

The Impact of Paternal and Maternal Parenting Styles on Alexithymia

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Abstract

Rogers stressed the impact of Conditional Regard (CR) towards the child in the development of neurotic anxiety. Miller noted that disorders in affect regulation relate to family atmospheres where the child is not allowed to express negative emotions. However, studies on the impact of paternal and maternal parenting styles lacking emotional warmth (EW) on the development of alexithymia in adulthood remain scarce. Therefore, The Bermond-Vorst Alexithymia Questionnaire (BVAQ) and the Leiden Parent-Child Interaction Questionnaire (LPCIQ-R) were administered to 152 male and female bachelor psychology students from 18 to 60 years of age at Leiden University. The results demonstrate that: 1) Both paternal and maternal parenting styles lacking EW induced significantly higher Alexithymia Total scores; 2) Fathers lacking EW induced significantly higher scores on Cognitive Alexithymia, while mothers lacking EW induced significantly higher scores on Affective Alexithymia; 3) Both CR fathers and CR mothers induced difficulties with Identifying emotions; 4) CR fathers induced difficulties with Verbalizing emotions, while 5) Indifferent mothers induced difficulties with Emotionalizing. The results above not only support Rogers' view on the devastating affect of CR on emotion regulation, but emphasize the different impact of paternal and maternal roles on the development of alexithymia features as well. In the past mothers were seen as the primary caretakers and consequently mothers were blamed for the child's mental health problems. However, our results show that Cognitive Alexithymia, known for its association with mental illness is induced by fathers lacking EW. In contrast Affective alexithymia, associated with on the one hand stress resistance, and on the other hand lack of empathy and creativity, turned out to be induced by mothers lacking EW. Hence, with the growing active role of fathers in child rearing it is unfair to blame mothers for the child's mental problems without prior investigations of parenting styles lacking EW.

Keywords: affective alexithymia, cognitive alexithymia, conditional regard, emotional warmth, mental illness, parent-child interaction

Abstrak

Penekanan terhadap dampak dari Penghormatan Bersyarat (Conditional Regard, CR) terhadap anak yang dalam tumbuh kembangnya mengalami kecemasan neurotik telah ditekankan Rogers sejak tujuh dekade yang lalu. Sementara Miller sejak 4 dekade lalu mencatat bahwa gangguan dalam sikap regulasi diri berhubungan dengan atmosfer keluarga, tempat anak tidak diizinkan untuk mengekspresikan emosi negatif. Namun, studi tentang dampak gaya pengasuhan yang kurang kehangatan emosional (emotional warmth, EW) terhadap perkembangan alexithymia di masa dewasa masih langka. Metode yang digunakan dalam studi ini adalah menyebarkan alat ukur The Bermond-Vorst Alexithymia Questionnaire (BVAQ) oleh Bermond et al. (2018a) dan Leiden Parent-Child Interaction Questionnaire (LPCIQ-R) oleh Moormann & Van Putten (2004) kepada 152 mahasiswa dan mahasiswi sarjana psikologi hingga civitas akademika pria dan wanita berusia 18 hingga 60 tahun di Universitas

Leiden. Hasil pertama studi ini adalah baik gaya pengasuhan ayah maupun ibu yang kurang dalam hal kehangatan emosional menyebabkan skor Total Alexithymia yang lebih tinggi secara signifikan. Kedua, ayah yang kurang memberikan kehangatan emosional menyebabkan skor yang lebih tinggi secara signifikan pada Cognitive Alexithymia, sementara ibu yang kurang memberikan kehangatan emosional menyebabkan skor yang lebih tinggi secara signifikan pada Affective Alexithymia. Ketiga, baik ayah yang memberikan Penghormatan Bersyarat maupun ibu yang memberikan Penghormatan Bersyarat akan mengakibatkan anak mengalami kesulitan dalam mengidentifikasi emosi. Keempat, ayah yang memberikan Penghormatan Bersyarat akan membuat anak mengalami kesulitan dalam mengungkapkan emosi, sementara ibu yang mengasuh dengan acuh tak acuh akan membuat anak mengalami kesulitan dalam mengekspresikan emosi. Dari hasil penelitian ini menunjukkan bahwa di masa lalu ibu dianggap sebagai pengasuh utama dan akibatnya disalahkan atas masalah kesehatan mental anak, namun Alexithymia kognitif, yang dikenal karena hubungannya dengan penyakit mental, disebabkan oleh ayah yang tidak memiliki kehangatan emosional. Sebaliknya Alexithymia afektif, yang di satu sisi dikaitkan dengan ketahanan terhadap stres, dan di sisi lain kurangnya empati dan kreativitas, ternyata disebabkan oleh pengasuhan ibu yang tidak memiliki kehangatan emosional. Dengan semakin aktifnya peran ayah dalam mengasuh anak, tidak adil untuk menyalahkan ibu atas masalah mental anak tanpa penyelidikan ilmiah sebelumnya tentang gaya pengasuhan yang tidak memiliki kehangatan emosional.

Kata kunci: alexithymia afektif, alexithymia kognitif, penghormatan bersyarat, kehangatan emosional, penyakit mental, interaksi orangtua-anak

Introduction

The aim of the present research is to test whether parents displaying emotional warmth in the parent-child interaction will lead to significantly lower alexithymia scores in adulthood than parents with a cold and distant attitude towards the child. Though in the older literature on attachment the mother is seen as the primary caretaker, in modern society the role of the father in child rearing has become more prominent (The Economic Times, 2023). It should be noted that the increasing impact of the father's role is not only limited to China and the US, but also applies to the whole world in modern society. Furthermore, as nowadays mothers are earning a living as well, in the present research it will be investigated whether parenting styles of fathers versus mothers differ from each other in the development of alexithymia later in life.

Theory

Parenting Styles

As opposed to loving and accepting parents displaying unconditional positive regard (UPR) towards the child, Rogers (1951) stated that parental styles characterized by conditional regard (CR) will induce neurotic anxiety and a low self later in life (see also Kernis et al. 1998). Empirical evidence for Rogers' theory on neuroticism has been brought forward by Lopes et al. (2015), using the revised form of the Leiden Parent Child Questionnaire (Moormann & Van Putten, 2004).

CR is characterized by a tendency of the child to perceive that one is only valued when one's behavior is in accordance with the parents' expectancy, since parent-child interactions are permeated by inconsistencies both in discipline and in expressions of love. Rogers' concept of CR (1951) has features in common with later constructs, such as Parker's rearing style of Affectionless Control (AC), characterized by harsh discipline in combination with the lack of a loving attitude (Parker, 1983). Parker (1990) stated that AC parental style seemed to be a risk factor for neurosis or simply for seeking for help. The reason why a CR or AC parental style might be associated with lack of psychological health can be attributed to parents' use of love withdrawal and guilt induction as important factors generating unstable self-esteem (Kernis et al., 2000). Although the relationship between CR/AC and neurosis and psychological complaints has been firmly established in the literature (Brand et al., 2009; Maynard & Harding, 2010; McGinn et al., 2005) the association between CR/AC and alexithymia has been sparsely

reported. If so, nearly all studies made use of the Parental Bonding Instrument (Parker et al., 1979), which assesses perceived parental care in terms of the dimension “care” and “overprotection”. However, in the field of child sexual abuse (CSA) where dysfunctional parenting styles are common a high prevalence of alexithymia has been reported in both male and female victims (Moormann et al., 2012a; Moormann et al., 2023). In an early study on CSA, where the Leiden Parent Child Questionnaire was administered, CR or AC was found to be associated with having difficulties in verbalizing emotions and with a low sense of relatedness (Moormann et al., 1997).

Although Rogers (1951) didn't explicitly emphasized the importance of fathers in the child's upbringing it should be noted that his view on accepting and loving parents, beneficial for the child's psychological well-being, has stimulated a huge amount of new research on a variety of psychological health variables, such as: positive expressiveness to children's empathy-related responding and social functioning (Zhou et al., 2002); parenting and perceived maternal warmth in European American and African American adolescents (Jackson-Newsom et al., 2008); alexithymia, parenting style, and parental control (Cuzzocrea et al., 2015); mediating role of perceived parental warmth and parental punishment in the psychological well-being of children in rural China (Chen & Liu, 2012); the impact of parental styles on the development of psychological complaints (Lopes et al., 2015); delinquency, anger, and parental warmth (Jaggers et al., 2018); parental warmth during childhood predicts coping and well-being in adulthood (Moran et al., 2018); the role of fathers' positive involvement (Han & Ko, 2021); the roles of alexithymia and an invalidating childhood environment (Born, 2023); the effect of secondary care intensity and parental-stress toward children's social-emotional development (Maulana et al., 2023); attachment-based and close parenting influences the formation of strong children's characters (Dewitri, 2023); toxic or poisonous parenting (Dunham et al., 2011) is another parenting style with a negative impact on a child's mental health (Syahid et al. (2023); and finally parenting style, alexithymia and fear of intimacy (Liu et al., 2024).

All studies described above have in common that they, as Rogers already noted in 1951, oppose debilitating versus facilitating parental styles. With the introduction of the constructs Conditional Regard versus Unconditional Positive Regard Rogers not only was the first who construed a theory on psychological health where accepting and loving parents were seen as beneficial for the child's psychological well-being, but Rogers has been an important source of inspiration for later researchers as well. In a recent study on parents, dealing with facilitating and encouraging their children's emotion regulation, a parenting style that can be categorized as debilitating is distinguished, i.e., the poisonous parenting style (often used interchangeably with the toxic parenting style), measured with the Indonesian adaptation of The Poisonous Parenting Style Scale, developed by Syahid et al. (2023) and based on the theory of Dunham et al. (2011). Here, the focus is on the impact of both paternal and maternal parenting styles on alexithymia.

Although we are not dealing with authoritarian parenting it has been reported that authoritarian parenting (another debilitating parenting style) contributes to the development of alexithymia, which is characterized by reduced emotional awareness and increased aggression (McEarlean & Lim, 2019; Musfiroh et al., 2024). They also found a different impact of paternal versus maternal styles: paternal authoritarian parenting predicted alexithymia and aggression when controlling for maternal authoritarian style, but not vice versa. McEarlean & Lim also reported that if the authoritarian parenting style is practiced by a father, then it will contribute significantly to increased child aggression in adulthood. Scientific research on the impact of paternal and maternal parenting styles on alexithymia is still rare.

Another, rare line of research concerns an environmental point of view on the etiology of alexithymia, where the relationship between parental alexithymia and parenting styles is investigated (Cuzzocrea et al., 2015). Parenting alexithymia means that the parents are alexithymic. The data indicate that paternal alexithymia is a predictor of children's internalizing and externalizing behavior problems and that paternal overreaction mediates the effects of alexithymia. These results highlight the importance of preventing parental alexithymia and involving fathers in parenting support programs aimed at ensuring children's mental health and adjustment (Scarzello, 2023). However, preventing parental alexithymia is

a difficult endeavour, because 1) Alexithymia is rather therapy resistant (Taylor et al., 1997), and 2) Alexithymia is, according to its originator, an inherent brain dysfunction (Sifneos, 2000) and as a consequence difficult to treat. This inherent brain dysfunction is called primary alexithymia as opposed to secondary alexithymia, induced by environmental forces, such as child sexual abuse (Moormann et al., 1997; Moormann et al., 2023). In the discussion this topic is dealt with more extensively.

Alexithymia

The term alexithymia has been introduced by Sifneos (2000) and emanates from the Greek (α -λέξις-θυμός), which means a disability to express emotions in words. In his article Sifneos (2000: 113) launched the following definition:

“Alexithymia, a term I introduced for better or for worse in 1972, involves a marked difficulty to use appropriate language to express and describe feelings and to differentiate them from bodily sensations, a striking paucity of fantasies and a utilitarian way of thinking which Marty et al. (1963) have called pensée opératoire”.

For the measurement of alexithymia, the Toronto Alexithymia Scale (TAS-20) by Bagby et al (1994) and the Bermond-Vorst Alexithymia Questionnaire by Bermond et al (2018a) are best known. In the present research the BVAQ will be used, because the TAS-20 only measures Cognitive Alexithymia while the BVAQ measures Affective Alexithymia as well (Vorst & Bermond, 2001). The cognitive alexithymia dimension (reduced ability to verbalize, identify and analyze emotions) has been found to be associated with mental illness (Moormann et al., 2008; Bermond et al., 2018b) and disorders (Van Dijke, 2018). On the other hand, the affective alexithymia dimension – which concerns reduced ability to become emotionally excited and a paucity of fantasies - has been found to be related to stress resistance (Moormann et al., 2018a), restricted creativity (Moormann et al., 2021a), and lack of empathy (Moormann et al., 2018b).

The distinction, made by Vorst and Bermond (2001) between the cognitive and affective alexithymia dimension has generated a new kind of research (see Moormann et al., 2008) in the alexithymia field by combing extreme scores on the cognitive and affective alexithymia dimension, resulting in four alexithymia types. The same procedure Eysenck used in his Trait-Type Factor Analytic Theory when combining his neuroticism-emotional stability dimension with his extraversion-introversion dimension (Pervin, 1980). Recent personality and neurobiological research outcomes indicate a distinct personality (Bermond et al., 2018b) and neurobiological make-up (Goerlich, 2018) for each alexithymia type.

In the present research however, alexithymia (Alexithymia Total; Cognitive Alexithymia, incorporating the sum total of reduced Verbalizing, Identifying and Analyzing emotions; and Affective Alexithymia, incorporating the sum total of Emotionalizing and Fantasizing) will only be used as dependent variable with maternal and paternal parenting styles as independent variables.

Research question, hypothesis, and exploration

In traditional attachment theories (Bowlby, 1969) the heroin in parent-child interactions (Ainsworth in 1983 with her Strange Room Situation) is the mother, not the father. The same holds for the first developmental stage of both Freud and Erikson (Carver & Scheier, 2000) where the mother-child interaction in infancy is crucial for becoming trustful versus mistrustful as an adult. In sexual abuse cases the mother, as primary caretaker, is often blamed by the female child victim for having led the abuse happen (Albach, 1993).

Without denying the mother as primary caretaker we also wanted to pay attention to the father by implementing both paternal and maternal parenting styles in the Leiden Parent-Child Interaction Questionnaire (LPCIQ-R) by Moormann & Van Putten (2004), starting from Roger's constructs of conditional regard versus unconditional positive regard, supplemented with Miller's (1981) notion that disorders in affect regulation relate to family atmospheres where the child is not allowed to express negative emotions. Furthermore, the remaining items relate to a) total or nearly total acceptance of the

children by their parents, b) clearly defined and enforced limits, and c) respect and latitude for individual actions that exist within the defined limits” (Coopersmith, 1967).

An item analysis on the LPCIQ-R using PCA resulted in two dimensions: emotional warmth (EW) and harsh disciplining (D).

The LPCIQ-R allows for distinguishing between four parenting styles, for the mother and father separately: Unconditional Positive Regard (UPR: EW++/DIS--), Conditional Regard (CR: EW--/DIS++), Confusing (CON: EW++/DIS--) and Indifferent (IND: EW--/DIS--).

Based on the environmental, theoretical frame described above it is hypothesized that parenting styles lacking emotional warmth (CR and IND) will lead to significantly higher scores on alexithymia total, cognitive alexithymia and affective alexithymia than parenting styles displaying emotional warmth (UPR and CON). This concerns both paternal and maternal styles.

Furthermore, from an explorative point of view it will be investigated whether differences between parenting styles exist on BVAQ subscale level. Again, regarding both paternal and maternal styles.

Our main research question is *do paternal and maternal parenting styles lacking emotional warmth induce alexithymia later in life?* With alexithymia we mean alexithymia total, cognitive alexithymia, and affective alexithymia.

The aim of the present research is to test whether parents displaying emotional warmth in the parent-child interaction will lead to significantly lower alexithymia scores in adulthood than parents with a cold and distant attitude towards the child.

Though in the older literature on attachment the mother is seen as the primary caretaker, in modern society the role of the father in child rearing has become more prominent. Furthermore, nowadays mothers are earning a living as well. Therefore, it will be investigated whether parenting styles of fathers versus mothers differ from each other in the development of alexithymia later in life.

Methods

Subjects

A total of 152 second year psychology students at Leiden University (62.5% women, 15.3% men from 18 to 60 years of age; 22.2% didn't fill in their sex; M = 22.84 years, SD = 5.9) participated in our research. When tested none of the students was familiar neither with the instruments used nor with the aim of our study.

Questionnaires

Bermond-Vorst Alexithymia Questionnaire (BVAQ; Bermond & Vorst, 1993), consisting of five subscales which relate to a reduced ability to: a) verbalize emotions (Verbalizing), b) identify emotions (Identifying), c) reflect upon emotions (Analyzing), d) fantasize (Fantasizing), and e) to have an emotional experience (Emotionalizing). The two alexithymia dimensions are based on the second order factor structure of the five BVAQ subscales (Vorst & Bermond, 2001) representing a Cognitive (reduced Verbalizing, Identifying and Analyzing) and an Affective (reduced Fantasizing and Emotionalizing) alexithymia component. Reliability and validity of the BVAQ are good (Vorst & Bermond, 2001; Bermond et al., 2007; Bermond et al., 2018a).

Leiden Parent-Child Interaction Questionnaire-Revised (Moormann & Van Putten, 2004) consists of 21 core items, for father and mother separately, reflecting the ideas of Rogers (1951), Miller (1981) and Coopersmith (1967) on parent-child interaction. A PCA on the items resulted for both parents in two dimensions: Emotional Warmth (EW; positive connotation: high score means emotional warmth) and Disciplining (D; negative connotation: high score means unreasonable punishment). Items of EW relate to acceptance, clear guidelines, justice, UPR, good reliance, admiration for, being treated honestly, getting attention, being loved, being hugged, allowance of expression of negative affect, and freedom

within certain limits. Items for D relate to inconsistent punishment, physical abuse, harsh punishment, evoking guilt feelings, acting out frustration and irritation towards the child, being afraid of, feeling being unwanted, and being touched unpleasantly. As the reliability coefficients of the Discipline dimension in the LPCIQ in the 1997 publication of Moormann et al. did not reach the .80 level, it was decided to add some D items to improve its Cronbach α . Now all reliability coefficients are very good: 1) EW father-child ($\alpha = .89$), 2) EW mother-child ($\alpha = .88$), 3) D father-child ($\alpha = .85$), and D mother-child ($\alpha = .85$).

Parental styles were constructed by combining extreme scores (> 70th percentile and < 30th percentile) on the EW and D dimensions, resulting in four parenting styles: CR or Conditional Regard (low on EW, high on D), UPR or Unconditional Positive Regard (high on EW, low on D), CON or Confusing (high on EW, high on D) and IND or Indifferent (low on EW, low on D). The items of the EW dimension are positively toned, while the items of the D dimension are negatively toned (harsh disciplining).

Procedure

The BVAQ and LPCIQ-R were administered on the Mental Information Processing and Neuropsychological Diagnostic System (MINDS'96 Test Manager, see Brand & Houx, 1992; Brand, 1996). All questionnaires were part of a much larger test battery, in which personality questionnaires and neuropsychological tests were included.

Statistical Analyses

As parental styles were constructed by combining extreme scores (based on percentile scores) on the Emotional Warmth and Discipline dimensions of the LPCIQ-R, only a selection of the respondents participated in the ANOVAs. The cut off scores for the father were: > 41 on EW and < 16 on D for UPR; < 35 on EW and > 18 on D for CR; > 41 on EW and > 18 on D for CON; < 35 on EW and < 16 on D for IND. The cut off scores for the mother were: > 44 on EW and < 20 on D for UPR; < 39 on EW and > 22 on D for CR; > 44 on EW and > 22 on D for CON; < 39 on EW and < 20 on D for IND.

All hypotheses were tested by running one-way ANOVAs with planned comparisons for father and mother separately with parental styles lacking EW (CR and IND) versus parental styles displaying EW (UPR and CON) as independent and the several alexithymia measures (Alexithymia Total, Cognitive Alexithymia, and Affective Alexithymia) as dependent variables.

In the explorative part one-way ANOVAs with post hoc comparisons were performed with both paternal and maternal parenting styles as independent and the 5 BVAQ subscales as dependent variables.

Results and Discussion

Results

It was hypothesized that *parenting styles lacking Emotional Warmth (CR and IND) will lead to significantly higher scores on Alexithymia Total, Cognitive Alexithymia and Affective Alexithymia than parenting styles displaying Emotional Warmth (UPR and CON)*. This hypothesis applies to both paternal and maternal styles.

In Table 1 the descriptive statistics for paternal styles are given (higher raw scores mean higher levels of alexithymia).

Table 1. Mean (M), Standard Deviation (SD) and Sample Size (N) of Alexithymia Total, Cognitive Alexithymia and Affective Alexithymia for the four paternal parenting styles

	Alexithymia-Total			Cognitive Alexithymia			Affective Alexithymia		
	M	SD	N	M	SD	N	M	SD	N
UPR	83.79	12.13	62	46.69	11.19	62	37.10	6.92	62
CR	91.29	18.17	55	53.87	15.24	55	37.42	8.55	55
CON	84.79	14.68	19	44.84	13.04	19	39.95	7.76	19
IND	89.13	14.25	16	49.31	12.38	16	39.81	10.26	16

The results of the one-way ANOVAs with Alexithymia Total, Cognitive Alexithymia, and Affective Alexithymia as dependent and the Paternal Parenting Styles as independent variables were significant for Alexithymia-Total ($F(3, 148) = 2.65, p \leq .05$) and Cognitive Alexithymia ($F(3, 148) = 3.76, p \leq .01$). However, the results for Affective Alexithymia turned out to be nonsignificant ($F(3, 148) = .99, p = .40$). Therefore, this variable was excluded from further analyses. The strength of the relationship between paternal parenting styles and Alexithymia-Total and Cognitive Alexithymia, as assessed by *Partial Eta Squared*, was small for Alexithymia-Total (with the level factor only accounting for 5% of the variance of the dependent variable) and medium for Cognitive Alexithymia (with the level factor accounting for 7% of the variance of the dependent variable). The *Levene's Test of Equality of Error Variances* was nonsignificant for both Alexithymia-Total and Cognitive Alexithymia. Therefore, Contrast Tests assuming equal variances were used. The contrast coefficients regarding UPR, CR, CON, and IND were -1, 1, -1, and 1 respectively.

The results of the contrasts confirm the hypothesis regarding Alexithymia-Total ($t(148) = 2.03, p = .02$ (one-tailed)) and Cognitive Alexithymia ($t(148) = 2.29, p = .01$ (one-tailed)).

Hence, though the hypothesis was rejected for Affective Alexithymia, paternal parenting styles lacking Emotional Warmth (CR and IND) indeed resulted in significantly higher scores on Alexithymia Total, and Cognitive Alexithymia than parenting styles displaying Emotional Warmth (UPR and CON).

In Table 2 the descriptive statistics for maternal styles are given (higher raw scores mean higher levels of alexithymia).

Table 2. Mean (M), Standard Deviation (SD), and Sample Size (N) of Alexithymia Total, Cognitive Alexithymia and Affective Alexithymia for the four maternal styles

	Alexithymia-Total			Cognitive Alexithymia			Affective Alexithymia		
	M	SD	N	M	SD	N	M	SD	N
UPR	85.44	14.03	36	46.64	11.53	36	38.81	8.06	36
CR	90.87	14.29	45	52.53	15.09	45	38.33	8.17	45
CON	84.80	13.88	25	47.84	9.71	25	36.96	6.66	25
IND	95.57	19.58	28	52.82	14.95	28	42.75	10.00	28

The results of the one-way ANOVAs with Alexithymia Total, Cognitive Alexithymia, and Affective Alexithymia as dependent variables and the Maternal Parenting Styles as independent variable were significant for the Alexithymia-Total ($F(3, 130) = 3.16, p \leq .05$) and Affective Alexithymia ($F(3, 130) = 2.50, p \leq .05$), but failed to reach significance for Cognitive Alexithymia ($F(3, 130) = 1.95, p = .13$). Therefore, this variable was excluded from further analyses. The strength of the relationship between maternal parenting styles and Alexithymia-Total and Affective Alexithymia, as assessed by *Partial Eta Squared*, was medium for Alexithymia-Total (with the level factor only accounting for 7% of the variance

of the dependent variable) and small for the Affective component (with the level factor accounting for 5% of the variance of the dependent variable). The *Levene's Test of Equality of Error variances* was nonsignificant for both Alexithymia-Total and the Affective Alexithymia. As a result, Contrast Tests assuming equal variances were used.

The contrast coefficients regarding UPR, CR, CON, and IND were -1, 1, -1, and 1 respectively. The results of the contrasts clearly confirmed the hypothesis regarding Alexithymia-Total ($t(148) = 2.03, p = .02$ (one-tailed)) and Affective Alexithymia ($t(148) = 2.29, p = .01$ (one-tailed)).

Hence, though the hypothesis was rejected for Cognitive Alexithymia, maternal parenting styles lacking Emotional Warmth (CR and IND) indeed resulted in significantly higher scores on Alexithymia Total, and Affective Alexithymia than parenting styles displaying Emotional Warmth (UPR and CON).

Explorative part

Next it was explored whether differences between parenting styles existed on BVAQ subscale level. Therefore, one-way ANOVAs with post hoc comparisons were run with paternal and maternal parenting styles as independent and the five BVAQ subscales as dependent variables.

In Table 3 descriptive statistics are given for paternal parenting styles (higher raw scores mean higher levels of alexithymia).

Table 3. Mean (M), Standard Deviation (SD) and Sample Size (N) of reduced Verbalizing, Fantasizing, Identifying, Emotionalizing and Analyzing for the four paternal parenting styles

	Verbalizing			Fantasizing			Identifying			Emotionalizing			Analyzing		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	M
UPR	17.3	5.6	6	18.5	5.0	6	15.2	4.5	6	18.5	4.2	6	14.0	3.9	6
	9	8	2	2	7	2	3	7	2	8	4	2	8	8	2
CR	20.9	7.4	5	18.8	6.4	5	18.1	6.4	5	18.5	4.9	5	14.7	5.0	5
	1	2	5	9	8	5	8	6	5	3	3	5	8	5	5
CON	18.2	7.3	1	21.2	7.6	1	14.3	4.7	1	18.6	4.2	1	12.2	3.1	1
	1	7	9	6	1	9	2	9	9	8	8	9	1	9	9
IND	19.2	6.3	1	20.5	7.4	1	15.6	4.4	1	19.3	4.3	1	14.3	3.7	1
	5	9	6	0	7	6	9	8	6	1	2	6	8	4	6

The results of the one-way ANOVAs with reduced Verbalizing, Fantasizing, Identifying, Emotionalizing and Analyzing of emotions as dependent and the paternal parenting styles as independent variables were significant for Verbalizing ($F(3, 148) = 2.83, p \leq .05$) and Identifying ($F(3, 148) = 3.95, p \leq .01$). The results for Fantasizing ($F(3, 148) = 1.23, p = .30$), Emotionalizing ($F(3, 148) = .13, p = .94$) and Analyzing ($F(3, 148) = 1.70, p = .17$) turned out to be nonsignificant. Therefore, these variables were excluded from further analyses. The strength of the relationship between paternal parenting styles and Verbalizing, as assessed by *Partial Eta Squared*, was small (with the paternal parenting style factor only accounting for 5% of the variance of the dependent variable). The strength of the relationship between paternal parenting styles and Identifying, as assessed by *Partial Eta Squared*, was medium (with the paternal parenting style factor only accounting for 7% of the variance of the dependent variable). The *Levene's Test of Equality of Error variances* was nonsignificant for both dependent variables (Verbalizing and Identifying). Therefore, the Bonferroni's Test assuming equal variances was used. The results indicate that paternal CR leads to significantly more difficulties in both Verbalizing and Identifying emotions ($p \leq .05$; two-tailed) than paternal UPR.

In Table 4 descriptive statistics are given for maternal parenting styles (higher raw scores mean higher levels of alexithymia).

Table 4. Mean (M), Standard Deviation (SD) and Sample Size (N) of reduced Verbalizing, Fantasizing, Identifying, Emotionalizing and Analyzing for the four maternal parenting styles

	Verbalizing			Fantasizing			Identifying			Emotionalizing			Analyzing		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	M
UPR	18.1	6.0	3	19.8	6.0	3	14.5	4.5	3	18.9	4.5	3	14.0	3.6	3
	1	0	6	9	6	6	0	6	6	2	8	6	3	2	6
CR	20.4	7.2	4	21.1	6.8	4	18.1	6.3	4	17.2	3.5	4	13.9	5.1	4
	2	8	5	1	4	5	8	5	5	2	7	5	3	4	5
CON	19.5	5.1	2	19.1	6.2	2	14.6	4.5	2	17.8	4.4	2	13.7	3.5	2
	2	3	5	6	6	5	0	2	5	0	8	5	2	7	5
IND	20.6	7.6	2	22.0	5.5	2	17.1	6.1	2	20.7	5.9	2	15.0	4.3	2
	4	7	8	4	3	8	1	3	8	1	7	8	7	5	8

Strong support was found for the hypothesis that both fathers and mothers lacking Emotional Warmth are a risk factor for developing general alexithymia - sum-total of the 5 BVAQ subscales - in their offspring. Hence, EW in the parent-child interaction is beneficial for a child's healthy emotion regulation development. So far so good, but does parental lack of EW affect the two alexithymia dimensions as well, and if so, what are the corresponding behavioral manifestations of Cognitive and Affective Alexithymia?

Discussion

Strong support was found for the hypothesis that both fathers and mothers lacking Emotional Warmth are a risk factor for developing general alexithymia - sum-total of the 5 BVAQ subscales - in their offspring. Hence, EW in the parent-child interaction is beneficial for a child's healthy emotion regulation development. So far so good, but does parental lack of EW affect the two alexithymia dimensions as well, and if so, what are the corresponding behavioral manifestations of Cognitive and Affective Alexithymia?

Cold and distant fathers induce Cognitive Alexithymia

Children of emotionally cold and distant fathers were found to suffer from Cognitive Alexithymia. An additional implication of this outcome is that Cognitive Alexithymia - experiencing difficulties with verbalizing, identifying, and analyzing emotions is associated with a wide array of psychological problems and disorders by Bailey & Henry (2007) for somatization; Moormann et al. (2008) for personality traits and psychopathology; Moormann et al. (2012a) for negative self, (2012b) for dissociation, and (2023) for conversion, in male and female CSA victims; Moormann et al. (2021b) for defense mechanisms; Bermond et al. (2018b) for personality traits and disorders; and Van Dijke (2018) for Borderline Personality Disorder (BPD) and Somatic Symptom Disorder (SSD). From the above research outcomes, it is concluded that cold and distant fathers contribute to the child's vulnerability to psychological disease.

Cold and distant mothers induce Affective Alexithymia

Emotionally cold and distant mothers on the other hand were found to induce Affective Alexithymia - paucity of fantasies, reduced imagination, and reduced Emotionalizing. Although research among elite athletes in serious competition indicates that Affective Alexithymia is an advantage because it enhances stress resistance (Moormann et al, 2018a), it is also associated with lack of empathy (Moormann et al., 2018b), a serious obstacle in communicating with and relating to others. Furthermore, Affective Alexithymia hampers creativity (Moormann et al., 2021a).

Who is to blame?

It should be noted that in the early attachment theories mothers were seen as primary caretakers (Ainsworth, 1983). If something went wrong mothers were usually blamed by childcare organizations for the child's mental problems, presumably caused by insecure attachment - avoidant, ambivalent and disorganized - between mother and child. However, our results indicate the contrary, i.e., that cold and distant fathers induce Cognitive Alexithymia in the child with an array of psychological problems and disorders as possible outcomes. Of course, it should be noted that inherent factors, problems at birth, brain diseases, and traumata may contribute to mental problems as well.

The impact of paternal and maternal Conditional Regard on alexithymia subscales

When looking at the outcomes on subscale level it appears that both CR (EW--/D++) fathers (36%, see Table 1) and mothers (34%, see Table 2) seem to induce reduced Identifying. According to results of the Toronto Alexithymia Scale, difficulties with Identifying emotions is the most predictive alexithymia subscale for a wide array of psychological problems (Taylor et al., 1997), particularly regarding somatization (De Gucht & Heiser, 2003). Rogers' theory on the devastating effect of CR on psychological well-being might be mediated by reduced ability to identify emotions. The same line of reasoning might hold for previous studies showing that negative parenting styles led to more psychological complaints than positive parenting styles (Lopes et al., 2015; Brand et al., 2009; Maynard & Harding, 2010; McGinn et al., 2005).

However, in the present research different effects of gender were found on subscale level as well. Only CR fathers led to significantly more difficulties in Verbalizing than UPR fathers. Problems with verbalizing emotions have been reported in CSA as well (Moormann et al., 2012b), where perpetrators were predominantly males, though not always fathers. As the abuse may take years, often starts at a very young age (before the age of ten), is surrounded by enforcing secrecy (emotional pressure) and coercion (position of power) - victims are withheld from both expressing their negative emotions and learning to attach a verbal label to the emotional experience, resulting in difficulties with verbalizing emotions.

Indifferent mothers induce reduced Emotionalizing

At first sight a rather puzzling result of the present study concerns the finding that Indifferent (EW--/D--) mothers (21%, see Table 4) induce reduced emotionalizing. Indifferent mothers are in fact absent mothers. They see their child more as a burden than a pleasure. Such mothers have other priorities. They are not there for the child and seem to communicate to the child: "I don't care what you are doing, it is not my business". The implicit meaning is "I don't love you". Rogers (1951) already emphasized the basic need of each child to be loved. If the child perceives that mother doesn't love him/her, a state of incongruence originates which according to Rogers results in neurotic anxiety. To protect itself against such overwhelming negative affect the child displays reduced emotionalizing, a closing off, a kind of psychic numbing, so characteristic of traumatized individuals.

Our results compared with earlier and recent studies

A comparison of our results with earlier and recent studies is awkward because the PBI, used in most of those studies, has comparable but nevertheless different dimensions than the LPCIQ-R. The Parental Bonding Instrument (Parker et al., 1979), assessing perceived parental care in terms of the dimension "care" and "overprotection" has features in common with the LPCIQ-R dimensions "emotional warmth" and "disciplining", but the items are based on different theoretical frameworks. Moreover, unlike the PBI, the LPCIQ-R has four parenting styles, deliberately constructed, and based on cutoff scores on the EW and D dimension. Finally, in the studies with the PBI, the TAS-20 has been used to measure alexithymia, while we used the BVAQ. It should be noted that the sum of the TAS-20 subscales is highly correlated ($r = .80$) with the cognitive dimension of the BVAQ (Vorst & Bermond, 2001). Hence, the term "alexithymia" in the PBI studies should be read as Cognitive Alexithymia in the LPCIQ-R studies.

Despite these differences the overall picture suggests that dysfunctional parenting styles are likely to induce a variety of alexithymia features (Thorberg et al. 2011; Cuzzocrea et al., 2015; McErlean & Lim,

2019). The most representative study on the relation between the PBI and TAS-20 is a meta-analysis by Thorberg et al. (2011), where findings confirm an especially strong association between maternal care and key elements of alexithymia. However, our results also demonstrate the importance of the father role in modern child rearing. Without criticizing the valuable work of Thornberg et al. it should be noted that this meta-analysis is based on studies before 2011, a period where in many more conservative family settings the mother still was seen as the primary caretaker (mother-child attachments, see Ainsworth, 1983), while the father had to earn a living.

Hence, many confounding variables such as different theoretical and methodological approaches, different countries, cultures, settings, and a different time span contribute to the outcome that the role of maternal versus paternal parenting styles on the various alexithymia measures is far from unanimous (Fukunishi et al., 1999; Fukunishi, & Paris, 2001; Kooiman et al., 1998, 2004, and Pellerone et al., 2017). More recent socio-economic changes in gender related rearing styles - nowadays, mothers have their own careers and fathers are more involved in child rearing - might be responsible for different research outcomes. Particularly the growing, active role of fathers in modern family life (Renk et al., 2003; Khaleque & Rohner, 2012) can be observed and is positively valued. However, the high percentage of indifferent mothers (21%, see Table 4)), associated with the child's affect intolerance, is a point of concern. The other side of the coin might be that IND mothers place their own careers above nurturing children, like fathers used to do when earning a living.

Etiology of alexithymia

As most dysfunctional parenting styles do affect alexithymia it is tempting to conclude that alexithymia is environmentally based. Results of studies on massive psychological trauma in childhood (for instance Berenbaum & James, 1994; Cloitre et al., 1997; Sher & Twaite, 1999; Bermond et al., 2008; Moormann et al., 2012a,b, 2023) seem to confirm this notion (called secondary alexithymia; for descriptions see Taylor et al., 1997, and Krystal, 1988). However, according to Sifneos (1988), the originator of the alexithymia construct, alexithymia is caused by an inherent malfunction of the brain or by neurobiological deficits (called primary alexithymia). Sifneos biological point of view on alexithymia is shared by biologically oriented adherents of temperament. Dumont (2010) for instance refers to some studies (Beer et al, 1998; Eysenck, 1990; Goldsmith et al, 1997) which conclude that patterns of child-rearing exert little impact in shaping the temperament of a child. More recent voxel-based morphometry studies on alexithymia types (Goerlich et al., 2015; Goerlich, 2018) suggest a differential impact of the cognitive and affective alexithymia dimensions on brain morphology (Goerlich- Dobre et al., 2014a; Van der Velde et al., 2014, Goerlich, 2018) and therefore, seem to support Sifneos' biological point of view. However, it should be noted as well, that adverse situational forces in childhood affect brain development. Neurobiological investigations do suggest that paediatric PTSD is associated with adverse brain behaviour (De Bellis & Keshavan, 2003), including those areas related to emotional behaviour (see also Bermond et al., 2006). The above fits well in the diathesis stress paradigm (Carver & Scheier, 2000), where a biological predisposition for or susceptibility to alexithymia is triggered by a situational stressor (dysfunctional parenting style or CSA).

Limitations

Like the PBI the LPCIQ-R measures perceived parenting styles. Hence, on the LPCIQ-R adult subjects must indicate how they perceive their interaction with their parents from childhood up to puberty. This retrospective procedure gives room for biases such as retrospective contamination as subjects not feeling happy might attribute their current mental state to external forces from the past. One of them is the interaction with father or mother.

Furthermore, we didn't investigate the impact of parenting styles on the subjects' gender, mainly because 22.2% of the respondents didn't indicate their gender. Therefore, we recommend including respondents' gender in future research.

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