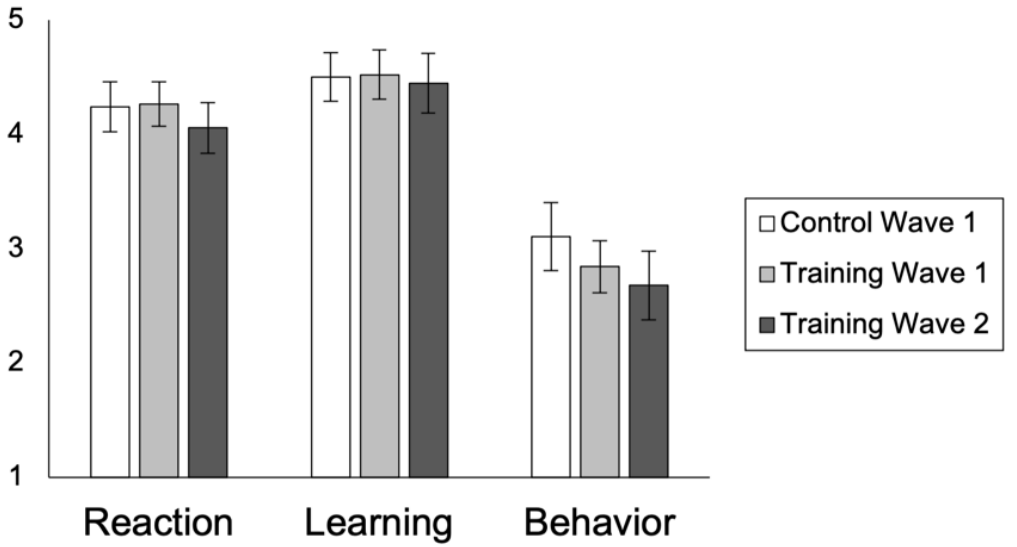


control group wave 1: $n = 46$, training group wave 1: $n = 47$, and training group wave 2: $n = 49$
error bars = 95% confidence interval

Open Minded

TRAININGSEFFEKTE

- Signifikante Effekte des Trainings im Prä-Post-Vergleich bei den Trainingsgruppen für
  - Perceived Subjective Knowledge on AI, $p < .001$
  - Perceived Knowledge on AI Compared to Peers, $p < .001$
  - Perceived Usefulness of AI, $p < .001$
  - Attitude towards AI, $p < .001$
  - Intention to use AI, $p < .001$
- Positives Feedback der Teilnehmenden



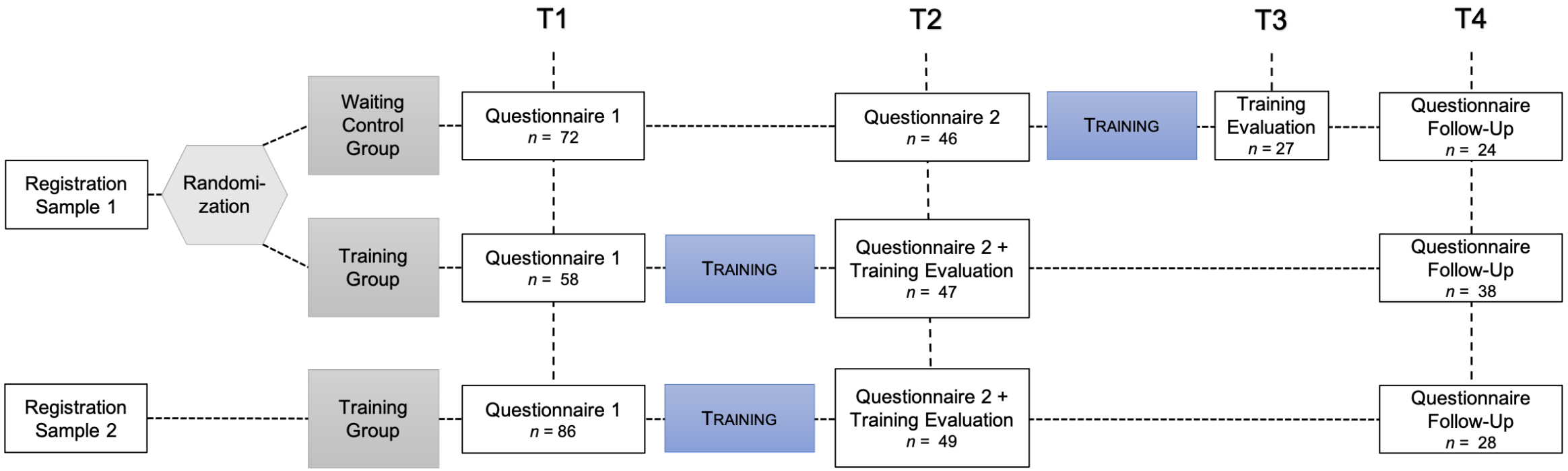
post-training evaluation of Reaction and Learning:
control group wave 1: $n = 27$, training group wave 1: $n = 46$, and training group wave 2: $n = 49$;
follow-up evaluation of Behavior:
control group wave 1: $n = 24$, training group wave 1: $n = 38$, and training group wave 2: $n = 28$
error bars = 95% confidence interval

Open Minded

REFERENZEN

- Anderson, J. R., Boyle, C. F., & Reiser, B. J. (1985). Intelligent tutoring systems. *Science*, *228*(4698), 456-462.
- Bartneck, C., Kulić, D., Croft, E., & Zoghbi, S. (2009). Measurement instruments for the anthropomorphism, animacy, likeability, perceived intelligence, and perceived safety of robots. *International Journal of Social Robotics, 1*(1), 71-81.
- Bendig, E., Erb, B., Schulze-Thuesing, L., & Baumeister, H. (2019). The next generation: Chatbots in clinical psychology and psychotherapy to foster mental health – A scoping review. Verhaltenstherapie.
- Brynjolfsson, E., & Mitchell, T. (2017). What can machine learning do? Workforce implications. *Science*, *358*(6370), 1530.
- Cave, S., & Dihal, K. (2019). Hopes and fears for intelligent machines in fiction and reality. *Nature Machine Intelligence*, *1*(2), 74-78.
- Dang, J., & Liu, L. (2021). Robots are friends as well as foes: Ambivalent attitudes toward mindful and mindless AI robots in the United States and China. *Computers in Human Behavior*, 115, 106612.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.
- Dwyer, D. B., Falkai, P., & Koutsouleris, N. (2018). Machine learning approaches for clinical psychology and psychiatry. *Annual Review of Clinical Psychology*, *14*(1), 91-118.
- Fast, E., & Horvitz, E. (2017). Long-term trends in the public perception of artificial intelligence. *Proceedings of the AAAI Conference on Artificial Intelligence*, *31*(1), 963-969.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. Psychology Press
- Grohmann, A., & Kauffeld, S. (2013). Evaluating training programs: Development and correlates of the questionnaire for professional training evaluation. *International Journal of Training and Development, 17*(2), 135-155.
- König, C., Demetriou, A., Glock, P., Hiemstra, A., Iliescu, D., Ionescu, C., Langer, M., Liem, C., Linnenbürger, A., Siegel, R., & Vartholomaios, I. (2020). Some advice for psychologists who want to work with computer scientists on big data. *Personnel Assessment and Decisions*, *6*(1), 17-23.
- Landers, R. N. (2019, September 25). *An I-O Perspective on Machine Learning in HR*. Society for Industrial and Organizational Psychology (SIOP).
- Langer, M., Baum, K., & König, C. (2018). Algorithmen bei der Personalauswahl – eine kritische und hoffnungsvolle Betrachtung. *Wirtschaftspsychologie aktuell*, *1*, 36-42.
- Lichtenthaler, U. (2020). Extremes of acceptance: Employee attitudes toward artificial intelligence. *Journal of Business Strategy*, *41*(5), 39-45.
- Luxton, D. D. (2014). Artificial intelligence in psychological practice: Current and future applications and implications. *Professional Psychology: Research and Practice*, *45*(5), 332-339.
- Ma, W., Adesope, O. O., Nesbit, J. C., & Liu, Q. (2014). Intelligent tutoring systems and learning outcomes: A meta-analysis. *Journal of Educational Psychology*, *106*(4), 901-918.
- Maier, S. B., Jussupow, E., & Heinzl, A. (2019). Good, bad, or both? Measurement of physician's ambivalent attitudes towards AI. In P. Johannesson (Ed.), *27th European Conference on Information Systems – Information Systems for a Sharing Society*, 115, Stockholm and Uppsala, Sweden. AISeL.
- Mruk, C. J. (1987). The interface between computers and psychology: Toward a psychology of computerization. *Computers in Human Behavior*, *3*(3), 167-179.
- Reindl, C. U. (2016). People Analytics: Datengestützte Mitarbeiterführung als Chance für die Organisationspsychologie. *Zeitschrift für Angewandte Organisationspsychologie (GIO)*, *47*(2), 193-197.
- Spannagel, C., & Bescherer, C. (2009). Computerbezogene Selbstwirksamkeitserwartung in Lehrveranstaltungen mit Computernutzung. *Notes on Educational Informatics – Section A: Concepts and Techniques, 5*(1), 23-43.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

STUDIENDESIGN



TRAININGSEFFEKTE: STATISTIKEN

Construct	Test	Test Value	*df*	*p*	Effect Size
Attitude towards AI	Paired samples *t*-test	−5.04	(97)	< .001	−0.51
	Repeated measures ANOVA	1.56	(1, 91)	.214	
Intention to use AI	Wilcoxon signed-rank test	553.5	(95)	< .001	−0.66
	Repeated measures ANOVA	1.19	(1, 91)	.278	
Perceived usefulness	Paired samples *t*-test	−3.64	(95)	< .001	−0.37
	Repeated measures ANOVA	3.21	(1, 91)	.076	
Perceived ease of use	Paired samples *t*-test	−2.41	(95)	.018	
	Repeated measures ANOVA	1.67	(1, 91)	.199	
Perceived social norm	Wilcoxon signed-rank test	908.5	(95)	.015	
	Repeated measures ANOVA	2.91	(1, 91)	.091	
Perceived subjective knowledge	Wilcoxon signed-rank test	33.5	(95)	< .001	−0.98
	Repeated measures ANOVA	33.08	(1, 91)	< .001	.05
Perceived knowledge compared to others	Wilcoxon signed-rank test	47	(95)	< .001	−0.93
	Repeated measures ANOVA	74.35	(1, 91)	< .001	0.11

For the paired samples *t*-test, test statistic is given by *t* and effect size is given by Cohen's *d*; for the Wilcoxon signed-rank test, test statistic is given by *W* and effect size is given by the matched rank biserial correlation *r*; for the repeated measurement ANOVA, test statistic is given by *F* and effect size is given by Omega squared ω^2