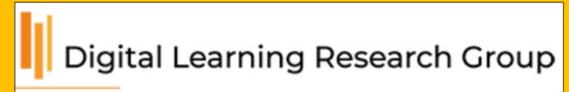


# Learning for Digital Detox: Exploring Instagram Use, Social Comparison and Fear of Missing out



Hermann Astleitner & Michelle Rosenthal



## Abstract

Excessive use of social media has been shown to have a negative impact on learning, academic performance, and mental health. Therefore, there are increasing efforts to reduce the time spent on social media. Such efforts are summarized under the buzzword of digital detoxification and are not yet optimal in their effect. In order to improve the effectiveness of such measures, it seems necessary to understand the theoretical mechanisms in more detail. To find these out, we started from activity-, comparison-, fear-related and hybrid theoretical models related to the amount of time that is spent in social media. We focused on Instagram, developed Instagram-related measurement scales and conducted an online survey of 271 young adults. In path analyses, we examined the relationships between variables such as self-esteem, active and passive social media use, upward and downward social comparisons, fear of missing out, Instagram stress and time. Our statistical analyses only partially confirm our initial models. However, we identified a model with a good fit that shows active social media use, upward social comparisons, and fear of missing out to be significantly related to Instagram stress and time. Based on our findings, we propose a multidimensional digital detoxification intervention package. Overall, we conducted a research and development study: We searched for effective patterns and used the most effective variables for developing a framework for learning and instruction on digital detox.

**Keywords:** Social Media, Digital Detox, Intervention, Online Survey

## 1. Background

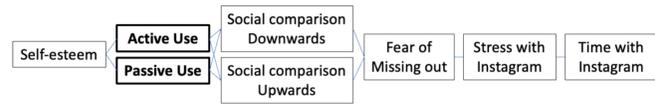
- Digital detox = "a time period during which individuals do not engage in using (b) certain types of applications (e.g., social media), (c) branded media (e.g., unplugging from Facebook), (d) special features (e.g., disconnect from chats), (e) interactions (e.g., active usage of WhatsApp), and/or (f) messages (e.g., voice messages)" (Radtke et al., 2022).
- The greater the use of a phone while studying, the greater the negative impact on learning (Sunday et al., 2021)
- Digital detox enhances student learning (Wood & Muñoz, 2021).
- "Driving factors" are essential for the design educational measures on digital detox (Ou et al. 2023).
- Driving factors, their theoretical mechanisms, and the effectiveness of detox trainings are still unclear (Radtke et al., 2022).
- Self-esteem should be employed as a relevant dimension in prevention and treatment of problematic smartphone use (Casale et al., 2022).

### Our Focus: Exploring factors for digital detox

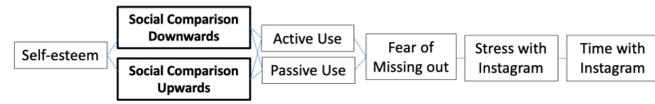
- Active or Passive Use (Yang et al., 2021)
- Social comparison upwards and downwards (Schmuck et al., 2019)
- Fear of missing out (Roberts & David, 2020)

## 2. Hypotheses: What drives time with Instagram?

**Model A: Activity driven** (related to: Verduyn et al., 2022)

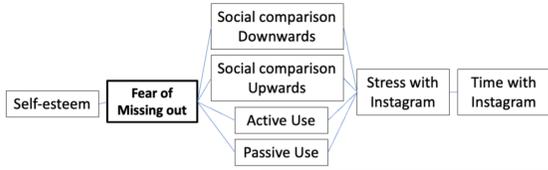


**Model B: Comparison driven** (related to: Yang et al., 2018)

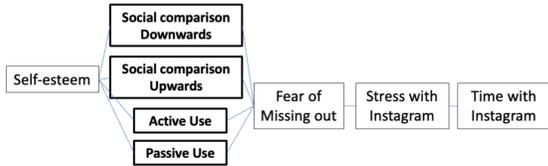


## 2. Hypotheses: What drives time with Instagram?

**Model C: Fear driven** (related to: Lee & Na, 2023)



**Model D: Hybrid driven** (related to: Pang, 2021)



## 3. Goals: Research and development

- To explore the driving mechanisms (and related models) for time on Instagram (e.g., Astleitner et al., 2023)

- To develop new measurement scales for social comparison, active/passive use, and stress related to Instagram.

- To develop a framework for instruction and learning on social media detox (e.g., Astleitner, 2018, 2022; Astleitner & Schlick, 2024)



## 4. Method

### 4.1. Participants and procedures

- N = 271
- 77.2 % female, 22.0 % male, 0.7% divers
- Young adults: At average 25.69 years (Range: 18 – 62)
- 49.4 % with University degree, 34.8 % High school

- Daily Instagram Use:
  - < 1 hour: 27.1 %
  - 1-2 hours: 48.7 %
  - 2-3 hours: 15.2 %
  - 3-4 hours: 5.2 %
  - 4-5 hours: 2.2 %
  - > 5 hours: 1.5 %

- Online-Survey (from 18.1.2023-1.2.2023, n=307 (some incomplete)) (Rosenthal, 2023)
- Links distributed via Whatsapp, Instagram, Facebook
- Convenience Sampling

## 4.2. Measures and statistical analyses

Variable	Scale	Number of Items	Cronbach's Alpha	Sample Item (Source)
Active Use	(almost) never (1) rarely (2) often (3) (almost) always (4)	7	.79	I post stories on Instagram (self-designed)
Passive Use	(almost) never (1) rarely (2) often (3) (almost) always (4)	5	.66	On Instagram I look at other people's stories without reacting to them (e.g. liking, commenting, ...) (self-designed)
Social comparison up	(almost) never (1) rarely (2) often (3) (almost) always (4)	4	.90	How often do you compare yourself on Instagram to people who you think are doing better than you? (self-designed)
Social comparison down	(almost) never (1) rarely (2) often (3) (almost) always (4)	4	.87	How often do you compare yourself on Instagram to people who have less reach than you? (self-designed)
Fear of Missing out	Strongly agree (4) Agree (3) Disagree (2) Strongly disagree (1)	10	.77	I fear others have more rewarding experiences than me. (Przybylski et al., 2013)
Self-esteem	Strongly agree (4) Agree (3) Disagree (2) Strongly disagree (1)	10	.89	On the whole, I am satisfied with myself. (Collani & Herzberg, 2003 based on Rosenberg)
Stress	(almost) never (1) rarely (2) often (3) (almost) always (4)	11	.88	How often does it happen that you get overwhelmed by the amount of content on Instagram? (self-designed)

- Pretest for instrument development
- Descriptive Statistics, Correlations with SPSS 29
- Path analysis (with raw data) with R-JAMOVI 2.5.4

## 5. Results

### 5.1. Descriptive statistics

	Age	Education	Daily Instagram Use (Hours)	Active Use	Passive Use	Social comparison upwards	Social comparison downwards	Fear of Missing out	Self-esteem	Stress
N	Valid 270	261	269	271	271	271	271	271	271	271
Missing	1	10	2	0	0	0	0	0	0	0
Mean	25.69	10.78	2.11	1.8919	2.9247	2.1642	1.4760	2.3306	3.0601	2.2076
SE of M	.377	.224	.063	.03290	.03425	.04739	.03482	.02994	.03371	.03991
Median	25.00	12.00	2.00	1.8571	3.0000	2.2500	1.2500	2.3000	3.1000	2.1818
Modus	25	14	2	2.14	3.00	2.00	1.00	2.30	3.00	2.36
SD	6.201	3.626	1.031	54154	56380	78012	57323	49290	55501	65698
Variance	38.447	13.150	1.062	.293	.318	.609	.329	.243	.308	.432
Skewness	2.448	-.911	1.382	-.700	-.281	.173	1.359	-.026	-.284	-.021
Kurtosis	9.172	-.202	2.538	-.650	-.198	-.651	2.077	.074	-.601	-.881
Range	44	12	5	2.86	2.60	3.00	3.00	2.80	2.30	2.73
Minimum	18	2	1	1.00	1.40	1.00	1.00	1.00	1.00	1.70
Maximum	62	14	6	3.86	4.00	4.00	4.00	3.80	4.00	3.73
Sum	6935	2813	568	512.71	792.60	586.50	400.00	631.60	829.30	598.27

## 5. Results

### 5.1. Correlations between study variables

	Age	Education	Daily Instagram Use (Hours)	Active Use	Passive Use	Social comparison upwards	Social comparison downwards	Fear of Missing out	Self-esteem	
Age	R	1								
	Sig. (2-sided)									
Education	R	.277	1							
	Sig. (2-sided)	<.001								
Daily Instagram Use (Hours)	R	.260	.261	1						
	Sig. (2-sided)	.118	.127							
Active Use	R	.053	.041	.269	1					
	Sig. (2-sided)	.608	.559	.269						
Passive Use	R	-.155	-.061	.291	.269	1				
	Sig. (2-sided)	.011	.324	<.001	<.001					
Social Comparison Upwards	R	.028	.114	-.106	-.323	.271	1			
	Sig. (2-sided)	.646	.067	.282	<.001	.271	.271			
Social Comparison Downwards	R	-.113	.084	.465	.229	.022	.271	1		
	Sig. (2-sided)	.065	.176	.007	<.001	.715	.271	.271		
Fear of Missing out	R	.270	.261	.269	.271	.271	.271	.271	1	
	Sig. (2-sided)	.001	.001	.001	.001	.001	.001	.001	<.001	
Self-esteem	R	-.288	-.142	-.198	-.126	-.008	-.419	-.255	-.397	1
	Sig. (2-sided)	<.001	.021	.001	.018	.899	<.001	<.001	<.001	<.001
Stress	R	.270	.261	.269	.271	.271	.271	.271	.271	.271
	Sig. (2-sided)	.001	.001	.001	.001	.001	.001	.001	.001	<.001

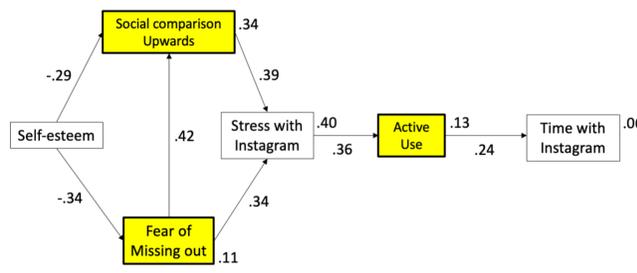
## 5.2. Model Tests: Fit statistics and indirect effects in the saturated model

Model	$\chi^2$	df	p	RMSEA	SRMR	CFI	R <sup>2</sup> Time
A	253	18	<.001	.22	.15	.50	.03
B	253	18	<.001	.22	.16	.50	.03
C	202	18	<.001	.20	.12	.61	.03
D	224	18	<.001	.21	.14	.56	.03
Saturated	8.05	8	.429	.01	.03	1.0	.06

Label	Description	Parameter	Estimate	SE	95% Confidence Intervals	Z	p		
E1	SELFN → FOMON → STREN → AKNUN → SMUSE	p12*p3*p1p1	-0.004	0.009	-0.042	-0.506	-0.010	-9.609	0.009
E2	SELFN → SOAUN → STREN → AKNUN → SMUSE	p12*p1*p5*p3*p1	-0.011	0.004	-0.020	-0.903	-0.005	-8.528	0.012
E3	STREN → AKNUN → SMUSE	p6*p3*p3*p1	-0.023	0.009	-0.040	-0.906	-0.009	-8.623	0.009
E4	FOMON → STREN → AKNUN → SMUSE	p12*p1	0.176	0.053	0.073	0.980	0.084	3.330	<.001
E5	SOAUN → STREN → AKNUN → SMUSE	p14*p3*p1	0.079	0.037	0.026	0.132	0.028	2.950	0.004
E6	FOMON → SOAUN → STREN → AKNUN → SMUSE	p12*p1*p3*p1	0.028	0.013	0.011	0.964	0.014	2.865	0.005
E7	SOAUN → STREN → AKNUN → SMUSE	p15*p3*p1	0.057	0.019	0.020	0.994	0.032	3.001	0.003

AKNUN = Active Use, PANUN = Passive Use, SOAUN = Social comparisons upwards, FOMON = Fear of missing out, SELFN = Self-esteem, STREN = Stress, SMUSE = Instagram Time

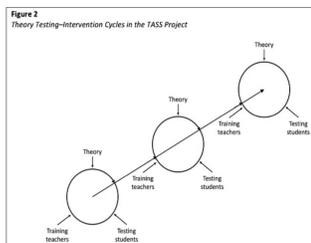
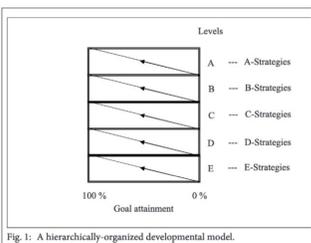
## 5.3. The saturated model



Note. All betas and R<sup>2</sup>: p < .001

## 7. Implications for Learning and Instruction

### Package Intervention: Developmental Model + Testing-Intervention-Cycles



Astleitner, H. (Ed.). (2020). *Intervention Research in Educational Practice: Alternative Theoretical Frameworks and Application Problems*. Waxmann.

Astleitner, H. (Ed.). (2024). *School Development, Teacher Training, and Digital Learning Contexts: Theoretical Approaches and Empirical Findings*. Waxmann.

## 7. Implications for Learning and Instruction

### Development: A Multidimensional Package Intervention on Digital Detox

Learning area	Goal	Instructional Strategies (to be tested in future research)	Resources
Active Use	Decrease	(1) Application limits with alerts and earnings when limits are met. (2) Building up alternative activities.	Stinson & Dallery (2023)
Upward Social Comparison	Decrease	(3) Individual or criterion reference norm orientation instead of social reference standards. (4) Orientation toward cultivation and not evaluation of relationships.	Rheinberg et al. (2000) Knee et al. (2003)
Fear of Missing out	Decrease	(5) Technical countermeasures: Auto-reply, Set status, Auto views. (6) Social countermeasures: Self-talk, self-esteem improvement, expectation management, anxiety control.	Alutaybi et al. (2020)

## References

Alutaybi, A., Al-Thani, D., McAlaney, J., & Ali, R. (2020). Combating fear of missing out (FoMO) on social media: The FoMoR method. *International Journal of Environmental Research and Public Health*, 17(17), 6138.

Astleitner, H. (2018). *Multidimensional Engagement in Learning—An Integrated Instructional Design Approach*. *Journal of Instructional Research*, 7, 32-32.

Astleitner, H. (2022). *Classroom Assignments for Fostering Resilience—An Instructional Design Model on Affective Personality Development*. *Journal of Instructional Research*, 11, 26-43.

Astleitner, H., Bains, A., & Hörmann, S. (2023). The effects of personality and social media experiences on mental health: Examining the mediating role of fear of missing out, ghosting, and vaguebooking. *Computers in Human Behavior*, 138, 107436.

Astleitner, H., & Schlick, S. (2024). The social media use of college students: Exploring identity development, learning support, and parallel use. *Active Learning in Higher Education*, 1469787421336605.

Casale, S., Fioravanti, G., Bucci, S. B., Falone, A., Ricca, V., & Rottella, F. (2022). A meta-analysis on the association between self-esteem and problematic smartphone use. *Computers in Human Behavior*, 126, 107302.

Gori, A., Topino, E., & Griffiths, M. D. (2023). The associations between attachment, self-esteem, fear of missing out, daily time expenditure, and problematic social media use: A path analysis model. *Addictive Behaviors*, 142, 107633.

Knee, C. R., Patrick, H., & Lonsbury, C. (2003). Implicit theories of relationships: Orientations toward evaluation and cultivation. *Personality and Social Psychology Review*, 7(1), 41-55.

Lee, Y., & Na, S. (2023). Fear of Missing out: An Antecedent of Online Fan Engagement of Sport Teams' Social Media. *Communication & Sport*, 12(4), 217-230.

Ou, M., Zhang, H., Kim, H. K., & Chen, X. (2023). A meta-analysis of social media fatigue: Drivers and a major consequence. *Computers in Human Behavior*, 140, 107597.

Pang, H. (2021). Unraveling the influence of passive and active WeChat interactions on upward social comparison and negative psychological consequences among university students. *Telematics and Informatics*, 57, 101510.

Radtke, T., Aepel, T., Scheibel, K., Keller, J., & von Lindern, E. (2022). Digital detox: An effective solution in the smartphone era? A systematic literature review. *Mobile Media & Communication*, 10(2), 190-215.

Rheinberg, F., Vollmeyer, R., & Burns, B. D. (2000). Motivation and self-regulated learning. In J. Heckhausen (Ed.), *Motivational psychology of human development* (pp. 81-108). Elsevier.

Roberts, J. A., & David, M. E. (2020). The social media party: Fear of missing out (FoMO), social media intensity, connection, and well-being. *International Journal of Human-Computer Interaction*, 36(6), 386-392.

Rosenthal, M. (2023). *Strustfaktor Social Media (Stress Factor Social Media)* [Unpublished Master Thesis]. Paris Lodron University Salzburg.

Schmuck, D., Karasz, K., Matthes, J., & Stevic, A. (2019). "Looking Up and Feeling Down": The influence of mobile social networking site use on upward social comparison, self-esteem, and well-being of adult smartphone users. *Telematics and Informatics*, 42, 102240.

Stinson, L., & Dallery, J. (2023). Reducing problematic social media use via a package intervention. *Journal of Applied Behavior Analysis*, 56(2), 323-335.

Sundary, D. J., Adesope, O. O., & Maughan, P. L. (2021). The effects of smartphone addiction on learning: A meta-analysis. *Computers in Human Behavior Reports*, 4, 100114.

Verduyn, P., Grijalva, M., & Kraus, E. (2022). Do social networking sites influence well-being? The extended active-passive model. *Current Directions in Psychological Science*, 31(1), 62-68.

Wang, J. L., Wang, H. Z., Gaskin, J., & Hawk, S. (2017). The mediating roles of upward social comparison and self-esteem and the moderating role of social comparison orientation in the association between social networking site usage and subjective well-being. *Frontiers in Psychology*, 8, 771.

Wood, N. T., & Muñoz, C. (2021). Unplugged: Digital detox enhances student learning. *Marketing Education Review*, 31(1), 14-25.

Yang, C. C., Holden, S. M., & Anand, J. (2021). Social media and psychological well-being among youth: the multidimensional model of social media use. *Clinical Child and Family Psychology Review*, 24(3), 631-650.

Yang, C. C., Holden, S. M., Carter, M. D., & Webb, J. J. (2018). Social media comparison and identity distress at the college transition: A dual-path model. *Journal of Adolescence*, 69, 92-100.

Zhao, N., & Zhou, G. (2021). COVID-19 stress and addictive social media use (SMU): Mediating role of active use and social media flow. *Frontiers in Psychology*, 12, 635546.

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