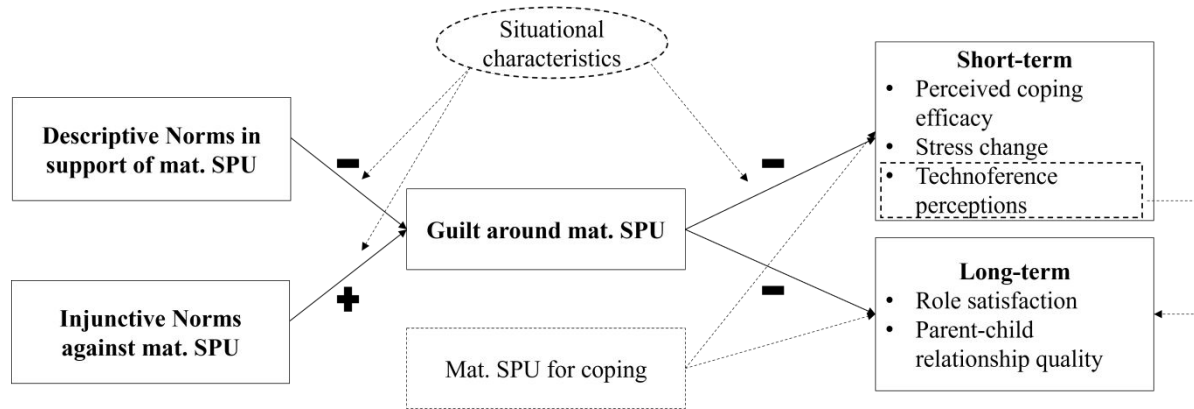


APPENDIX A: Model Illustration

Figure A1

Graphical Illustration of the Assumed Relationships



Note. Relationships and variables with dashed variables are reported only in the Appendix (see Appendix B). Since the measurement was not valid, the variables child self-esteem and child wellbeing were not included in the analysis. Here, the analyses can be found on OSF. SPU indicates smartphone use.

APPENDIX B: Results for the Omitted Research Questions and Hypotheses

Research Question 1

In H1 and H2 in the manuscript, we assumed that participants who reported stronger descriptive and injunctive norms around smartphone use would report increase guilt around smartphone use and that in situations in which more guilt is experienced, also coping efficacy is diminished. These associations might depend on situational circumstances. In some situations, individuals may be able to justify smartphone use. Smartphone use might, for example, be less associated with guilt or guilt might impact coping efficacy less if a situation is urgent or important. In these situations, balancing the benefits of immediate smartphone use for stress management against the potential adverse effects on children might be easier. Indeed, qualitative studies about maternal guilt showed that guilt decreased if a seemingly deviant behavior could be rationalized (Sutherland, 2010). Such rationalization might also be easier in situations characterized by high individual control. We therefore additionally explored if situational factors (importance, urgency, control) moderate the relationship of norms on guilt (H1) and of guilt on coping efficacy (H2)

RQ1: Does the association between norms and situational guilt and between situational guilt and coping effectiveness depend on situational factors of the stressful situation (importance, urgency, control)?

Research Question 3

While feeling guilty around maternal smartphone use should be negatively related to general satisfaction with the mother role, it is less clear if the smartphone use itself shows similar effects. Successful phone use for coping could be associated with greater role satisfaction, since parental smartphone use can support parents in performing their parenting role (Lupton et al., 2016). However, as previous research has also reported that smartphone

use can cause distraction from being a parent (McDaniel, 2019), a negative association is conceivable as well. We therefore openly assessed:

RQ3: Is more frequent smartphone use for coping associated with satisfaction with the mother role?

Hypotheses 6 and 7

Studies finally assumed that maternal phone use distracted from and interrupted parent-child interactions (Lemish et al., 2020). Thus, also smartphone use for coping might be associated with a less positive mother-child relationship. Only very few studies have differentiated between different reasons for using a phone when assessing influences on parent-child interactions (Wolfers et al., 2020). In addition, researchers often measured the frequency of phone use interference (technofence) instead of the frequency of the phone use itself (McDaniel & Radesky, 2018). As previous research mostly suggested that phone use and technofence both are associated with a worse parent-child-quality, we assume:

H6: More frequent smartphone use for coping is associated with a worse mother-child relationship quality.

H7: A higher technofence perception (aggregated on the individual level) is related to a worse mother-child relationship quality.

Additional measures not reported in the paper

Situational Characteristics

For situational control, we asked participants if they felt they could influence the situation on a scale from 1 (*not at all*) to 5 (*very much*; based on (Perrez & Reicherts, 1992); $M = 2.76$, $SD = 1.13$). To measure situational importance, mothers indicated the importance of the stress-inducing problem on a scale from 1 (*not important*) to 5 (*very important*; (Thies & Kordts-Freudinger, 2019); $M = 3.00$, $SD = 1.21$). Urgency was measured asking participants how urgent they needed to act in the situation on a scale from 1 (*not at all*) to 5

(*very much*; $M = 3.59$, $SD = 1.05$).

Phone Use in Stressful Situations (description partly in the paper)

We measured phone use in stressful situation using a dichotomous variable (*yes/no*). Mothers were asked to only answer *yes* if they used their phones themselves, so that giving their phone to their child to cope with stress was omitted. For aggregating smartphone use for coping, we used the ratio between the number of situations in which a smartphone was used and the total number of stressful situation-questionnaires answered ($M = 0.27$, $SD = 0.25$).

Perceived Phone Influence on the Parent-Child-Interaction (description partly in the paper)

Perceived phone influence on parent-child interactions was measured by asking participants to rate two items. First, they reported if their smartphone use had a positive influence ($M = 2.69$; $SD = 1.27$) and then they indicated if their smartphone use had a negative impact ($M = 2.05$; $SD = 1.14$, $r = -.18$) on the parent-child interaction during the situation on a 5-point-scale from 1 (*do not agree*) to 5 (*fully agree*). We included the first item to avoid introducing guilt. It was, as preregistered, not used in the analysis. For the person-level aggregation, we built a mean score of all situations, in which the item about a negative impact was answered ($M = 2.02$; $SD = 0.98$, range 1-5).

Results

Research Question 1

RQ1 asked if the relationships observed in H1 and H2 would differ according to the situational characteristics of importance, control, and urgency. Results for H1 showed that injunctive norms but not descriptive norms around parental phone use predicted situational guilt around maternal smartphone use (for more details see the paper).

Looking at situational characteristics, the importance of the situation was associated with less guilt ($\chi^2 = 7.72$, $p = .005$), while situational control ($\chi^2 = 1.21$, $p = .271$) and urgency

($\chi^2 = 0.15, p = .697$) did not relate to experienced guilt. Table B1 shows the results for the final model. There, experienced control is significantly related to experienced guilt around phone use indicating that there might be a relationship here that however, is less stable and might depend on other factors.

In RQ1, we asked if the association assumed in H1 depends on these situational characteristics. Interactions between descriptive norms and situational characteristics were not significant (importance: $\chi^2 = 0.02, p = .901$, control: $\chi^2 = 0.53, p = .464$, urgency: $\chi^2 = 1.37, p = .242$). Situational control ($\chi^2 = 0.04, p = .843$) and urgency ($\chi^2 = 0.31, p = .578$) did not moderate the association between injunctive norms and guilt for using phones. Situation importance, however, significantly moderated this association ($\chi^2 = 6.52, p = .011$ see also Table B1). The relationship between injunctive norms and situational guilt was smaller for higher levels of situational importance (see Figure B1).

Table B1*Multilevel linear regression analysis on situational guilt for phone use (final model)*

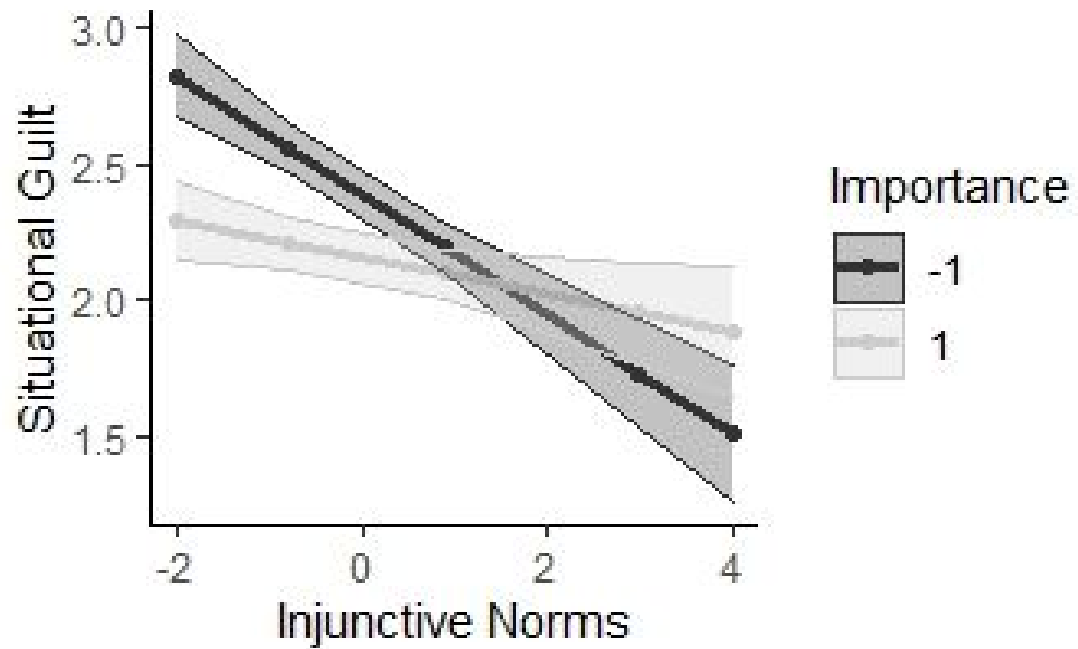
<i>Parameters</i>	<i>Fixed effects</i>		
	<i>Estimate</i>	<i>SE</i>	<i>t</i>
<i>Individual level</i>			
Intercept	2.24	0.07	34.27*
Age	-0.02	0.02	-1.41
Youngest child age	0.04	0.04	0.97
Education	0.02	0.14	0.16
Phone use frequency	0.12	0.08	1.48
Descriptive Norms ¹	0.00	0.06	0.09
Injunctive Norms ¹	-0.14	0.05	-2.75*
<i>Situational level</i>			
Urgency	0.01	0.05	0.32
Importance	-0.12	0.04	-2.72*
Control	-0.08	0.04	-2.03*
<i>Interactions</i>			
Descriptive * Urgency	-0.05	0.04	-1.41
Descriptive * Importance	0.00	0.04	0.12
Descriptive * Control	-0.02	0.03	-0.47
Injunctive * Urgency	0.02	0.03	0.56
Injunctive * Importance	0.08	0.03	2.41*
Injunctive * Control	0.02	0.03	0.71
R ² (marginal/conditional)	.07/.44		
Random Intercept	<i>SD = .062</i>		

Note. 483 observations of 158 individuals. ¹A higher level indicates higher use/acceptance of phone use among important others. Individual-level predictors are grand mean centered, situation-level predictors are group mean centered. Model formula: $\text{guilt.phoneuse} \sim 1 + (1|\text{participant}) + \text{age.mother} + \text{age.youngest.child} + \text{spu.general} + \text{educ.mother} + \text{norm.desc} + \text{norm.inj} + \text{urgency} + \text{importance} + \text{control} + \text{norm.desc} * \text{urgency} + \text{norm.desc} * \text{importance} + \text{norm.desc} * \text{control} + \text{norm.inj} * \text{urgency} + \text{norm.inj} * \text{importance} + \text{norm.inj} * \text{control}$. SPU indicates general smartphone use.

* $|t| > 2.0$, indicating a significant effect Gelman and Hill (2007).

Figure B1

The interaction between injunctive norms and situational importance in predicting guilt around maternal smartphone use



Note. Predicted values are shown for one standard deviation below the mean and one standard deviation above the mean for situational importance.

In RQ1, we asked if the relationship between situational guilt about phone use and perceived coping efficacy (negative relationship found for H2) and stress change (no relationship observed for H2, see details in the paper) would depend on situational characteristics. Unsurprisingly, perceived coping efficacy was rated higher in situations with higher control ($\chi^2 = 16.57, p < .001$). Neither importance ($\chi^2 = 2.21, p = .137$) nor urgency ($\chi^2 = 1.32, p = .251$) related to perceived coping efficacy. Also, none of the interaction effects between the situational characteristics and situational guilt was a significant predictor of perceived coping efficacy (control: $\chi^2 = 0.36, p = .549$; importance: $\chi^2 = 0.03, p = .867$; urgency: $\chi^2 = 0.24, p = .626$).

Similarly to perceived coping efficacy, increased situational control was related to a stronger stress decrease ($\chi^2 = 11.90, p < .001$). Higher situational importance and urgency were associated to a lower stress decrease (importance: $\chi^2 = 15.83, p < .001$; urgency: $\chi^2 = 8.82, p = .002$). The situational characteristics did not significantly moderate the association predicted in H2 (control: $\chi^2 = 0.68, p = .411$; importance: $\chi^2 = 1.50, p = .221$; urgency: $\chi^2 = 1.20, p = .274$).

In an explanatory step, we also looked at the interactions with situational characteristics and the perceived technoferece. Similar to the interaction observed for the effect of injunctive norms on guilt, situational importance moderated the relationship between guilt about phone use and the perception of negative influences on mother-child interactions ($\chi^2 = 13.56, p < .001$), such that the relationship was weaker in important situations. Table B2 shows the results of the final models.

Research Question 3 and Hypothesis 6 & 7

Explaining satisfaction with the mother role

On the individual level, we compared the effects of situational guilt and smartphone use on satisfaction with the mother role (H3, RQ3). Table B3 shows the results of the final model. Answering RQ3, aggregated phone use for coping was not a significant predictor of

role satisfaction ($\beta = .03, p = .688$) while aggregated feelings of guilt were a significant predictor ($\beta = -.09, p = .025$).

Explaining mother-child-relationship quality

For parent-child-relationship quality, none of the effects were significant (see Table 4). Contrary to H6, the frequency of using the phone for coping was not related to relationship quality ($\beta = .06, p = .436$). Moreover, and contrary to H7, the situational perception that the phone interfered with the mother-child interaction did not relate to parent-child relationship quality ($\beta = -0.01, p = .917$). Finally, aggregated feelings of guilt did not predict parent-child relationship satisfaction significantly ($\beta = -0.01, p = .955$).

Table B2

Multilevel linear regression analysis on coping efficacy, stress change, and perceived phone influence on parent-child interactions (final models)

Dependent variable	Perceived coping efficacy			Stress change			Negative influence on parent-child interactions		
	<i>Fixed effects</i>			<i>Fixed effects</i>			<i>Fixed Effects</i>		
<i>Parameters</i>	Estimate	<i>SE</i>	<i>t</i>	Estimate	<i>SE</i>	<i>t</i>	Estimate	<i>SE</i>	<i>t</i>
<i>Individual level</i>									
Intercept	3.06	0.07	44.09*	-0.92	0.06	-15.12*	1.99	0.07	27.33*
Age	0.00	0.02	0.07	0.01	0.02	0.49	-0.00	0.02	-0.16
Youngest child age	-0.00	0.05	-0.10	-0.03	0.04	-0.67	0.03	0.05	0.63
Education	0.13	0.15	0.90	-0.16	0.13	-1.25	0.32	0.15	2.05*
Phone use frequency	0.04	0.09	0.42	0.04	0.08	0.48	0.20	0.09	2.13
<i>Situational level</i>									
Stress T1				-0.74	0.06	-11.44*			
Guilt about phone use	-0.30	0.07	-4.06*	0.09	0.07	1.30	0.33	0.06	5.27*
Control	0.18	0.05	3.32*	-0.15	0.05	-3.12*	-0.02	0.05	-0.48
Importance	-0.10	0.05	-1.83	0.15	0.05	2.91*	-0.02	0.05	-0.42*
Urgency	0.07	0.06	1.14	0.16	0.05	2.97*	-0.01	0.51	-0.22
<i>Interactions</i>									
Guilt * Control	-0.06	0.08	-0.70	0.05	0.07	0.65	0.08	0.07	1.12
Guilt * Importance	-0.03	0.08	-0.37	-0.05	0.07	-0.59	-0.20	0.07	-2.75*
Guilt * Urgency	0.05	0.10	0.48	-0.10	0.09	-1.07	0.01	0.09	0.11
R ² (marginal/conditional)	.06/.28			.21/.37			.09/.45		
Random Intercept	<i>SD</i> = 0.56			<i>SD</i> = 0.46			<i>SD</i> = 0.70		

Note. 483 observations of 158 individuals. Individual-level predictors are grand mean centered, situation-level predictors are group mean centered. Model formula: DV ~ 1 + (1|participant) + age.mother + age.youngest.child + spu.general + educ.mother + guilt + urgency + importance + control + guilt * urgency + guilt *importance + guilt*control. SPU indicates general smartphone use. *|*t*| > 2.0, indicating a significant effect Gelman and Hill

(2007).

Table B3*Linear regression analysis on role satisfaction and parent-child relationship quality*

Dependent variable	Role satisfaction					Parent-child relationship quality				
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	β	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	β
<i>Individual level</i>										
Intercept	5.40	0.51	10.65	<.001	.00	5.07	0.42	12.20	<.001	.00
Age	-0.03	0.01	-2.60	.010	-.22	-0.02	0.01	-1.83	.069	-.16
Youngest child age ¹ / age of child on which was reported ²	0.00	0.03	0.14	.891	.01	-0.07	0.02	-3.15	.002	-.28
Education	0.05	0.10	0.46	.646	.04	-0.00	0.09	-0.17	.987	-.00
Phone use frequency	-0.10	0.06	-1.55	.124	-.13	0.00	0.05	0.02	.988	.00
Number of stressful situations	-0.02	0.01	-1.41	.161	-.12	-0.00	0.01	-0.85	.395	-.07
Guilt about phone use	-0.09	0.09	-2.27	.025	-.19	-0.00	0.08	-0.06	.955	-.01
Phone use for coping	-0.21	0.23	0.40	.688	.03	0.15	0.19	0.78	.436	.06
Negative influence on the parent-child-interaction	-	-	-	-		-0.00	0.05	-0.11	.917	-.01
R ² (multiple/adjusted)	.11/.07					.13/.09				

Note. 151 individuals. Model formula: outcome ~ 1 + age.mother + age.youngest.child (or age.reported.child) + spu.general + educ.mother + guilt.agg + phone.use.frequ + number of stressful situations + guilt.agg + phone.use.frequ. For parent-child relationship quality additionally + perc.in.p-c-i.agg. SPU indicates general smartphone use. ¹For role satisfaction; ²For parent-child relationship quality.

References Appendix B

- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge University Press.
- Lemish, D., Elias, N., & Floegel, D. (2020). “Look at me!” Parental use of mobile phones at the playground. *Mobile Media & Communication*, 8(2), 170–187.
<https://doi.org/10.1177/2050157919846916>
- Lupton, D., Pedersen, S., & Thomas, G. M. (2016). Parenting and digital media: From the early web to contemporary digital society. *Sociology Compass*, 10(8), 730–743.
<https://doi.org/10.1111/soc4.12398>
- McDaniel, B. T. (2019). Parent distraction with phones, reasons for use, and impacts on parenting and child outcomes: A review of the emerging research. *Human Behavior and Emerging Technologies*, 1(2), 72–80. <https://doi.org/10.1002/hbe2.139>
- McDaniel, B. T., & Radesky, J. S. (2018). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development*, 89(1), 100–109.
<https://doi.org/10.1111/cdev.12822>
- Perrez, M., & Reicherts, M. (1992). *Stress, coping, and health*. Hogrefe & Huber.
- Sutherland, J.-A. (2010). Mothering, guilt and shame. *Sociology Compass*, 4(5), 310–321.
<https://doi.org/10.1111/j.1751-9020.2010.00283.x>
- Thies, K., & Kordts-Freudinger, R. (2019). German higher education academic staff’s positive emotions through work domains. *International Journal of Educational Research*, 98, 1–12. <https://doi.org/10.1016/j.ijer.2019.08.004>
- Wolfers, L. N., Kitzmann, S., Sauer, S., & Sommer, N. (2020). Phone use while parenting: An observational study to assess the association of maternal sensitivity and smartphone use in a playground setting. *Computers in Human Behavior*, 102, 31–38.
<https://doi.org/10.1016/j.chb.2019.08.013>

Appendix C: Additional information on the question wording and the validity of the measures used in the study

General information

In the following, we provide additional information about the measures used in the study. In this document, we report on the source, the wording of the scale (in the original German version used in the study and in the English translation), descriptives, and information about the validity of the scales. We use the full sample (208 mothers) to investigate the scales (therefore some coefficients might be different to the paper).

To evaluate scales on the individual level (i.e., from the pre- or post-survey), we provided information about:

- 1) Cronbachs alpha as an indicator for *internal consistency*
- 2) The results of confirmatory factor analyses as an indicator for *construct validity*
- 3) Structural equation models which test correlations with variables with which a correlation can be expected as an indicator for *convergent validity*
- 4) As an indicator for *discriminant validity*, we reported on comparisons between structural equation models with a single factor (all items loading on one factor) and the two-factor model of 3) using always a variable used for convergent validity as the second variable. We compared model fit based on the procedure in Hayes et al. (2005) using CFI, RMSEA differences and a model comparison test based on the χ^2 statistic of the ML estimation.

To evaluate scales on the situational level (i.e., from the experience sampling questionnaires), we provided information about:

- 1) The Intraclass Correlation Coefficient (ICC) as an indicator of *test-retest reliability*
- 2) Confirmatory factor analyses on the within-person level for the multi-item scales as an indicator of *construct validity*
- 3) Multilevel regression models with the random intercepts and the situational variable of interest as the dependent variable to assess *convergent validity*
- 4) To assess *discriminant validity*, we looked at the correlation between the scale and conceptually different variables, for which no or only a weak correlation can be expected similar as done in van Hooff (2007) for one-item measures. For multi-item scales we used the procedure as for the individual variables based on Hayes et al. (2005).

For confirmatory factor analyses and structural equation models, we used lavaan in R (Rosseel, 2012). We used maximum likelihood estimation with robust standard errors and Satorra-Bentler scaled test statistic (MLM), except for model comparisons where we use no robust estimator (ML). We build upon the recommendations for fit indices for structural equation models of (Hair, 2013). For multilevel correlations, we used the rmcrr package in R (Bakdash & Marusich, 2017).

Presurvey Measures

Descriptive Norms about Parental Phone Use

Source. Based on (White et al., 2009)

Question wording (German original)

In den folgenden Fragen geht es um die Smartphonennutzung bei Eltern im Besonderen. Was denken Sie: Wie viele andere Eltern, die Ihnen wichtig sind, nutzen ihr Smartphone oft, während sie mit ihren Kindern zusammen sind?

1 keine – 7 alle Wenn Sie an andere Eltern denken, die Ihnen wichtig sind: Wie viele von ihnen werden in den nächsten Tagen ihr Smartphone verwenden, wenn sie mit ihren Kindern zusammen sind?

1 keine – 7 alle

Question wording (English translation).

The following questions are about parental smartphone use in particular.

What do you think: How many other parents who are important to you do use their smartphone often when being with their children?

1 none – 7 all

When you think about other parents who are important to you: How many of them will use their smartphone when being with their children in the next days?

1 none – 7 all

Descriptives. $M = 5.33$, $SD = 1.21$

Validity

$r_{\text{items}} = .67$

Confirmatory Factor Analyses

To be able to run a confirmatory factor analysis, we combined descriptive norms into analyses with the injunctive norms measure (see below).

Convergent validity

We expected that descriptive norms correlate positively with a measure of phone use while parenting asked in the postsurvey (example items: “During a typical meal, which I eat with my children, I glance at my smartphone here and there”, “I place my smartphone so I can see it when I am with my children”).

Model fit: $\chi^2(13) = 19.78$, $p = .101$, $CFI = 0.98$, $RMSEA = .051$

Table C1*Estimates of a SEM including descriptive norms and phone use while parenting*

Item	<i>b</i>	SE	<i>p</i>	β
Descriptive norms				
Item 1	1.00			1.25
Item 2	0.75	0.38	.047	.94
Phone use while parenting ¹				
Item 1	1.00			.71
Item 2	1.04	0.13	<.001	.74
Item 3	0.88	0.13	<.001	.63
Item 5	0.53	0.10	<.001	.38
Item 6	1.06	0.14	<.001	.75
Correlation	0.16	0.09	.068	.18

¹The fourth item was excluded because of low model fit.**Discriminant Validity**

We expected that descriptive norms and phone use while parenting are different constructs

Table C2*Comparison of the two-factor model (see Table C1) and a single-factor model*

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	0.98	0.64	0.34	
RMSEA	0.51	0.189	0.321	
χ^2 (robust estimate)	19.78	115.69	95.91	
χ^2 (ML estimate)	21.85	136.61	114.76	<.001

N = 218.**Injunctive Norms****Source.** Semantic differential based on the measure used in (Paek, 2009)**Question wording (German original)***Was denken Sie, wie finden es Menschen, die Ihnen wichtig sind, wenn Eltern Smartphones nutzen, während sie mit ihren Kindern zusammen sind?**1 negativ – 9 positiv (excluded)**1 schlecht – 9 gut**1 schädlich – 9 hilfreich**1 unangemessen – 9 angemessen***Question wording (English translation)***What do you think, how do people who are important to you think about when parents use their smartphones while being with their children?**1 negative – 9 positive (excluded)**1 bad – 9 good**1 harmful – 9 helpful**1 inappropriate – 9 appropriate*

Descriptives. $M = 3.46$, $SD = 1.29$, $\alpha = .90$ (lower values indicate more negative evaluations of phone use while parenting)

Validity

Confirmatory Factor Analyses

We ran a confirmatory factor analysis with both descriptive and injunctive words. It can be expected that mothers who reported that more other parents use their phones also perceived that others rate smartphone use rather positively. This would be indicated by a positive relationship between both constructs.

Note: Because of the high correlations between the first and the second item ($r = .88$), which lead to low fit on the confirmatory factor analysis, we excluded the first item.

Model fit: $\chi^2(4) = 1.30$, $p = .862$, CFI = 1.00, RMSEA = .000

Table C3

Estimates of a SEM including descriptive and injunctive norms

Item	<i>b</i>	SE	<i>p</i>	β
Descriptive norms				
Item 1	1.00			.85
Item 2	0.97	0.35	.006	.79
Injunctive Norms				
Item 1	1.00			.77
Item 2	1.19	0.10	<.001	.85
Item 3	1.10	0.10	<.001	.82
Correlation	0.24	0.11	.025	.20

Convergent Validity

We expected that injunctive norms correlate positively with a measure of the experience of positive phone influences from the post-survey (example items: “When talking to my children, my smartphone is often helpful”, “Because of my smartphone, I can spend more time with my children”)

Model fit: $\chi^2(13) = 20.14$, $p = .092$, CFI = 0.98, RMSEA = .052

Table C4

Estimates of a SEM including injunctive norms and positive phone influence

Item	<i>b</i>	SE	<i>p</i>	β
Injunctive Norms				
Item 1	1.00			1.08
Item 2	1.19	0.11	<.001	1.29
Item 3	1.14	0.10	<.001	1.22
Positive phone influence				
Item 1	1.00			0.54
Item 2	1.28	0.24	<.001	0.69
Item 3	0.98	0.22	<.001	0.53
Item 4	1.32	0.26	<.001	0.72
Correlation	0.17	0.07	.007	0.30

Discriminant Validity

We expected that injunctive and descriptive norms are different constructs (Table C5), and that injunctive norms and positive phone influence are different constructs (Table C6).

Table C5

Comparison of the two-factor model (see Table C3) and a single-factor model

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	1.00	0.68	0.32	
RMSEA	0.000	0.309	0.309	
χ^2 (robust estimate)	1.30	109.30	108.00	
χ^2 (ML estimate)	1.24	126.51	125.28	<.001

N = 218.

Table C6

Comparison of the two-factor model (see Table C4) and a single-factor model

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	0.98	0.71	0.27	
RMSEA	0.052	0.182	0.13	
χ^2 (robust estimate)	20.14	108.74	88.6	
χ^2 (ML estimate)	19.84	127.08	107.24	<.001

N = 204.

General Smartphone Use Frequency

As a control variable, we measured general smartphone use frequency by asking respondents in the presurvey how often they use their smartphones on a scale from 1 (*never*) to 5 (*all the time*).

Descriptives. *M* = 3.99, *SD* = 0.79).

Validity.Convergent Validity

The item correlated with another item about smartphone use we asked (“How often do you use your smartphone?”) on the scale: Once per minute or more often, several times per hour, once per hour, several times a day, once a day or more seldomly: Spearman's rho = -.35, *p* < .001

The item also correlated with the phone use while parenting scale (see above descriptive norms) when used in a structural equation model.

Model fit: $\chi^2(15) = 240.71$, *p* = .000, CFI = 0.97, RMSEA = .057

Table C7*Estimates of a SEM including phone use while parenting and phone use frequency*

Item	<i>b</i>	SE	<i>p</i>	β
Phone use while parenting ¹				
Item 1	1.00			.60
Item 2	1.00	0.13	<.001	.62
Item 3	0.84	0.12	<.001	.57
Item 5	0.52	0.09	<.001	.47
Item 6	1.04	0.13	<.001	.82
Correlation with phone use frequency item	0.21	0.05	<.001	.36

¹The fourth item was excluded because of low model fit.

Discriminant validity.

As the model with the correlation and the model in which the item loads on the same factor as phone use while parenting have the same degrees of freedom, we cannot use the same procedure as for the other variables. The factor loadings provide another indicator for discriminant validity. The factor loadings for the phone use items are between .47 and .82. The factor loading for the phone use frequency item is only .36 showing a hint towards discriminant validity.

Postsurvey Measures

Role Satisfaction

Source. Parenting Satisfaction and Efficacy Scale (Johnston & Mash, 1989) in the German translation of (Kabakçı-Kara, 2009) on a scale from 1 (*do not agree*) to 5 (*fully agree*).

Question wording (German original).

Im Folgenden finden Sie Aussagen zu Ihrer Zufriedenheit mit der Mutterrolle allgemein. Bitte geben Sie jeweils an, wie sehr Sie den Aussagen zustimmen.

Skala von 1 Stimme nicht zu bis 5 Stimme voll zu

Mutter zu sein ist zwar schön, aber im Moment macht mir das Alter, in dem mein Kind sich befindet, zu schaffen.

Am Ende eines Tages habe ich oft das Gefühl, nicht viel erreicht zu haben.

Ich weiß nicht, woran es liegt, aber manchmal habe ich das Gefühl, ich werde manipuliert, obwohl ich eigentlich Kontrolle ausüben sollte.

Ich könnte ein gutes Vorbild für angehende Mütter/Väter sein.

Manchmal habe ich das Gefühl, nichts auf die Reihe zu bekommen.

Was die Erziehung meines Kindes angeht, erfülle ich meine eigenen Erwartungen.

Wenn ich darüber nachdenke, wie lange ich schon Mutter bin, dann fühle ich mich sehr vertraut in dieser Rolle.

Ich glaube, dass ich alle notwendigen Fähigkeiten einer guten Mutter besitze.

(Ich habe das Gefühl, dass die Betreuung und Pflege meines Kindes mich völlig in Beschlag nimmt und mein ganzes Leben bestimmt.) – nicht verwendet, misst elterliche Autonomie (Ich fühle mich durch meine Elternpflichten gefangen.) – nicht verwendet, misst elterliche Autonomie

Question wording (English translation).

In the following, you will find statements about your satisfaction with the mother role in general. Please rate how much you agree with each statement.

Scale from 1 *Do not agree* to 5 *Completely agree*

Even though being a parent could be rewarding. I am frustrated now while my child is at his/her present age.

At the end of the day, I often feel I have not accomplished a whole lot

I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.

I would make a fine model for a new mother/father to follow.

Sometimes I feel like I'm not getting anything done.

I meet my own personal expectations for expertise in caring for my child.

Considering how long I've been a mother/father. I feel thoroughly familiar with this role.

I honestly believe I have all the skills necessary to be a good mother/father to my child.

(I feel like caring for and nurturing my child completely consumes me and dictates my entire life.) - not included measures parental autonomy

(I feel trapped by my parenting duties.) - not included measures parental autonomy

Descriptives. $M = 3.52$, $SD = 0.61$

Validity. $\alpha = .72$

Confirmatory Factor Analysis

Note. As the scale contains several negatively coded items, we included correlations as a method factor (see e.g., (Lindwall et al., 2012).

Model fit: $\chi^2(28) = .318.52$, $p = .000$, CFI = 0.97, RMSEA = .056

Table C8

Estimates of a confirmatory factor analysis including role satisfaction

Item	<i>b</i>	SE	<i>p</i>	β
1	1.00	-	-	.22
2	1.15	0.40	.004	.25
3	0.93	0.35	.007	.28
4	2.12	0.75	.005	.65
5	1.76	0.63	.005	.40
6	1.92	0.67	.004	.65
7	1.97	0.74	.008	.57
8	2.48	0.90	.006	.76

Convergent Validity

We included the life satisfaction scale of Diener et al. (1985). We expected a positive correlation between both constructs.

Model fit: $\chi^2(58) = 69.07$, $p = .152$, CFI = 0.98, RMSEA = .031

Table C9
Estimates of a SEM including role and life satisfaction

Item	<i>b</i>	SE	<i>p</i>	β
Role Satisfaction				
Item 1	1.00			0.25
Item 2	1.08	0.34	.002	0.26
Item 3	0.88	0.30	.003	0.30
Item 4	1.88	0.60	.002	0.65
Item 5	1.65	0.52	.002	0.42
Item 6	1.75	0.54	.001	0.67
Item 7	1.74	0.58	.003	0.57
Item 8	2.13	0.69	.002	0.74
Life Satisfaction				
Item 1	1.00			0.83
Item 2	0.96	0.10	<.001	0.69
Item 3	0.98	0.07	<.001	0.85
Item 4	1.00	0.08	<.001	0.75
Item 5	1.06	0.10	<.001	0.66
Correlation	0.17	0.05	.010	0.43

N = 204.

Discriminant Validity

We expected that role satisfaction is a different construct than life satisfaction.

Table C10
Comparison of the two-factor model (see Table C9) and a single-factor model

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	0.98	0.80	0.18	
RMSEA	.031	.118	0.192	
χ^2 (robust estimate)	69.07	206.71	137.64	
χ^2 (ML estimate)	73.47	226.45	152.99	<.001

N = 204.

Parent-Child Relationship Quality

Source. Ten items from the maternal perspective scale of Müller & Achtergarde (2018)

Question wording (German original).

Die nächsten Fragen beziehen sich nur auf eines Ihrer Kinder. Bitte wählen Sie eines Ihrer Kinder aus, das zwischen 3 und 7 Jahre alt ist. Wenn Sie mehrere Kinder haben, auf die das zutrifft, denken Sie bitte an das Kind, welches als letztes Geburtstag hatte.

Wenn keines Ihrer Kinder zwischen 3 und 7 Jahre alt ist, denken Sie bitte an Ihr ältestes Kind unter 3.

Wie alt ist das ausgewählte Kind?

_____ Jahre alt

(eine Frage dazwischen)

Bitte denken Sie wieder an das Ihrer Kinder, über das Sie auch vorher berichtet haben. Wie bewerten Sie die Beziehung von Ihrem Kind und Ihnen? Bitte geben Sie an, wie sehr Sie den

Aussagen jeweils zustimmen.

Von 1 Stimme nicht zu bis 5 stimme voll zu

Ich glaube, mein Kind vertraut mir.

Mein Kind und ich gehen harmonisch miteinander um.

Ich glaube, mein Kind akzeptiert mich. (excluded)

Mein Kind und ich tragen Machtkämpfe aus.

Mein Kind und ich haben häufig Konflikte.

Mein Kind und ich kommen gut miteinander aus.

Für mich ist mein Kind in Ordnung, so wie es ist.

Ich weiß nicht, was ich meinem Kind gegenüber fühle. (excluded)

Mein Kind und ich gehen so miteinander um, dass wir uns beide gut fühlen.

Die Beziehung zwischen meinem Kind und mir ist angespannt.

Question wording (English translation).

The next questions refer to only one of your children. Please choose one of your children who is between 3 and 7 years old. If you have more children for which this applies, please think about the child who had their birthday the latest.

If none of your children is between 3 and 7 years old, please think about your oldest child below the age of 3

How old is the chosen child?

_____ years

(one question inbetween)

Please think again about the child about which your have reported before. How would you rate the relationship of you and your child? Please indicate for each statement how much you agree with it.

From 1 I do not agree to 5 Completely agree

I think my child trusts me.

My child and I are harmonious with each other.

I think my child accepts me. (excluded)

My child and I engage in power struggles.

My child and I often have conflicts.

My child and I get along well.

For me, my child is fine the way she/he is.

I don't know how I feel about my child. (excluded)

My child and I deal with each other in a way that makes us both feel good.

The relationship between my child and me is strained.

Descriptives. Child on which was reported on: 2.86 years, $SD = 1.94$), $M = 4.33$, $SD = 0.45$

Validity

$\alpha = .81$, alpha without the two items (see below): $\alpha = .79$

Confirmatory Factor Analysis

Note. As the scale contains several negatively coded items, we included correlations as a method factor (see e.g., (Lindwall et al., 2012).

A first model with all items revealed a low model fit: Model fit: $\chi^2(29) = 58.97, p = .001$, CFI = 0.92, RMSEA = .074. Thus, we decided to exclude two items. Item 3 correlated highly with Item 1 and was therefore excluded. Additionally, Item 8 showed a low factor loading and was therefore excluded.

Model fit: $\chi^2(17) = 23.73, p = .127$, CFI = 0.98, RMSEA = .046

Table C11

Estimates of a confirmatory factor analysis of parent-child relationship quality

Item	<i>b</i>	SE	<i>p</i>	β
1	1.00	-	-	.47
2	2.24	0.61	<.001	.78
4	1.74	0.57	.002	.34
5	2.43	0.62	<.001	.58
6	1.69	0.36	<.001	.63
7	1.29	0.27	<.001	.57
9	2.54	0.61	<.001	.74
10	1.89	0.45	<.001	.61

N = 188.

Convergent Validity

In the pre-survey, we included the UCLA-8 Loneliness Scale (Hays & DiMatteo, 1987). We expected that parent-child relationship quality and loneliness relate negatively.

Model fit: $\chi^2(73) = 105.51, p = .008$, CFI = 0.96, RMSEA = .049

Table C12

Estimates of a SEM including parent-child relationship quality and loneliness

Item	<i>b</i>	SE	<i>p</i>	β
Parent-Child relationship quality				
Item 1	1.00			0.47
Item 2	2.23	0.61	<.001	0.77
Item 4	1.73	0.57	.002	0.34
Item 5	2.42	0.62	<.001	0.57
Item 6	1.69	0.36	<.001	0.63
Item 7	1.29	0.27	<.001	0.57
Item 9	2.54	0.61	<.001	0.74
Item 10	1.91	0.45	<.001	0.61
Loneliness ¹				
Item 1	1.00			0.73
Item 2	0.81	0.09	<.001	0.68
Item 4	0.99	0.10	<.001	0.81
Item 5	1.16	0.09	<.001	0.87
Item 6 ²	-0.85	0.10	<.001	-0.63
Item 8	0.66	0.10	<.001	0.55
Correlation	-0.03	0.02	.125	-0.14

Note. *N* = 188. ¹Items 3 and 7 deleted due to low model fit. ²Reversed item.

The relationship was not significant and lower than it might have been expected. However,

there is research showing that especially young mothers experience a state of isolation (Barclay et al., 1997), so it is probably not a rare experience that mothers with young children feel alone (from other adults) while still having a good relationship with their child(ren).

It might also be expected that a low parent-child relationship quality relates to a low overall life satisfaction.

Model fit: $\chi^2(61) = 60.15, p = .507, CFI = 1.00, RMSEA = .000$

Table C13

Estimates of a SEM including parent-child relationship quality and life satisfaction

Item	<i>b</i>	SE	<i>p</i>	β
Parent-Child relationship quality				
Item 1	1.00			0.47
Item 2	2.25	0.60	<.001	0.78
Item 4	1.70	0.56	.002	0.34
Item 5	2.41	0.60	<.001	0.57
Item 6	1.67	0.35	<.001	0.62
Item 7	1.29	0.26	<.001	0.57
Item 9	2.57	0.60	<.001	0.75
Item 10	1.90	0.43	<.001	0.61
Life satisfaction				
Item 1	1.00			0.84
Item 2	0.94	0.10	<.001	0.70
Item 3	0.97	0.07	<.001	0.85
Item 4	0.99	0.08	<.001	0.77
Item 5	1.03	0.10	<.001	0.66
Correlation	0.09	0.03	.001	0.39

Note. $N = 188$.

For life satisfaction, we found the expected relationship with parent-child relationship quality.

Discriminant Validity

We expected that parent-child relationship quality is a different construct than life satisfaction.

Table C14

Comparison of the two-factor model (see Table C13) and a single-factor model

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	1.00	0.72	0.28	
RMSEA	.000	.130	0.13	
χ^2 (robust estimate)	60.15	257.89	197.74	
χ^2 (ML estimate)	70.37	321.63	251.25	<.001

$N = 204$.

Situational Questionnaires

Procedure: Situation Selection

Wording Situation Selection (German original)

Haben Sie in den letzten zwei Stunden eine einigermaßen stressige Situation erlebt? Stressige Situationen können durch verschiedene Dinge ausgelöst werden, z.B. durch Konflikte mit Kindern oder Partner/in, durch Zeitdruck, schlechten Schlaf oder durch Krankheiten.

Bitte berichten Sie auch Situationen, die für Sie nur ein bisschen stressig waren. Beziehen Sie sich bitte auf die letzten beiden Stunden direkt bevor Sie den Fragebogen beantworten, egal wann Sie an den Fragebogen erinnert wurden.

- ja, ich habe eine stressige Situation erlebt

- nein, ich habe keine stressige Situation erlebt

Wording Situation Selection (English translation)

Have you experience a somewhat stressful situation in the last two hours? Stressful situations can be cause by different things, e.g. through conflicts with children or partners, through time pressure, bad sleep quality or through illnesses.

Please also report on situations which where only a bit stressful for you. Refer to the last two hours before you answer this questionnaire regardless of when you have been send the reminder about the questionnaire.

Yes, I have experienced a stressful situation

No, I have not experienced a stressful situation

Phone Use in Stressful Situations

Question Wording (German original)

Haben Sie während oder direkt nach der stressigen Situation Ihr Smartphone verwendet? Wenn Sie es nicht selbst verwendet, aber Sie es einem Ihrer Kinder gegeben haben, dann antworten Sie bitte mit "Nein".

Ja, ich habe es selbst genutzt.

Nein

Question Wording (English translation)

Have you used your smartphone during or directly after the stressful situation?

If you haven't used it yourself, but gave it to one of your children, then please answer "no".

Yes, I used it.

No.

Descriptives. $M = 0.27$, $SD = 0.25$.

Validity.

ICC = 0.13

Convergent Validity

We used logistic multilevel modeling to assess the convergent validity of situational phone

use in stressful situations. Each of the estimates below were based on separate models with the respective variable as sole predictor. We expected positive relationships with all phone use variable: phone use frequency in general (1 item) from the pre-survey, phone use duration in general from the pre-survey, and phone use while parenting in general (averaged 5 items, see SEMs above) from the post-survey

Table C15

Estimates of three logistic multilevel models predicting phone use in stressful situations

Survey	Variable	Estimate	SE	<i>z</i>	<i>p</i>
Pre-survey ¹	Phone use frequency	0.40	0.11	3.73	.001
Pre-survey ¹	Phone use duration	0.20	0.11	1.73	.084
Post-survey ²	Phone use while parenting	0.27	0.12	2.25	.024

Note. ¹*N* = 1655 observations from 218 individuals. ²*N* = 1615 observations from 204 individuals.

All relationships are in the expected direction, but the relationship with the second phone use item was not significant. This item, however, might also have the least validity itself.

Discriminant Validity

We did not expect that phone use in stressful situations correlates (more than weakly) with trait optimism (measured in the pre-survey with the German version of the Life-Orientation-Test, Glaesmer et al., 2008, 6 items). There are no other constructs for which we can rather clearly assume a non-existent relationship. We again used logistic multilevel modeling to assess discriminant validity.

Table C16

Estimates of a logistic multilevel model predicting phone use in stressful situations

Survey	Variable	Estimate	SE	<i>z</i>	<i>p</i>
Pre-survey	Trait Optimism	-0.14	0.11	-1.26	.208

Note. *N* = 1655 observations from 218 individuals.

As expected, the relationship was not significant.

Guilt About Phone Use

Source. The question was based on Halfmann et al. (2021). We used two indices: On the *situational level*, we used a mean index of the three items. On the *individual level*, we built a mean score of all situations for which the item was answered for each individual.

Wording Guilt About Phone Use (German original)

Manche erwarten von uns, dass wir ständig über das Smartphone erreichbar sind, andere, dass wir es weniger nutzen. Wie fühlen Sie sich in Bezug darauf, dass Sie Ihr Smartphone während der stressigen Situation genutzt haben?

Von 1 Trifft nicht zu bis 5 trifft voll zu

*Ich hatte ein schlechtes Gewissen.
Ich habe mich schuldig gefühlt.*

Ich habe mich gut damit gefühlt.

(Ich war stolz auf mich.) – Measures Pride – not part of the guilt scale

Wording Guilt About Phone Use (English translation)

Some expect us to be constantly available via smartphone, others expect us to use it less. How do you feel about having used your smartphone during stressful situations?

From 1 Does not apply to 5 Does fully apply.

I had a bad conscience.

I felt guilty about it.

I felt good about it.

(I felt proud of myself.) - Measures Pride - not part of the guilt scale

Descriptives. Situational level: $M = 2.24$, $SD = 1.01$, Individual level: $M = 2.23$, $SD = 0.60$, range 0–3.67

Validity.

$\alpha = .78$

ICC = 0.40

Confirmatory Factor Analysis and convergent validity on the within-person level

To be able to run a confirmatory factor analysis, we included negative affect also measured at the situational level (nervous, insecure, annoyed) as second variable. We expected a positive correlation between the two variables.

Model fit: $\chi^2(8) = 15.53$, $p = .033$, CFI = 0.99, RMSEA = .044

Table C17

Estimates of a SEM including guilt around phone use and negative affect

Item	<i>b</i>	SE	<i>p</i>	β
Guilt around phone use				
Item 1	1.00			1.06
Item 2	1.03	0.07	<.001	1.09
Item 3	0.53	0.05	<.001	0.56
Negative Affect				
Item 1	1.00			1.12
Item 2	0.78	0.15	<.001	0.87
Item 3	0.16	0.07	.014	0.18
Correlation	0.31	0.07	<.001	.26

Note. $N = 483$ observations.

Discriminant Validity on the within-person level

We expected that negative affect is a different construct than guilt around phone use.

Table C18

Comparison of the two-factor model (see Table C17) and a single-factor model

Item	Two-factor model	Single-factor model	Difference in Fit	<i>p</i> (difference in fit)
CFI	0.99	0.75	0.24	
RMSEA	.044	.209	0.17	
χ^2 (robust estimate)	15.53	199.00	183.47	
χ^2 (ML estimate)	16.77	229.27	212.5	<.001

Note. *N* = 483 observations.

Convergent Validity on the individual level

We expected a negative correlation between aggregated feelings of guilt and general perceived negative influence on the parent-child interactions, which was asked in the post-survey (e.g., My smartphone use sometimes interrupts us when I'm just talking to my kids).

Model fit: $\chi^2(5) = 5.01$, $p = .414$, CFI = 1.00, RMSEA = .004

Table C19

Estimates of a SEM including the aggregated version of guilt around phone use (as manifest variable) and negative phone use influences

Item	<i>b</i>	SE	<i>p</i>	β
Negative Phone Influence				
Item 1	1.00			0.57
Item 2	1.25	0.23	<.001	0.72
Item 3	1.27	0.26	<.001	0.73
Item 4	1.11	0.22	<.001	0.63
Correlation	0.07	0.03	.021	.13

Note. *N* = 151 individuals.

The correlation was smaller than expected but went in the expected direction and was significant.

We expected that the model with descriptive and injunctive norms and aggregated guilt produce the same results as the results from the multilevel model reported in the paper.

Model fit: $\chi^2(7) = 3.69$, $p = .815$, CFI = 1.00, RMSEA = .000

Table C20

Estimates of a SEM including aggregated phone use (as manifest variable), descriptive and injunctive norms

Item	<i>b</i>	SE	<i>p</i>	β
Descriptive norms				
Item 1	1.00			1.00
Item 2	1.00	0.40	.012	1.00
Injunctive Norms				
Item 1	1.00			1.12
Item 2	1.16	0.13	<.001	1.29
Item 3	0.99	0.12	<.001	1.11
Correlation Des. Norms & Agg. Guilt				
	0.01	0.04	.822	0.01
Correlation Inj. Norms & Agg. Guilt				
	-0.09	0.06	.146	-0.08
Correlation Des. Norms & Inj. Norms				
	0.25	0.12	0.037	0.22

Note. *N* = 158 individuals.

The correlation between injunctive norms and aggregated guilt around phone use was not significant. Here, we saw a difference between the multilevel models with guilt on the situational level and aggregated guilt. This might point towards that the aggregated form of the guilt was not as valid. The calculations on the individual level with the aggregated form of the guilt measure also had much less power.

Discriminant Validity

We expected that aggregated guilt around phone use and negative phone use influences are different constructs. As we cannot compare models with a single-item, we again checked the factor loading when we let aggregated guilt load on the same latent variable than the negative phone use influence items. The factor loading was .23 with all other items loading between .53-.80 indicating that aggregated guilt is a different construct than perceived negative phone use influence.

Perceived Coping Efficacy

Source. Based on another study of the authors (in prep.).

Wording Perceived Coping Efficacy (German original)

Hat das, was Sie in der Situation gedacht und getan haben, geholfen, den Stress zu bewältigen?

Von 1 Nicht geholfen bis 5 Gut geholfen

Wording Perceived Coping Efficacy (English translation)

Did what you have thought or done in the situation make you feel better?

From 1 Did not help to 5 Helped a lot

Descriptives.

$M = 3.05$; $SD = 1.16$

Validity.

ICC = 0.22

Convergent Validity

We used logistic multilevel. Each of the estimates below were based on separate models with the respective variable as sole predictor. We expected that perceived coping efficacy correlates negatively with stress change, trait stress as measured in the presurvey, and trait stress as measured in the post survey (Perceived Stress Questionnaire: Demands & Worries scales, (Fliege et al., 2001)

Table C21

Estimates of multilevel models predicting situational perceived coping efficacy

Survey	Variable	Estimate	SE	<i>t</i>
ESM Surveys ¹	Stress Change	-0.16	0.02	-6.68*
Pre-survey ¹	Stress Trait	-0.18	0.06	-2.96*
Post-survey ²	Stress Trait	-0.23	0.06	-3.81*

Note. ¹ $N = 1655$ observations from 218 individuals. ² $N = 1615$ observations from 204 individuals.

All correlations were as expected.

Discriminant Validity

We expected that coping efficacy is only weakly related with trait loneliness (measured in the pre-survey, based on the UCLA-8 scale in the German translation of Döring & Bortz, 1993, 8 items but only used 6 items here because we saw earlier that the model fit was not good with the 8 items)

Table C22

Estimates of multilevel models predicting situational perceived coping efficacy

Survey	Variable	Estimate	SE	<i>t</i>
Pre-survey	Loneliness	-0.04	0.06	-0.60

Note. $N = 1655$ observations from 218 individuals.

As expected, the relationship was not significant.

Stress Change

Stress change was calculated by subtracting stress intensity during the situation from reported stress intensity after the situation had ended

Source. Direct measurement

Wording Stress Change (German original)

Stress intensity during the situation:

Wenn Sie an die stressige Situation denken, die Sie erlebt haben: Wie haben Sie sich während der Situation gefühlt?

Von 1 gar nicht bis 5 sehr stark

*Gestresst**(Verärgert)* Misst negativen Affekt – nicht teil der Stressmessung*(Nervös)* Misst negativen Affekt – nicht teil der Stressmessung*(Unsicher)* Misst negativen Affekt – nicht teil der Stressmessung*(Einsam)* Misst negativen Affekt – nicht teil der Stressmessung

Stress intensity after the situation had ended

Wie gestresst haben Sie sich gefühlt, als die Situation vorbei war? Wenn die Situation noch nicht vorbei ist, geben Sie bitte an, wie gestresst Sie sich jetzt gerade fühlen.

Von 1 gar nicht bis 5 sehr stark

Wording Stress Change (English translation)

Stress intensity during the situation:

When you think about the stressful situation you experienced: How did you feel during the situation?

From 1 not all all to 5 very much

*Stressed**(Upset)* Measures negative affect - not part of stress measurement*(Nervous)* Measures negative affect - not part of stress measurement*(Insecure)* Measures negative affect - not part of stress measurement*(Lonely)* Measures negative affect - not part of stress measurement

Stress intensity after the situation had ended

How stressed did you feel when the situation had ended?

From 1 not all all to 5 very much

*If the situation is not over yet, please indicate how stressed you feel right now.***Descriptives.** Stress Intensity during the situation: $M = 3.63$, $SD = 0.90$; Stress intensity after the situation has ended: $M = 2.58$, $SD = 1.15$; Stress change difference score $M = -1.05$; $SD = 1.12$, range -4–3.**Validity.**

ICC = 0.16

Convergent Validity

We used logistic multilevel. Each of the estimates below were based on separate models with the respective variable as predictor. We controlled for the initial stress level (as otherwise we would assume that stress in the beginning and stress after the situation has ended correlate perfectly). We expected that coping efficacy and stress change correlate negatively. We expected that stress change correlates positively with stress trait at the pre- and the post-survey.

Table C23*Estimates of multilevel models predicting situational perceived coping efficacy*

Survey	Variable	Estimate	SE	t
ESM Surveys ¹	Perceived Coping Efficacy	-0.26	0.02	-11.64*
Pre-survey ¹	Stress Trait	0.19	0.05	3.49
Post-survey ²	Stress Trait	0.19	0.05	3.41

Note. ¹N = 1655 observations from 218 individuals. ²N = 1615 observations from 204 individuals.

Discriminant Validity

We expected that stress change is only weakly related with trait loneliness (measured in the pre-survey, based on the UCLA-8 scale in the German translation of Döring & Bortz, 1993, 8 items but only used 6 items here because we saw earlier that the model fit was not good with the 8 items).

Table C24*Estimates of multilevel models predicting situational perceived coping efficacy*

Survey	Variable	Estimate	SE	t
Pre-survey	Loneliness	0.01	0.06	0.10

Note. N = 1655 observations from 218 individuals.

As expected, the relationship was not significant.

Perceived Technoference

Source. Based on own pretests

Wording Perceived Technoference (German original)

*Wie hat Ihre Smartphone-Nutzung beeinflusst, wie Sie mit Ihrem Kind umgegangen sind?
Bitte geben Sie an, wie sehr Sie den Aussagen zustimmen.*

Von 1 Stimme nicht zu bis 5 Stimme voll zu

(Die Nutzung hatte einen positiven Einfluss darauf, wie ich mit meinem Kind umgegangen bin.) – excluded measures positive influence

Die Nutzung hatte einen negativen Einfluss darauf, wie ich mit meinem Kind umgegangen bin.

Wording Perceived Technoference (English translation)

How has your smartphone use affected how you interacted with your child? Please indicate how much you agree with the statements.

From 1 strongly disagree to 5 strongly agree

(My use has had a positive impact on how I have interacted with my child) excluded measures positive influence.

My use has had a negative impact on how I have interacted with my child.

Descriptives. Positive Influence: $M = 2.69$; $SD = 1.27$; Negative influence $M = 2.05$; $SD = 1.14$

Validity.

ICC = 0.35

Convergent Validity

We used logistic multilevel modeling. Each of the estimates below were based on separate models with the respective variable as sole predictor. We expected that perceived technofence correlates negatively with perceived positive influence on the situational level and with individual-level reported perceived technofence from the post-survey

Table C25*Estimates of multilevel models predicting situational perceived technofence*

Survey	Variable	Estimate	SE	t
ESM Surveys	Positive Phone Influence	-0.19	0.04	-4.71*
Post-survey	Perceived Technofence	0.17	0.09	1.80

Note. $N = 468$ observations from 151 individuals.

The correlation with positive phone influence was as expected but the relationship with perceive technofence on the individual level was not significant.

Discriminant Validity

We expected that perceived technofence is not correlated with the trait coping flexibility (measured in the post-survey, translated from Kato, 2012, 8 items).

Table C26*Estimates of multilevel models predicting situational perceived technofence*

Survey	Variable	Estimate	SE	t
Post-survey	Coping Flexibility	-0.03	0.13	-0.19

Note. $N = 468$ observations from 151 individuals.

As expected, the constructs were not related.

Situational Characteristics.

Source. Control: (Perrez & Reicherts, 1992), Importance: (Thies & Kordts-Freudinger, 2019), Urgency: Self-developed

Wording Situational Characteristics (German original)

Control

Hatten Sie das Gefühl, die Situation beeinflussen zu können?

Von 1 gar nicht bis 5 sehr

Importance

Wie wichtig war das Problem, das die stressige Situation ausgelöst hat?

Von 1 gar nicht wichtig bis 5 sehr wichtig

Urgency

Hatten Sie das Gefühl, dass Sie in der stressauslösenden Situation dringend handeln mussten?

Von 1 nein, überhaupt nicht bis 5 ja, sehr stark

Wording Situational Characteristics (English translation)

Control

Did you feel you could influence the situation?

From 1 not at all to 5 very much

Importance

How important was the problem that caused the stressful situation?

From 1 not at all important to 5 very important

Urgency

Did you feel that you had to act urgently in the stressful situation?

From 1 no, not at all to 5 yes, very strongly

Descriptives. Control: $M = 2.76$, $SD = 1.13$, Importance: $M = 3.00$, $SD = 1.21$, Urgency: $M = 3.59$, $SD = 1.05$

Validity.

$ICC(\text{Importance}) = 0.26$, $ICC(\text{Control}) = 0.24$, $ICC(\text{Urgency}) = 0.17$

Convergent and Discriminant Validity

We used logistic multilevel modeling to assess the convergent validity of situational phone use in stressful situations. Each of the estimates below were based on separate models with the respective variable as sole predictor. For all three variables, we included the variables we expected the situational characteristic to correlate with, and variables for which we expected no correlation. Additionally, we included the constructs we tested for the other situational variables to see whether the situational characteristics are differently related to variables and can therefore be expected to represent different constructs.

Importance:

We expected that importance and urgency correlate positively. We expected that in situations in which the stressor is either illness, developmental questions or financial stress the problem (all coded as 1) causing the stressful situation was rated as more important compared to other stressors (all coded as 0).

For discriminant validity, we expected that importance is not related to the time pressure stressor, parental autonomy and loneliness.

The relationships with situational control and active coping are not clear.

Table C27*Estimates of multilevel models predicting situational importance*

Survey	Variable	Estimate	SE	<i>t</i>
Pre-Survey	Loneliness	0.08	0.07	1.13
ESM Surveys	Urgency	0.39	0.03	15.07*
ESM Surveys	Control	-0.17	0.03	-6.54
ESM Surveys	Stressors (illness, develop., financial)	0.62	0.08	8.31*
ESM Surveys	Stressors (time pressure)	0.01	0.06	0.24
ESM Surveys	Active Coping	0.08	0.06	1.46
Post-Survey ¹	Parental Autonomy	0.12	0.05	2.51*

Note. $N = 1655$ observations from 218 individuals. ¹ $N = 1615$ observations from 204 individuals.

Control:

We expected that control positively correlates with applying the coping strategy active coping (I concentrated on changing something of the situation I am in) and negatively with parental autonomy.

For discriminant validity, we expected that control is not related to loneliness.

We included importance, control, and the stressor variables in addition with unclear expectations.

Table C28*Estimates of multilevel models predicting situational control*

Survey	Variable	Estimate	SE	<i>t</i>
Pre-Survey	Loneliness	-0.13	0.06	-2.02*
ESM Surveys	Urgency	0.02	0.03	0.82
ESM Surveys	Importance	-0.15	0.02	-6.49*
ESM Surveys	Stressors (illness, develop., financial)	-0.19	0.07	-2.59*
ESM Surveys	Stressors (time pressure)	0.20	0.06	3.60*
ESM Surveys	Active Coping	0.38	0.05	7.05*
Post-Survey ¹	Parental Autonomy	-0.08	0.05	-1.69

Note. $N = 1655$ observations from 218 individuals. ¹ $N = 1615$ observations from 204 individuals.

Urgency:

We expected that urgency positively correlates with the time pressure stressor and with applying the coping strategy active coping (I concentrated on changing something of the situation I am in).

For discriminant validity, we expected that urgency would not relate to loneliness and parental autonomy.

We included importance, control and the important stressor variables with unclear expectations.

Table C29*Estimates of multilevel models predicting situational urgency*

Survey	Variable	Estimate	SE	<i>t</i>
Pre-Survey	Loneliness	0.09	0.05	1.62
ESM Surveys	Control	0.02	0.02	0.81
ESM Surveys	Importance	0.31	0.02	15.06*
ESM Surveys	Stressors (illness, develop., financial)	0.10	0.07	1.51
ESM Surveys	Stressors (time pressure)	0.03	0.05	0.57
ESM Surveys	Active Coping	0.44	0.05	8.58*
Post-Survey ¹	Parental Autonomy	0.06	0.03	1.52

Note. $N = 1655$ observations from 218 individuals. ¹ $N = 1615$ observations from 204 individuals.

Not all our expectations held. Control did not relate to parental autonomy but to loneliness and urgency did not correlate with the time pressure stressor variable. Overall, many of the expectations held and the three characteristics were shown to correlated differently with each other and with other constructs suggesting that they represent different constructs.

References Appendix B

- Barclay, L., Everitt, L., Rogan, F., Schmied, V., & Wyllie, A. (1997). Becoming a mother - an analysis of women's experience of early motherhood. *Journal of Advanced Nursing*, 25(4), 719–728. <https://doi.org/10.1046/j.1365-2648.1997.t01-1-1997025719.x>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
- Döring, N., & Bortz, J. (1993). Psychometrische Einsamkeitsforschung: Deutsche Neukonstruktion der UCLA Loneliness Scale. [Psychometric research on loneliness: A new German version of the University of California at Los Angeles (UCLA) Loneliness Scale.]. *Diagnostica*, 39(3), 224–239.
- Fliege, H., Rose, M., Arck, P., Levenstein, S., & Klapp, B. F. (2001). Validierung des “Perceived Stress Questionnaire“ (PSQ) an einer deutschen Stichprobe. *Diagnostica*, 47(3), 142–152. <https://doi.org/10.1026//0012-1924.47.3.142>
- Glaesmer, H., Hoyer, J., Klotsche, J., & Herzberg, P. Y. (2008). Die deutsche Version des Life-Orientierung-Tests (LOT-R) zum dispositionellen Optimismus und Pessimismus. *Zeitschrift Für Gesundheitspsychologie*, 16(1), 26–31. <https://doi.org/10.1026/0943-8149.16.1.26>
- Hair, J. F. (2013). *Multivariate Data Analysis: Pearson New International Edition*.
- Hayes, A. F. (2005). Willingness to Self-Censor: A Construct and Measurement Tool for Public Opinion Research. *International Journal of Public Opinion Research*, 17(3), 298–323. <https://doi.org/10.1093/ijpor/edh073>
- Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment*, 51(1), 69–81. https://doi.org/10.1207/s15327752jpa5101_6
- Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology*, 18(2), 167–175.

https://doi.org/10.1207/s15374424jccp1802_8

- Kabakçı-Kara, F. (2009). *Eltern- und Kindertraining für Familien türkischer Herkunft: Evaluation einer selektiven Präventionsmaßnahme [Parent and child training for families of Turkish origin: Evaluation of a selective prevention measure, Doctoral dissertation]* [Friedrich-Alexander-Universität Erlangen-Nürnberg]. <https://dnb.info/997651032/34>
- Lindwall, M., Barkoukis, V., Grano, C., Lucidi, F., Raudsepp, L., Liukkonen, J., & Thøgersen-Ntoumani, C. (2012). Method Effects: The Problem With Negatively Versus Positively Keyed Items. *Journal of Personality Assessment*, 94(2), 196–204. <https://doi.org/10.1080/00223891.2011.645936>
- Müller, J. M., & Achtergarde, S. (2018). Der Multiperspektivische Fragebogen zur Eltern-Kind-Beziehung (MEK). *Praxis der Kinderpsychologie und Kinderpsychiatrie*, 67(5), 481–498. <https://doi.org/10.13109/prkk.2018.67.5.481>
- Paek, H.-J. (2009). Differential effects of different peers: Further evidence of the peer proximity thesis in perceived peer influence on college students' smoking. *Journal of Communication*, 59(3), 434–455. <https://doi.org/10.1111/j.1460-2466.2009.01423.x>
- Perrez, M., & Reicherts, M. (1992). *Stress, coping, and health*. Hogrefe & Huber.
- Rosseel, Y. (2012). lavaan : An R package for structural equation modeling. *Journal of Statistical Software*, 48(2). <https://doi.org/10.18637/jss.v048.i02>
- Thies, K., & Kordts-Freudinger, R. (2019). German higher education academic staff's positive emotions through work domains. *International Journal of Educational Research*, 98, 1–12. <https://doi.org/10.1016/j.ijer.2019.08.004>
- Van Hooff, M. L. M., Geurts, S. A. E., Kompier, M. A. J., & Taris, T. W. (2007). “How fatigued do you currently feel?” Convergent and discriminant validity of a single-item fatigue measure. *Journal of Occupational Health*, 49(3), 224–234. <https://doi.org/10.1539/joh.49.224>

White, K. M., Smith, J. R., Terry, D. J., Greenslade, J. H., & McKimmie, B. M. (2009).

Social influence in the theory of planned behaviour: the role of descriptive, injunctive, and in-group norms. *The British Journal of Social Psychology*, 48(Pt 1), 135–158.

<https://doi.org/10.1348/014466608X295207>

**Appendix D: Sample Comparison Between the Sample Included in the Analyses
and the Sample Excluded from the Analyses**

All analyses in the paper included participants who at least reported on one situation in which a phone was used in a stressful situation while a child/children were around. This final sample contained 158 mothers, while the overall sample included 234 mothers. Of the 234 mothers who downloaded the app, we excluded five participants who only filled in the presurvey, eleven participants who did not report on any stressful situation while being with their children, and finally 50 because they did not report on a stressful situation while being with their children which included phone use. This Appendix D gives an overview over the two different samples. Table D1 gives an overview over the different demographics.

Table D1
Differences in the demographics

Variable	Included Sample (N = 158 mothers)	Excluded Sample (N = 76 mothers)	p^2
Age	33.05 (4.35)	33.38 (4.30)	.584
Number of children	1.71 (0.90)	1.76 (0.91)	.668
Education			
Bachelor or more	61%	57%	.542
No Bachelor	39%	43%	
Working status			
Full-time	7%	16%	.145 ^{3,4}
Part-time	33%	36%	
In education	10%	5%	
Stay-at-home/ on leave	46%	42%	
other	4%	1%	
Living situation ¹			
With other parent of child(ren)	90%	87%	.490
Single mothers	9%	8%	.805
Living with non-parent partner	2%	8%	.026 ³
Living with other family members	3%	3%	.964 ³
Smartphone use frequency	4.03 (0.78)		

Note. ¹Choices were not exclusive. Therefore comparison for each option separately.

²Resulted from a t-test with independent samples for means and chi-square-tests for frequencies. ³Might be unreliable because of partly small cell sizes. ⁴Without “other”-category: $p = .127$.

Overall, there were slightly more mothers excluded who worked full-time and less who were in education. Moreover, significantly more mothers were excluded who lived with a partner who was not a parent of one of her children.

Table D2 shows the differences in the included and excluded sample for the individual-level variables included in this paper as well as the difference for stress trait as an interesting additional measure for this paper.

Table D2
Differences in the study variables

Variable	Included Sample (N = 158 mothers)	Excluded Sample (N = 76 mothers)	<i>p</i> (mean differences)
Injunctive norms around parental smartphone use	3.61 (1.28)	3.11 (1.34)	.008
Descriptive norms around parental smartphone use	5.43 (1.14)	5.08 (1.31)	.049
Role satisfaction	3.47 (0.61)	3.69 (0.57) ¹	.017
Mother-child relationship quality	4.21 (0.51)	4.31 (0.45) ¹	.201
Stress Trait ²	3.06 (0.72)	2.82 (0.80)	.031

Note. ¹Only including the 58 mothers who participated in the post-survey. ²Measured according to the demands and worries scales of the perceived stress scale by Fliege et al. (2001, 2005).

Evaluation: Mothers in the excluded sample perceived norms to be more negative toward smartphone use, were less stressed and more satisfied with their mother role. This makes sense given that we excluded mothers who experienced no stressful situation while being with their children and mothers who did not use their phones during a stressful situation while being with their children, but is still interesting to keep in mind.

References Appendix D

- Fliege, H., Rose, M., Arck, P., Levenstein, S., & Klapp, B. F. (2001). Validierung des "Perceived Stress Questionnaire" (PSQ) an einer deutschen Stichprobe. *Diagnostica*, 47(3), 142–152. <https://doi.org/10.1026//0012-1924.47.3.142>
- Fliege, H., Rose, M., Arck, P., Walter, O. B., Kocalevent, R.-D., Weber, C., & Klapp, B. F. (2005). The Perceived Stress Questionnaire (PSQ) reconsidered: Validation and reference values from different clinical and healthy adult samples. *Psychosomatic Medicine*, 67(1), 78–88. <https://doi.org/10.1097/01.psy.0000151491.80178.78>