

Behind Videoconferencing Fatigue at Work

The Taxing Effects of Self-View and the Mediating Role of Public Self-Awareness

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Appendix (available online via <http://link.springer.com>)

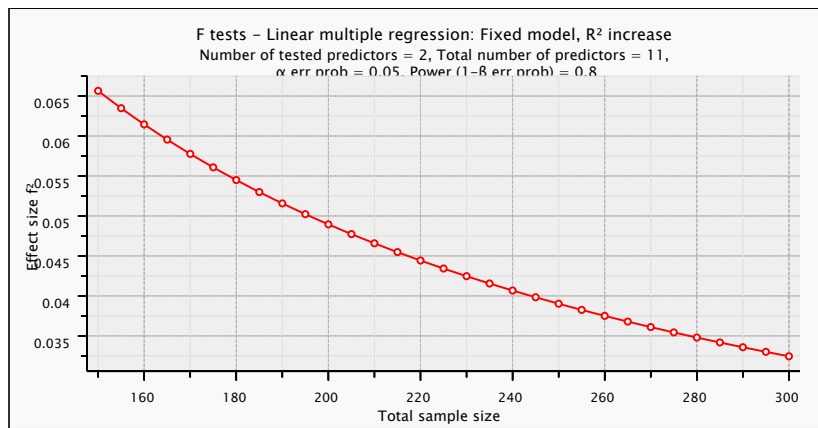
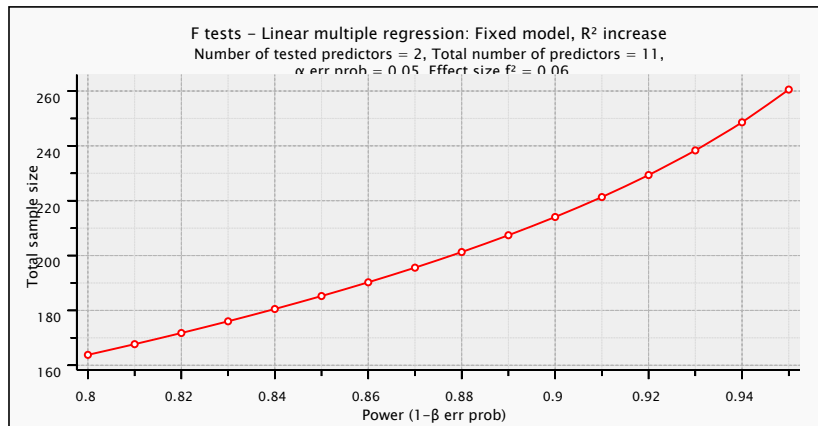
Appendix A. Survey Instrument

The same measures were used in Study 1 and Study 2, unless stated otherwise.

Construct name and source	Measurement Items
Self-view frequency when sending a message	How often did you look at the self-view (video of yourself) window when you were <i>speaking</i> ? 1= (almost) never, 2=very rarely, 3=rarely, 4=about half the time, 5=often, 6= very often, 7= (almost) always.
Self-view frequency when receiving a message	How often did you look at the self-view (video of yourself) window when you were <i>listening</i> ? 1= (almost) never, 2=very rarely, 3=rarely, 4=about half the time, 5=often, 6= very often, 7= (almost) always.
Public self-awareness (state) (Fenigstein et al. 1975)	During this online meeting... PUBSA1: I was concerned about my style of doing things; PUBSA2: I was concerned about the way I presented myself; PUBSA3: I was self-conscious about the way I looked; PUBSA4: I was worried about making a good impression; PUBSA5: I was concerned about what other people thought of me. 1=strongly disagree, 2=disagree, 3= rather disagree, 4= neither agree nor disagree, 5=rather agree, 6= agree, 7=strongly agree (thereafter, 7-point Likert scale).
Dispositional public self-consciousness (trait) (Fenigstein et al. 1975)	The following questions are related to your experience with online meetings in general. DPUBSC1: I usually worry about making a good impression; DPUBSC2: I'm concerned about the way I present myself; DPUBSC3: I'm concerned about what other people think of me. 7-point Likert scale
Perceived excessiveness of VCs	How do you perceive the current amount of online work meetings that you participate in? 1=much too few, 2=too few, 3=barely too few, 4=the right amount, 5=barely too many, 6=too many, 7=much too many.
Job level	Assume there are five levels within your organization, with 1 being the lowest and 5 being the highest. At what level is your job? 1=lowest job level to 5=highest job level
Technical participation in a meeting	How did you participate in this meeting? 1=audio-only, 2= audio+video, 3= other.
Self-view on	Did you have self-view on? 1= yes, 2= no.
Number of participants	How many participants in total, including you, were there in this meeting? [open field] people
Length of the meeting	How long was this meeting (approximately)? [open field] minutes
Gender	What is your gender? 1= female, 2=male, 3=other.
Age	How old are you? [open field] years
Negative affect (study 1)	What did you feel after this meeting? Which emotions have you experienced? [open field]

Negative affect (study 2) (Thompson 2007)	After this recent online meeting, I felt... NAF1: Nervous NAF2: Upset NAF3: Afraid NAF4: Ashamed NAF5: Hostile
Exhaustion (study 2) (Maier et al. 2015)	EXH1: I felt drained from videoconferencing. EXH2: I felt tired from my videoconferencing activities. EXH3: Working with the videoconferencing software was a strain for me.

Appendix B. Power analysis



Appendix C. Effect of a VC layout

We have tested whether self-view frequency differs with a VC layout, coded as follows:

1=Active speaker view, 2=Gallery/ grid view, 3=Floating thumbnail window, 4=Pinned my own video, 5=I switched between the layouts during the meeting.

In study 1, there were no participants who pinned their own video. For self-view frequency, we see deviations from the normality assumption both visually (based on histograms and QQ plots) and formally, with the Shapiro-Wilk test (sending information: $W = 0.943$, $p < 0.001$, receiving information: $W = 0.932$, $p < 0.001$). Hence, we run the Kruskal-Wallis H test in addition to ANOVA, which both suggest an insignificant effect of VC layout on self-view frequency.

Table C1. Mean, median and standard deviations of self-view frequency across VC layouts in study 1

VC layout	n	Self-view when receiving information			Self-view when sending information		
		Median	Mean	SD	Median	Mean	SD
1=Active speaker view	31	3	3.323	1.681	4	3.935	1.652
2=Gallery/ grid view	122	3	3.156	1.575	4	3.779	1.708
3=Floating thumbnail window	4	2	2.000	1.155	3	3.000	1.633
5=I switched between the layouts during the meeting	17	3	3.471	1.586	4	4.059	1.713
6=other	2	3	3.000	0.000	3	3.000	1.414
Kruskal-Wallis	176	$\chi^2(4)=3.035$, $p=0.552$			$\chi^2(4)=1.898$, $p=0.755$		
ANOVA		$F(1, 174) = 0.03$, $p=0.863$			$F(1, 174) = 0.01$, $p=0.974$		

In study 2, we also observe that self-view frequency residuals deviate from the normality assumption both visually (based on histograms and QQ plots) and formally, with the Shapiro-Wilk test (sending information: $W = 0.943$, $p < 0.001$, receiving information: $W = 0.963$, $p < 0.001$). Kruskal-Wallis H test and ANOVA agree on an insignificant effect of VC layout on self-view frequency.

Table C2. Mean, median and standard deviations of self-view frequency across VC layouts in study 2

VC layout	n	Self-view when receiving information			Self-view when sending information		
		Median	Mean	SD	Median	Mean	SD
1=Active speaker view	71	4.0	3.690	1.545	3.0	3.620	1.607
2=Gallery/ grid view	142	4.0	3.711	1.551	3.0	3.535	1.662
3=Floating thumbnail window	4	4.0	4.000	1.826	5.0	4.500	1.732
4=Pinned my own video	3	2.0	2.667	1.155	5.0	4.667	1.528
5=I switched between the layouts during the meeting	31	3.0	3.290	1.243	4.0	3.742	1.731
6=other	2	3.5	3.500	3.536	1.5	1.500	0.707
Kruskal-Wallis	253	$\chi^2(5)=3.571$, $p=0.613$			$\chi^2(5)=6.381$, $p=0.271$		
ANOVA		$F(1, 251) = 1.923$, $p=0.167$			$F(1, 251) = 0.024$, $p=0.876$		

Appendix D. Comparison of self-view frequency when sending and receiving a message

We have compared the distributions of self-view frequency when sending and receiving a message. Because of deviations from normality, a nonparametric test was used. In study 1, the Wilcoxon rank sum test suggests significant differences ($W = 18792$, $p\text{-value} = 0.0004$) between self-view frequency when sending a message ($M=3.81$, Median=4.0, $SD=1.69$) and when receiving a message ($M=3.19$, Median=3.0, $SD=1.58$). In study 2, we observe insignificant differences ($W = 31514$, $p\text{-value} = 0.7618$) between self-view frequency when sending a message ($M=3.60$, Median=3.0, $SD=1.66$) and when receiving a message ($M=3.64$, Median=3.0, $SD=1.52$).

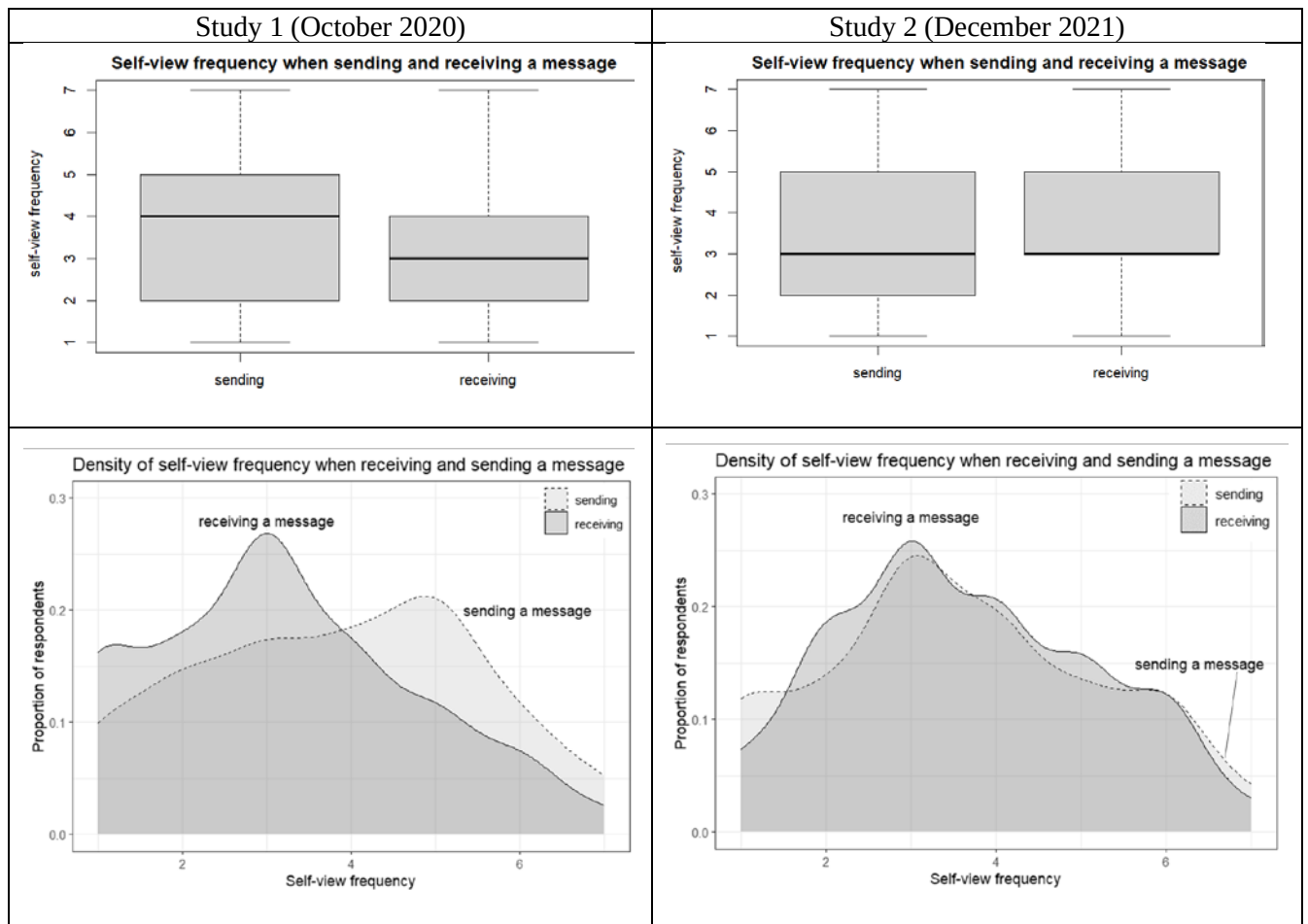


Figure D1. Distribution of self-view frequency when sending and receiving a message

Appendix E. Robustness to alternative analytical techniques in Study 1.

Hierarchical regression analysis

First, the state of public self-awareness in a VC is explained with hierarchical regressions (Table D1). Both dispositional public self-consciousness and situational frequency of self-view are significant predictors of the public self-awareness state, in line with H1. As for the unique proportion of variance, the addition of the self-view frequency results in the R² change of 7% for the message recipient role (Model 2 vs. Model 1) and 5% for the message sender role (Model 3 vs. Model 1). Comparison of the standardized coefficients β also differs: $\beta = 0.21$ for the self-view frequency when receiving a message and $\beta = 0.15$ for the self-view frequency when sending a message. Altogether, self-view frequency when receiving information, i.e., listening to other attendees, has a slightly higher explanatory power for public self-awareness compared to self-view frequency when sending information, i.e., presenting in a VC. The effect of the number of participants on public self-awareness was marginally significant ($\beta = 0.11$, $p = 0.096$).

Table D2 covers the results of hierarchical regression analysis for negative affect and VC exhaustion. Along with VC duration, a higher frequency of self-view when receiving a message is associated with a higher number of words expressing negative affect ($b = 0.21$, $p = 0.03$). The contribution of self-view when sending a message is insignificant ($b = -0.07$, $p = 0.31$). Public self-awareness, assumed to mediate the relationship between self-view frequency and negative affect, was significantly associated with the number of words expressing negative affect (Model 7 and Model 8). Logistic regressions confirm the significant association of the self-view frequency when receiving information with the presence of negative affect. The effects on the presence of exhaustion after a VC were insignificant.

Table E1: Results of hierarchical regression analysis for public self-awareness in Study 1

Model	(1)		(2)		(3)		(4)	
Method	OLS							
Dependent variable	Public self-awareness							
	b	β	b	β	b	β	b	β
Self-view when sending a message					0.21***	0.28	0.13*	0.15
Self-view when receiving a message			0.25***	0.28			0.19**	0.21
Dispositional public self-consciousness	0.60***	0.49	0.49***	0.40	0.53***	0.40	0.48***	0.39
Female	0.24	0.08	0.17	0.06	0.13	0.06	0.11	0.04
Ln (Age)	-0.41	-0.08	-0.34	-0.07	-0.13	-0.07	-0.19	-0.04
Ln (N participants)	0.26 [†]	0.13	0.24 [†]	0.12	0.22	0.12	0.22 [†]	0.11
Ln (Duration)	-0.01	-0.005	-0.03	-0.01	0.03	-0.01	-0.001	-0.001
Intercept	2.21		1.89		0.78		1.42	
R ² adjusted	0.25		0.32		0.30		0.33	
F value	12.8***		14.64***		13.78***		13.36	

Note: N=176, [†]p<0.1, *p < 0.05, **p<0.01, ***p<0.001, b – unstandardized coefficients, β - standardized coefficients

Table E2: Results of hierarchical regression analysis for the emotional outcomes in Study 1

Model	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Method	Negative binominal				Logistic regression				Logistic regression			
Dependent variable	Number of words expressing negative affect				Presence of words expressing negative affect (binary)				Presence of words expressing exhaustion (binary)			
Public self-awareness			0.25**	0.27***			0.37*	0.37**			0.12	0.13
Self-view when sending a message		-0.07	-0.12 [†]			-0.19	-0.27 [†]			-0.10	-0.13	
Self-view when receiving a message		0.21**	0.14*			0.37**	0.29*			0.18	0.15	
Female	0.10	0.07	-0.01	-0.04	0.12	0.10	-0.01	-0.08	0.24	0.25	0.21	0.17
Ln (Age)	-0.31	-0.29	-0.15	-0.05	-0.72	-0.85	-0.68	-0.38	-0.57	-0.62	-0.57	-0.44
Ln (N participants)	0.07	0.11	0.09	0.06	-0.03	0.001	-0.03	-0.06	-0.20	-0.19	-0.20	-0.21
Ln (Duration)	0.84***	0.81***	0.79***	0.83***	1.44***	1.45***	1.48***	1.48***	1.42***	1.40***	1.38***	1.41***
Perceived VCs' excessiveness	0.17	0.19 [†]	0.17	0.14	0.36 [†]	0.39*	0.38 [†]	0.34 [†]	0.78***	0.81***	0.80***	0.77***
Host	-0.10	-0.06	-0.005	-0.04	-0.16	-0.27	-0.04	-0.08	-0.02	0.01	0.04	0.005
Intercept	-3.42*	-4.00*	-5.11**	-5.37***	-4.71 [†]	-5.09 [†]	-6.85*	-7.69**	-8.02**	-8.20*	-8.63**	-8.91**
Pseudo R ² McFadden	0.07	0.09	0.11	0.10	0.12	0.16	0.18	0.16	0.15	0.16	0.16	0.16
Pseudo R ² Nagelkerke	0.16	0.21	0.25	0.22	0.21	0.26	0.30	0.26	0.23	0.23	0.25	0.24
χ^2	27.77***	36.36***	44.87***	39.99***	29.75***	37.87***	44.25***	38.63***	30.32***	31.93***	32.46***	31.17***

Note: N=176, [†]p<0.1, *p < 0.05, **p<0.01, ***p<0.001

Appendix F. Loadings and cross-loadings in Study 2

	Public self-awareness	Dispositional public self-awareness	Negative affect	VC exhaustion
EXH1	0.198	0.217	0.281	0.926
EXH2	0.221	0.204	0.271	0.950
EXH3	0.299	0.224	0.332	0.834
NAF1: Nervous	0.311	0.167	0.761	0.283
NAF2: Upset	0.152	0.058	0.781	0.241
NAF3: Afraid	0.219	0.122	0.823	0.256
NAF4: Ashamed	0.317	0.176	0.855	0.265
PUBSA1	0.859	0.563	0.304	0.234
PUBSA2	0.826	0.445	0.304	0.260
PUBSA3	0.855	0.538	0.239	0.162
PUBSA4	0.881	0.585	0.292	0.233
PUBSA5	0.773	0.497	0.194	0.219
DPUBSC1	0.580	0.896	0.144	0.235
DPUBSC2	0.555	0.882	0.168	0.209
DPUBSC3	0.504	0.832	0.130	0.176

Note: loadings of indicators on their respective latent variables are marked in bold.

Appendix G. Common method bias

Beyond procedural remedies to minimize common method variance, the marker variable technique was applied post-hoc using the construct “blue attitude” in study 2. First, we examined the correlations. The average correlation (Spearman’s ρ) between the marker variable and other variables, computed as a mean of absolute values, was 0.05 (Table G1).

Table G1. Correlations (Spearman ρ) between the marker variable and other variables

	Self-view frequency when sending a message	Age (ln)	Number of participants (ln)	Duration (ln)	Job level	Perceived excessiveness of VCs	Host
Marker variable	0.07	0.04	0.04	-0.01	0.07	0.02	0.10
	Self-view frequency when receiving a message	Female	Public self-awareness	Negative affect	VC exhaustion	Dispositional public self-awareness	
Marker variable	-0.03	-0.05	0.03	0.06	0.08	<0.01	

Second, we added the blue attitude construct as a predictor for all outcome variables, i.e., negative affect and VC exhaustion. The relationships among all primary constructs remained unchanged, signifying that CMB did not affect the results (Figure G1).

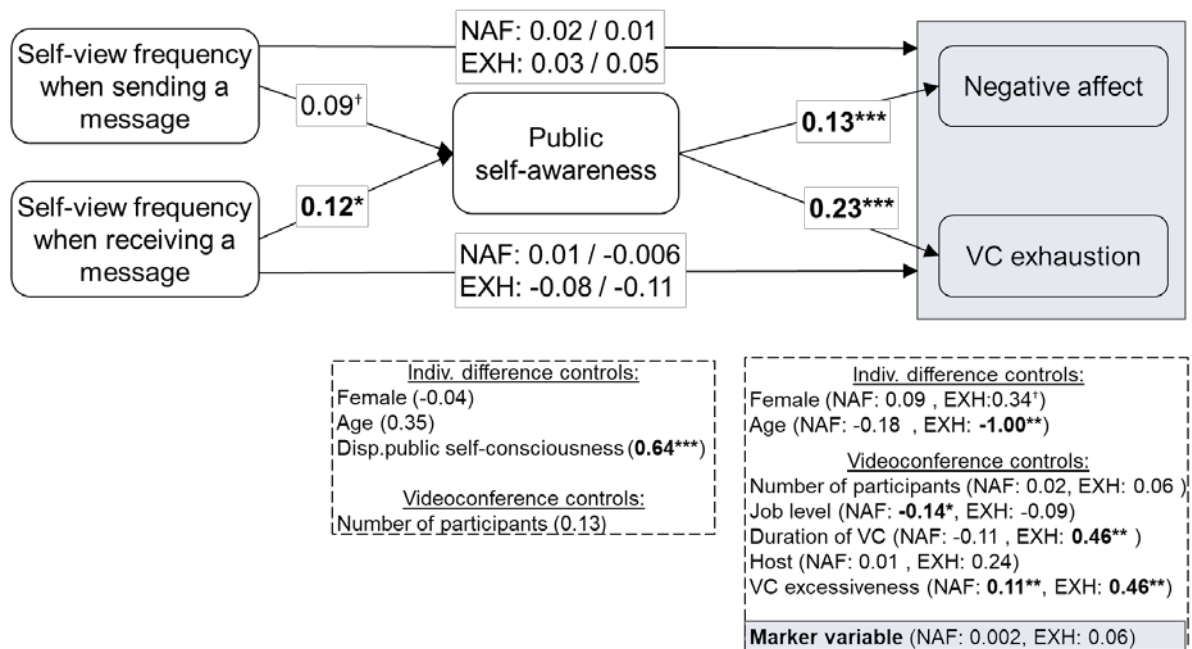


Figure G1. Structural model results with a marker variable in study 2