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Protective Factors against Maternal Prenatal Stress

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ABSTRACT

There are several studies in rodents, primates and also in humans showing that prenatal stress has impact on the fetus and the new born in terms of his/her physiological state and growth while the consequences and risks are meanwhile well approved; there is very rare literature about the character of the relevant stress-factors. The objective of this clinical trial was to find preventive or predisposing factors in stress coping. It investigated subjective, objective and hormonal aspects of stress, trying to find the criteria with the highest impact on pregnant women. Three structured prenatal packages of self-report questionnaires in addition to anamnestic data were collected. The surveyed data included anxiety, perceived stress, life events, subjective stress (PSQ), pregnancy-specific stress (PESI), depression (EPDS), partnership (FPD) and social support (F-sozU). 111 women were included into the analysis. The findings show that a good partnership and social support seem to be the most important factors preventing pregnant women from emotional and psychological stress, independent from their objective situation. These results highlight the importance of a firm social environment and a good partnership as highly underestimated factors to minimize stress-related risks for mother and child.

Keywords: Pregnancy, Stress, Partnership, Social support, Prenatal

INTRODUCTION

Prenatal stress and its impact on human infants receive increasing scientific attention in recent years. The foci of primary interest are attentional organization [1], temperament [2,3] and developmental consequences affecting infant growth [4,5]. Derived from these findings the 'Fetal Programming Hypothesis' was confirmed, stating that prenatal events and stressors are programming the infant brain and its metabolism via the stress hormone cortisol [6]. According to this model mother's cortisol level is increased if the mother is confronted with a stressor or she perceives stress during pregnancy. Cortisol can pass the placenta and can influence a variety of birth outcome variables like birth weight, gestational age, head circumstances and length. These early risk factors are assumed to have impact on the cognitive and behavioral development of the child [7]. This is the first study looking at the association between prenatal maternal cortisol level during each trimester of pregnancy and medical pre-, peri- and post-natal complication in a prospective study design.

In the last decades, an increasing literature on prenatal influences on the unborn child has emerged. As it is shown in several prospective studies, a mother who is stressed during her pregnancy has a higher risk for behavioral, emotional or cognitive problems in their children, including an increased risk of attentional deficit/hyperactivity, anxiety and language delay [8,9]. Moreover there is elaborated evidence about lower birth-weight [10,11] and smaller head circumferences [12,13]. Due to alterations in immunofunction, also the risk of pregnancy complications such as preeclampsia and premature labor is increased [14-16]. The idea that pregnancy could influence the long-term health of the offspring was formulated and which stated that "Coronary heart disease, Type 2 diabetes, stroke and hypertension originate in developmental plasticity, in response to under nutrition during fetal life". Indeed, lower birth weight, which seems to be associated with stress and daily hassles in maternal reports, has turned out to be an individual risk for cardiovascular disease and metabolic disorder, such as diabetes [17,18]. The concept of pregnancy impact on the offspring is nowadays known as "fetal programming or prenatal programming". This concept describes the fetus physiological adaption to the environment where it is signalized to be born in [19-22].

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One of the most important and best-investigated mechanisms in fetal programming is the psychological stress response due to the activation of the hypothalamic-pituitary-adrenal (HPA)-axis and the autonomic nervous system (ANS) [23,24]. However, despite those findings, there still is little previous research and literature about the forms of anxiety or stress which are most detrimental. Most studies are only focused on one criterion. For example, Lobel et al. [25] investigated the difference between the contribution of pregnancy-specific and general stress to the birth outcomes, and whether prenatal health behaviors explain this association. They found pregnancy-specific stress contributing directly to an earlier delivery and a higher risk for low birth weight, due to an association between pregnancy-specific stress and smoking [6]. Two other studies revealed that women with high stress were more susceptible to use cigarettes or marihuana during the pregnancy, what evidently is associated with higher risks for the child outcome [17,18]. Chou et al. [7] state that women who have not planned their pregnancy have a higher risk for poor maternal psychosocial adaptation as well as for severe pregnancy-related nausea and vomiting. Only two studies dealt particularly with partnership and social support as a factor in stress-copying. Paul et al. [19] tracked the partner- and partnership-related risk factors for preterm birth among low-income women in Lima, Peru. They selected 580 preterm cases (20-36 weeks gestational age at delivery) and 633 term controls (≥ 37 weeks) from women delivering at an obstetric hospital in Lima, Peru. Each subject completed a structured interview and gave biological specimens within 48 h after the birth. Four factors were chosen to create a, composite partnership risk score which showed a correlation with the risk for pre-term-birth. Those factors were: ever had a partner with a history of drug use, ever having had anal sex, having a current partner with a history of visiting prostitutes and perceiving one's current partner as a "womanizer". Another study investigated social support and stress in the transition to parenthood. She found deficiencies in social integration and reliable alliance as important factors predicting postpartum depression. Nevertheless, we found great gaps in literature concerning the question after the most affecting components of stress and the stress- and pregnancy related environment. Partnership has often been suggested as a crucial factor, but still scientific evidence is missing. This paper is a first approach to fill this gap of research. It will concentrate on the different components of influence and subjective stress-perceiving and show up the most important points, focusing on partnership and social support, as the criteria with the highest revealed influence.

METHODS

Participants

This study is a three-wave prospective longitudinal study conducted during the period November 2007 to January 2009. Participants were recruited to the study via public and private search, referrals from obstetricians, notices posted in clinics and advertisement in the internet and newspapers. Inclusion criteria were an early pregnancy (week of gestation: 13.6 ± 1.68) and no severe mental or physical problems. Exclusion criteria were (a) inability to speak and read German language, (b) twin pregnancy and (c) advanced pregnancy (>19 week of pregnancy). Every woman gave her written, informed consent in accordance with the ethic committee of the University Clinic of Heidelberg, which approved all protocols.

Procedures

Eligible subjects received a regarding demographic information; social, medical and psychiatric history, information concerning partnership and pregnancy, medical complications and live events, as well as a package of structured questionnaires including the PSQ, PESI, PRAQ-R, F-sozU, EPDS and FPD. This package had to be completed at three points of time, each in every trimester of pregnancy. In addition, the women were consulted for appointment days, also one in each trimester, where samples of salivary cortisol were taken. The determining instruments for this article will be presented in the following:

The Perceived Stress Questionnaire (PSQ) by Levenstein et al. [20], translated by Fliege et al. [21], is a tool for psychomatic research, with the aim to measure the subjective perceived stress. This questionnaire contains four scales (worries, strains, joy and demands); differently from the original version by Levenstein et al. [20] that includes five scales. The original number of 30 items was reduced to 20 items. The first three scales try to image the individual's internal stress reaction, whereas the scale, demands focuses on the apperception of external stressors. Internal consistency of the subscales is ranging from 0.80 to 0.86; reliability is at least 0.80.

The Prenatal Emotional Stress Index (PESI) by Moehler et al. [3] is an instrument developed to measure emotional stress in pregnancy. In this study it was used as prospective measurement. The questionnaire consists of 33 items, 11 for each trimester of pregnancy. Each item images anxiety, sadness, joy, perceived stress and emotional strain of the mother on a visual analog scale from 0 to100. The arithmetic mean of all 33 single scales discloses the total burden of stress during pregnancy.

The revised Pregnancy Related Anxiety Questionnaire (PANX/PRAQ-R) aims to record pregnancy-specific anxiety [22]. It contains 10 items accordant to the three-factor-model: 1. 'fear of giving birth', 2. 'fear of having a handicapped child' and 3. 'Fear of one-self's unattractive appearance'. The PRAQ was developed by van den Bergh [1], revised by Huizink [22] and translated in German language by Moehler et al. [3]. The answer format consists of a five point Likert scale reaching from "never" to "mostly". Cronbach's alpha for all three subscale is >0.76.

F-SozU ("Fragebogen zur sozialen Unterstützng") is a questionnaire dealing with social support by Sommer and Fydrich [23]. Four scales are measured: emotional support, practical support, social integration and social strains. Four all of these scales and the total the internal consistency are identified between 0.81 and 0.93.

The German "Fragebogen für Parnterschaftsdiagnostik" (FPD) ('Questionnaire for diagnostics of partnership') assessed marital satisfaction, using three subscales: 1. Behavior during partnership conflicts, 2. Tenderness and 3. Commonness/communication. Each woman indicated on a four point Likert scale how often ("never", "seldom", "often", "very often") some attitudes from the partner or themselves occur (e.g. the statement: "He blames me of failures I did in the past"). Reliabilities for all subscales are located between 0.88 and 0.95. Internal Consistency for the whole scale constitutes r=0.83.

One part of the questionnaire, which the women completed once in the beginning and particular parts continuously once every trimester was a part about live events. It was asked for critical events like separation in partnership, medical complications during pregnancy, financial problems, death of a relative, loss of home or job, etc. All possible life events were summarized to one 'critical life event score' ranging from zero to eleven.

STATISTICAL ANALYSIS

SPSS version 17.0 for Windows was used for the statistical analysis. Single missing values were replaced by the mean value of the item. Descriptive analysis of the anamnestic data reported was carried out. Correlation between the different questionnaires and cortisol were conducted using Pearson or Spearman's rho correlation if data were non-normally distributed. A p-value of ≤ 0.05 was regarded as significant. Multiple regression analyses were used to examine the association between partnership, social support and other items. For the first multiple regression, the total FPD-score, commonness/communication and tenderness were independent variables. Analyses were repeated with changing response-variables. Every important target value (questionnaire scores, scales) was tested. The same construction was calculated with the total score and scales of F-sozU and another time with the objective stress factors and live events as independent variables. To test for imputation bias, a sensitivity analysis with exclusion of all missing data was preceded.

RESULTS

Patient flow and characteristics

A total of 121 women were contacted in Heidelberg, Germany and the surrounding area **(Figure 1)**, of whom 111 women submitted at least one dataset package and were included in the study. Main reasons for drop-out were spontaneous abortions and unclear reasons (probably in most cases forgetting to send back the data set in time). The questionnaire dataset collection was conducted by post. The mean age of the pregnant women was 31 years (comprising a total range from 17 to 43 years). The mean age of the partner was identified to be 34 years. The majority of women were German (94.6%), Christian (93.7%), have an education level of the German "Abitur" or higher (82.0) and planned or at least wished their pregnancy (71.2% planned, 97.3% wished). 97.3% are having a long term relationship, 86.5% are living with their partners. **Table 1** presents a selection of socio demographic and anamnestic characteristics of the participants in an overview.

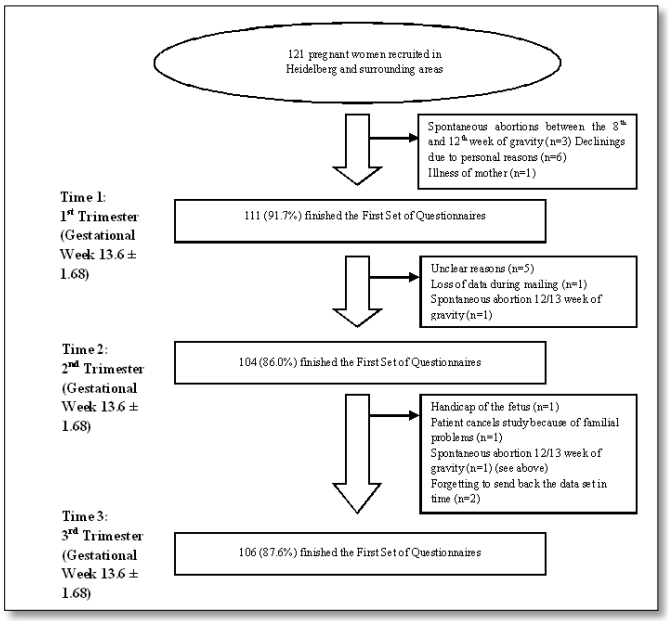

Figure 1. Patient flow diagram.

Table 1. Socio demographic and anamnestic characteristics of the patient collective and partners.

		Pregnant women n (%)	Partner n (%)
Nationality	German	105 (94.6)	102 (91.9)
	European (other)	3 (2.7)	3 (2.7)
	Others	3 (2.7)	6 (5.4)
Confession	Christian	75 (93.7)	68 (87.2)
	Muslim	2 (2.5)	4 (5.1)
	Other	3 (3.8)	6 (7.7)
Marital staus	Married	66 (59.5)	66 (63.4)
	Single	39 (35.1)	32 (30.8)
	Divorced/Separated	6 (5.4)	6 (5.8)
Education	"Abitur" or higher educational level	91 (82.0)	84 (83.1)
	Lowered level	20 (18.0)	17 (16.9)
Occupation	Fulltime	57 (51.8)	87 (87.0)
	Part time	26 (23.6)	3 (3.0)
	Student	7 (6.4)	6 (6.0)
	Housewife/marginally occupied	20 (18.2)	4 (4.0)
Living situation	With partner	96 (86.5)	n/a
	Without partner	12 (10.8)	n/a
	With parents	3 (2.7)	n/a
Living with children	Own child/children	38 (34.2)	n/a
	Other child/children	3 (2.7)	n/a
	No child	70 (63.1)	n/a
Depressive Symptoms	Yes	14 (12.6)	n/a
	No	97 (87.4)	n/a
Planned pregnancy	Yes	79 (71.2)	79 (73.1)
	No	32 (28.8)	29 (26.9)
Wished pregnancy	Yes	107 (97.3)	3 (2.7)
	No	102 (96.2)	4 (3.8)

DATA ANALYSIS

A significant negative correlation could be found between the different aspects of a good partnership and depressive symptoms, indicated by the EPDS **(Table 2)**. This correlation even gets stronger with the pregnancy progressing. Also pregnancy-specific anxiety shows a tendency to be lower in a good partnership, which gets specifically obvious for the fear of child's disability in the second and third trimester and worries about the own looks in first and second trimester. On the contrary it is interesting to see, that partnership does not seem to influence the specific fear of giving birth. The perception of social support and social satisfaction is highly dependent on the partnership. The correlation between the total PSQ score and FPD indicates that the partnership has high importance for the women's perceived stress in the whole progress of pregnancy. The same tendency could be found in the correlations between the different investigated aspects of partnership and the scales worries, strains, joy and demands. **Table 2** gives an overview over the most important correlations between partnership and subjective stress perception and smoking.

Table 2. Pearson's correlations between partnership and subjective stress perception and smoking over time.

	Trimester of pregnancy	Tenderness	Commonness/ Communication	Fpd_ges
Total EPDS Score	1st	-0.184†	-0.344**	**-0.267****
	2nd	-0.414**	-0.493**	**-0.380****
	3rd	-0.432**	-0.401**	**-0.408****
Fear of handicapped child	1st	-0.037 n.s.	-0.106 n.s.	**-0.037 n.s.**
	2nd	-0.316**	-0.162 n.s.	**-0.226****
	3rd	-0.205**	-0.114 n.s.	**-0.130 n.s.**
Worries about one's own appearance	1st	-0.249**	-0.338**	**-0.171†**
	2nd	-0.332**	-0.348**	**-0.330****
	3rd	-0.162 n.s.	-0.163 †	**-0.138 n.s.**
Emotional support	1st	00.461**	00.510**	**00.375****
	2nd	00.427**	00.493**	**00.438****
	3rd	00.352**	00.470**	**00.378****
Satisfaction with social support	1st	00.484**	00.480**	**00.376****
	2nd	00.450**	00.464**	**00.354****
	3rd	00.499**	00.490**	**00.404****
Total F-sozU score	1st	00.526**	00.565**	**00.397****
	2nd	00.492**	00.564**	**00.457****
	3rd	00.475**	00.552**	**00.472****
Worries	1st	-0.234**	-0.356**	**-0.297****
	2nd	-0.340**	-0.390**	**-0.301****
	3rd	-0.298**	-0.370**	**-0.323****
StrainTension	1st	-0.288**	-0.262**	**-0.260****
	2nd	-0.336**	-0.379**	**-0.255****
	3rd	-0.373**	-0.398**	**-0.379****
Joy	1st	00.380**	00.327**	**00.306****
	2nd	00.436**	00.475**	**00.329****
	3rd	00.472**	00.461**	**00.413****
Demands	1st	-0.176†	-0.155 n.s.	**-0.095 n.s.**
	2nd	-0.231**	-0.200**	**-0.136 n.s.**
	3rd	-0.317**	00.273**	**00.284****
Total PSQ score	1st	-0.312**	-0.319**	**-0.278****
	2nd	-0.375**	-0.396**	**-0.284****
	3rd	-0.408**	00.418**	**00.391****
Smoking	1st	-0.105 n.s.	-0.244*	**-0.128 n.s.**
	2nd	-.247**	-0.242**	**-0.285****
	3rd	-0.027 n.s.	-0.177†	**-0.070 n.s.**
Alcohol	1st	-0.185†	-0.116 n.s.	**-0.133 n.s.**
	2nd	-0.225*	-0.158 n.s.	**-0.108 n.s.**
	3rd	**-0.109 n.s.**	**-0.068 n.s.**	**-0.066 n.s.**

PSQ: Perceived stress questionnaire; EPDS: Edinbourgh Postnatal Depression Scale
***p<0.01, *p<0.05, †p<0.10; n.s.=non-significant*

As **Table 2** shows, women without partnership or bad FPD and tenderness scores are more susceptible to smoke cigarettes and drink alcohol during pregnancy. However, these data has to be interpreted with reservation, referring to the small number of women without partnership as well as the small number of women smoking or drinking alcohol in our study-group.

Nevertheless, we found that bad values in commonness and communication as well as a high amount of arguments with the partner and a low FPD score are associated financial issues **(Table 3)**. Women, who value their level of communication and commonness as bad also tend to have a higher number of objective stress factors (r=-0.129; p=0.024). The total number of objective stress factors and live events (e.g. medical complications, separation in partnership, financial issues, other not-specified factors) has a clear impact on the measure of worries, strain, joy, demands and the total PSQ score (Table 4). Splitting it up, particularly financial issues and a separation in partnership seem to have the highest influence on these perceptions. Other objective stress factors or live events like "loss of home", "loss of job" or "loss of relative" do not even indicate significant values, which is why they are not included in **Table 4**, which shows the key correlations between objective stress factors/live events and the subjective stress perception.

Table 3. Pearson's correlations between objective stress factors/live events and the subjective view of the partnership.

	Medical complications	Separation in partnership	Financial issues	Other stress factors	Number of objective stress factors/live events
Commonness/ communication	0.15 n.s.	-0.309**	-0.169**	0.-159**	-0.129*
Tenderness	-0.007 n.s.	-0.208**	-0.104†	-0.048 n.s.	-0.076 n.s.
Arguments	0.001 n.s.	0.109†	0.133*	0.061 n.s.	0.061 n.s.
FPD total score	0.005 n.s.	-0.259**	-0.177**	-0.133*	-0.111†

FPD: Questionnaire for Diagnostics of Partnership (Fragebogen zur Partnerschaftsdiagnostik)
***p<0.01, *p<0.05, †p<0.10, n.s.=non-significant*

Table 4. Pearson's correlations between objective stress factors/live events and subjective stress perception.

	Medical complications	Separation in partnership	Financial issues	Other stress factors	Number of objective stress factors/live events
Worries	0.054 n.s.	0.157**	0.403**	0.264**	0.310**
Strains	0.116*	0.165**	0.284**	0.209**	0.284**
Joy	-0.083 n.s.	-0.173**	-0.280**	-0.197**	-0.247**
Demands	0.031 n.s.	0.141*	0.271**	0.201**	0.213**
Total PSQ score	0.079 n.s.	0.181**	0.353**	0.248**	0.299**

PSQ: Perceived Stress Questionnaire
***p<0.01, *p<0.05, †p<0.10, n.s.=non-significant*

In the multiple regression analysis FPD and it subscales **(Table 4)**, the measure of commonness and communication shows a clear impact on the variables "worries", "strain", "joy" and "EPDS total score" in the fist and the second trimester **(Table 5)**. Commonness and communication seems to play a more important role for the women than tenderness or arguments (the FPD total score contains commonness/communications, tenderness and arguments). There were no significant influences on the anxiety variables (fear of giving birth, worries about own looks, worries to have a disabled child).

Table 5. Multiple regression results for the relationship between partnership and subjective stress perception over time.

Dependent Variable	Independent variable	Beta		
		T1	T2	T3
Worries	FPD total score	-0.143 n.s.	00.097 n.s.	-0.071 n.s.
	Commonness/Communication	-0.326*	-0.345 *	-0.303 n.s.
	Tenderness	00.080 n.s.	-0.158 n.s.	-0.012 n.s.
Strain	FPD total score	-0.079 n.s.	00.247 n.s.	-0.089 n.s.
	Commonness/Communication	-0.108*	-0.378*	-0.229 n.s.
	Tenderness	-0.162 n.s.	-0.253 n.s.	-0.130 n.s.
Joy	FPD total score	00.042 n.s.	-0.283 n.s.	-0.087 n.s.
	Commonness/Communication	00.122**	00.393**	00.285 n.s.
	Tenderness	00.270*	00.372*	00.329*
EPDS total score	FPD total score	-0.143 n.s.	00.90 n.s.	-0.206 n.s.
	Commonness/Communication	-0.349**	-0.451**	-0.091 n.s.
	Tenderness	00.145 n.s	-0.147 n.s.	-0.193 n.s.

FPD: Questionnaire for Diagnostics of Partnership (Fragebogen zur Partnerschaftsdiagnostik)
EPDS: Edinburgh Postnatal Depression Scale
***p<0.01, *p<0.05, †p<0.10; n.s.=non-significant*

Social support does as well influence the stress perception during pregnancy **(Table 6)**, whereas the total SozU score has more significance than the single support variables. We found a preventive effect against depressions and an influence on worries, strain, joy, demands and the total PSQ score.

There were hardly any significant values between stress and stress-associated factors and cortisol found.

DISCUSSION AND CONCLUSION

The results of this study present significant evidence for the hypothesis that there are preventive and predisposing factors for stress-management in pregnant women. This is the first known population-based study to specifically evaluate this question. Several epidemiological studies have shown that stress during pregnancy bears high long- and short-term risk factors for the developing child [10,11,24,25]. Our findings affirm the conclusion which states that "specific components of social support are most strongly predictive of postpartum depression". It also matches with previous presumptions that partnership (due to its important role in stress perception) is very probable to play a crucial role for the early programming and child development [24]. One aspect of this can even be proofed: obviously a bad partnership is a predisposing factor for smoking and eventually drinking during the pregnancy, which is known as a risk factor for the child's health. This also stands in accordance to previous findings by Nelson et al. [17] and Crittenden et al. [18], who also found the use of cigarettes and marihuana related with a the mother's stress-perception.

In the perception of stress during pregnancy, it can be distinguished between:

1. Objective stress factors like live events (separation in partnership, medical complications, financial issues, etc.).

2. Subjective perception (presented here by PSQ, PESI).

3. Pregnancy-specific anxiety (R-PRAQ), and

4. Internal and external factors which influence the final perception (character, partnership, social support, natural resources).

All those factors are complexly related. Objective, internal and external factors are together constructing the psychological state, which decides about the final subjective perception. Neither objective nor internal backgrounds are influencable from the medical point of view, excluding the possibility of psychological therapy. In conclusion, partnership and social support play a key role for the subjective stress perception. Tenderness, commonness, communication and emotional support are found as the criteria with main impact in partnership and social support. Reminding of all the approved consequences for mother and child related with stress during pregnancy, this is a crucial finding concerning stress-management and awareness during pregnancy. As a conclusion, the impact of the partner's behavior should be valued much higher and it would be important to make people aware that it is not only possible,

but important, to protect their baby's health through such simple measures as tenderness and communication.

Table 6. Multiple regression results for the relationship between social support and subjective stress perception over time.

Dependent Variable	Independent variable	Beta		
		T1	T2	T3
PSQ total score	Emotional Support	0.029 n.s.	0.369†	0.338†
	Practical Support	0.210 n.s.	0.142 n.s.	0.197 n.s.
	Social Integration	0.143 n.s.	0.049 n.s.	-0.039 n.s.
	Person(s) of trust	0.208 n.s.	00.068 n.s.	0.014 n.s.
	Total SozU score	-0.991**	-10.023**	-0.924**
Worries	Emotional Support	0.088 n.s.	0.379†	0.221 n.s.
	Practical Support	0.093 n.s.	0.166 n.s.	0.195 n.s.
	Social Integration	0.121 n.s.	0.051 n.s.	-0.092 n.s.
	Person(s) of trust	0.191 n.s.	0.012 n.s.	0.039 n.s.
	Total SozU score	-10.002**	-10.049**	-0.800**
Strain	Emotional Support	-0.102 n.s.	0.170 n.s.	0.252 n.s.
	Practical Support	0.245†	-0.003 n.s.	0.153 n.s.
	Social Integration	0.068 n.s.	0.166 n.s.	-0.093 n.s.
	Person(s) of trust	0.191 n.s.	0.094 n.s.	-0.059 n.s.
	Total SozU score	-0.665†	-0.745*	-0.578†
Joy	Emotional Support	0.041 n.s.	-0.260 n.s.	-0.166 n.s.
	Practical Support	-0.153 n.s.	-170 n.s.	-0.238†
	Social Integration	-0.086 n.s.	-0.076 n.s.	-0.052 n.s.
	Person(s) of trust	-0.190 n.s	-0.151 n.s.	-0.185 n.s.
	Total SozU score	0.823*	10.079**	10.017**
Demands	Emotional Support	0.144 n.s.	0.460*	0.515**
	Practical Support	0.240†	0.159 n.s.	0.122 n.s.
	Social Integration	0.215 n.s.	-0.092 n.s.	-0.006 n.s.
	Person(s) of trust	0.150 n.s.	-0.002 n.s.	-0.094 n.s.
	Total SozU score	-20.679**	-0.752*	-0.868**
EPDS total score	Emotional Support	-0.169 n.s.	0.255 n.s.	0.215 n.s.
	Practical Support	0.015 n.s.	0.012 n.s.	-0.002 n.s.
	Social Integration	-0.023 n.s.	0.276†	0.079 n.s.
	Person(s) of trust	0.082 n.s.	0.295†	0.147 n.s.
	Total SozU score	-10.171 n.s.	-10.283**	-0.830**

SozU: Social Support Questionnaire (in German: Fragebogen zur Sozialen Untersützung)
PSQ: Perceived Stress Questionnaire
EPDS: Edinburgh Postnatal Depression Scale
***p<0.01, *p<0.05, †p<0.10; n.s.=non-significant*

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