Master Thesis

Let's Talk: Communication and Parent-Child Attachment in Families with a Chronically Ill Parent

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Abstract

This study examined the relationship between the frequency of communication and the quality of parent-child attachment in families with a chronically ill parent. Communication was referred to talking about parental illness, family tasks, and feelings. Participants were 97 families, including 97 ill parents, 81 healthy parents, and 155 adolescents between 10 and 20 years of age, who were visited at home and filled out questionnaires. A positive association between children's frequency of communication and the quality of parent-child attachment towards both parents was hypothesized. Likewise, it was expected that the ill parent's frequency of communication was positively associated with their evaluated quality of parent-child attachment. Pearson correlations and regression analyses revealed significant results for all hypotheses, confirming a positive relationship between the frequency of communication and the quality of parent-child attachment. Therefore, interventions treating parental chronic illness should foster family communication to maintain the quality of attachment and enhance the well-being of all family members. Yet, further research is needed due to limitations of the study.

Keywords: parental chronic illness, frequency of communication, parent-child attachment

Let's Talk: Communication and Parent-Child Attachment in Families with a Chronically Ill Parent

Prevalence rates of parents having a chronic medical condition (CMC), such as multiple sclerosis or brain damage, are increasing, ranging from 4 to 12% (Barkmann, Romer, Watson, & Schulte-Markwort, 2007). Ever more parents suffer from CMC due to the increased age of parents at the time of child-rearing (Shifren & Kachorek, 2003). Various studies on parents with CMC have been conducted, however, the effects it has on their children still need to be explored (Umberger et al., 2014). A limited number of papers were published focusing on children and adolescents having a chronically ill parent throughout the last 30 years (Umberger et al., 2013). Recent literature outlines that children of parents with CMC display more internalizing and externalizing problem behavior compared to children with healthy parents (Kaasbøll, Lydersen, & Indredavik, 2012; Sieh, Meijer, Oort, Visser-Meily, & Van der Leij, 2010). Moreover, the risk of experiencing continuous stress, as well as difficulties to adjust, is higher in these children compared to children of healthy parents (Sieh et al., 2010). However, the stress scores of adolescents affected by parental CMC are reduced when experiencing a higher quality of parent-child attachment (Sieh, Dikkers, Visser-Meily, & Meijer, 2012).

According to attachment theory, child attachment is defined by the proximity towards their attachment figures especially in stressful situations, for instance, when they fear that they will be abandoned (Bowlby, 1988; Heylen et al., 2015). The need for closeness in these situations has the function of being provided with safety and experiencing less anxiety when having contact with their attachment figure (Bowlby, 1988). In this paper, children's perceived quality of parent-child attachment is defined by the communication with their parents, confidence in their parents and alienation from their parents, whereas the quality of parent-child attachment perceived by the parent involves conflict resolution and acceptance of

their child. The definitions for the quality of parent-child attachment differ for children and adults due to the distinction between child - and adult attachment.

In comparison to child attachment, adult attachment involves a level of confidence in oneself and others of being able to provide and receive love and support (Roisman, 2009). This confidence is influenced by the mental representation of adults' personal attachment experiences, which has an impact on the responsiveness towards their own children (Ensink, Normandin, Plamondon, Berthelot, & Foangy, 2016). Ensink and colleagues studied the reflective functioning of 88 mothers from demographically diverse backgrounds and its influence on their children's attachment at 16-months of age. Reflective functioning was defined as mental representations of the mothers' childhood attachment relationships, which were positively associated with their children's attachment. It was found that mothers with a better reflective functioning were more sensitive and able to recognize and regulate negative emotions, which supports secure attachment in children. However, when parents have a serious illness, they might not be able to fulfill the child's need for safety (Armsden & Lewis, 1993). The ill parent might be impaired by the illness and may, therefore, not have the ability to provide attention for the child, which can lead to an insecure attachment (Fagan, 2003; Bowlby, 1988). The possibility of insecure attachment is especially high when the parent is experiencing substantial illness-related pain and when the onset occurred in the early stages of the child's life (Evans, Keenan, & Shipton, 2007).

According to Dearden and Becker (2004), many children adopt a caring role and take on additional responsibilities when the parent's ability to function is impaired and there is little support from other adults. Hereby, the child undertakes tasks and duties that are normally carried out by the primary caregiver. These tasks include household chores (e.g. cooking, cleaning), providing emotional support (e.g. comforting), and tasks involving personal care (e.g. nursing, dressing, feeding) and child care (e.g. caring for siblings) (Dearden & Becker, 2004). Eleven young adults, who are young caregivers to their parents

suffering from multiple sclerosis, were interviewed in a study by Bjorgvinsdottir and Halldorsdottir (2014). They reported that taking on caregiving tasks was exhausting and time-consuming. Moreover, the mental changes of their parents due to the illness were contributing to the experienced caregiver strain. Many adolescents felt unsupported and as their effort was not acknowledged by their parents, as well as other people outside the family, especially because there was little communication about the illness and the chores that were carried out. Adolescents that do not have time to meet friends and are overwhelmed by the illness of their parent and various caregiving tasks, will presumably distance themselves emotionally from their ill parent and will develop an insecure attachment.

In attachment theory, emotional availability and insecure attachment are not the only interacting elements. Poor communication is also an influencing factor in parent-child attachment (Bolby, 1988; Shaw & Dallos, 2005). In this paper, communication refers to the frequency of conversation between children and their parents about parental CMC, family tasks and each other's feelings. The verbal interaction between a child and its caregiver is one of the most important elements of a child's development. Particularly, the communication about emotions has been noted to be of importance since it fosters the child's understanding of affective experiences and the concept of attachment (Cassidy, 1994). In a study examining the attachment style of 44 preschoolers and their emotional communication towards their parents, Leibowitz, Ramos-Marcuse and Arsenio (2002) investigated that children uttering their emotions in a conversation score lower on the Separation Anxiety Test (SAT), indicating that they have a more secure attachment than children that score higher on this test.

Communication especially plays a significant role in families with parental CMC. Many parents do not talk about their illness with their children because they intend to protect them or feel guilty and ashamed or do not know how they should discuss this topic with their children (Imber-Black, 2014; Pihkala, Sandlund, & Cederstorm, 2012). Similarly, children may keep their emotions and thoughts to themselves because they are afraid of worsening the

symptoms of their ill parent (Umberger et al., 2013; Umberger et al., 2014). Children's expression of emotions about the illness of their parent may be enhanced when parents would talk more openly about their CMC (Pihkala et al., 2012). Besides, open conversation about the illness and ways how to deal with it helps the child or adolescent to understand the illness, its symptoms, and the effects it might have on their parents (Årestedt, Persson, & Benzein, 2014; Pihkala et al., 2012). During the conversation, it is important that parents use age-appropriate language that fosters the child's understanding and which assists the parents in exploring their children's feelings about the illness (Umberger, Risko, & Covington, 2015). Umberger and colleagues (2013) found that ineffective communication causes children to distance themselves from their parents emotionally, as well as physically. For instance, emotional distance was indicated by children depicting indifferent emotions about the parent's symptoms, and physical distance was portrayed by prolonged time spend at school or at friends' homes.

Communication can be influenced by factors such as gender. Leibowitz and colleagues (2002), for example, examined gender differences in emotional communication and explored that boys inhibit conversation with their parents more often by denying their emotions and expressing more negativity than girls, therefore scoring higher on the SAT. Another study by Gazendam-Donofrio et al. (2009) indicated that parents talk more openly with boys than with girls. Not only are there gender differences in adolescent communication but there are also age differences. Keijsers and Poulin (2013) conducted a longitudinal study examining the development of parent-child communication during the course of adolescence. A large sample of 390 participants was assessed nine times over the course of eight years between ages 12 to 19. Keijsers and Poulin explored that the developmental needs of children influence the parent-child communication during adolescence depending on their age. In their study, parent-child communication was assessed with a series of scales developed by Stattin and Kerr (as cited in Keijser & Poulin, 2013) including a 5-point Likert scale. Boys' open

communication towards their parents declines during early adolescence, whereas the willingness for disclosure and parental solicitation is low from middle adolescence onward. Vice versa, their level of secrecy is high during that time. Girls, on the other hand, display a decrease in parent-child communication during early adolescence, which increases in middle adolescence due to increased parent solicitation, disclosure and decreased secrecy.

Another factor influencing the communication between parents and their children is the parental socioeconomic status and level of education. In a longitudinal study, Sohr-Preston and colleagues (2013) investigated 139 families and their perspective on socioeconomic status, parental investment and child development over three generations. Results showed that higher income and education predicted more responsive communication in parents and consequently in their children, which was measured with the communication scales of the Iowa Family Interaction Rating Scales (IFIRS). Sohr-Preston et al. (2013) suggested that parents with a higher income experience less stress from financial worries and, therefore, have more time and resources to engage in communication with their children. They also found that mothers with a higher socioeconomic status talk more and longer to their children and use a larger variety of vocabulary when interacting with them. This extensive communication is most likely adopted by their children and enhances the communication within the family.

Family systems theory is a theory linking both attachment and communication (Bowen, 1966). It describes the individual as part of a system, namely the family, in which each member is influencing each other through interaction. Family systems theory is closely linked to attachment theory and both concepts use comparable constructs in investigating interactive patterns within the system, for example, displayed affection, conflicts, availability, support, and the exchange of information through communication (Caffery & Erdmann, 2000). According to Bavelas and Segal (1982), interaction between a system's members is always defined by communication, which does not necessarily have to be verbal but can

consist of any behavior. Assuming that any interaction between members of a family reveals information about the relationship between them, and with that about their attachment to each other, one could conclude that communication and parent-child attachment are interacting variables. For instance, a parent suffering from CMC will then have an influence on the child not only trough communication but also through non-communication. Consequently, the frequency of the communication will most likely have an effect on the quality of the parent-child attachment.

The association between communication and parent-child attachment in families with parental CMC is understudied. Therefore, we would like to contribute to the research of CMC in parents and its effect on their children, by focusing on the frequency of communication between parents and their children. Considering attachment theory, one could not only assume that secure attachment influences the communication between parent and child, but also that better and more frequent communication results in more secure attachment and hence a higher quality of parent-child attachment. This assumption provided the basis for this research project. The aim of this thesis is to investigate the association between the frequency of communication in families with parental CMC and the quality of the parent-child attachment in these families. Furthermore, this study is intended to increase insight into risk factors resulting from poor quality of parent-child attachment for children, as well as stressing the importance of communication in family interventions. This study examines whether the frequency of communication in families with a chronically ill parent is associated with the quality of the parent-child attachment experienced by parents and children. Moreover, it investigates whether there is a gender difference in children's frequency of communication.

To answer these research questions, four hypotheses were tested: (1) the frequency of children's communication about the illness, family tasks, and feelings is positively associated with experienced quality of parent-child attachment by the child towards the ill parent; (2) the frequency of children's communication about the illness, family tasks, and feelings is

positively associated with experienced quality of parent-child attachment by the child towards the healthy parent ; (3) the frequency of communication of the ill parent about the illness, family tasks, and feelings is positively associated with experienced quality of parent-child attachment by the parent; (4) Girls have a higher frequency of communication compared to boys.

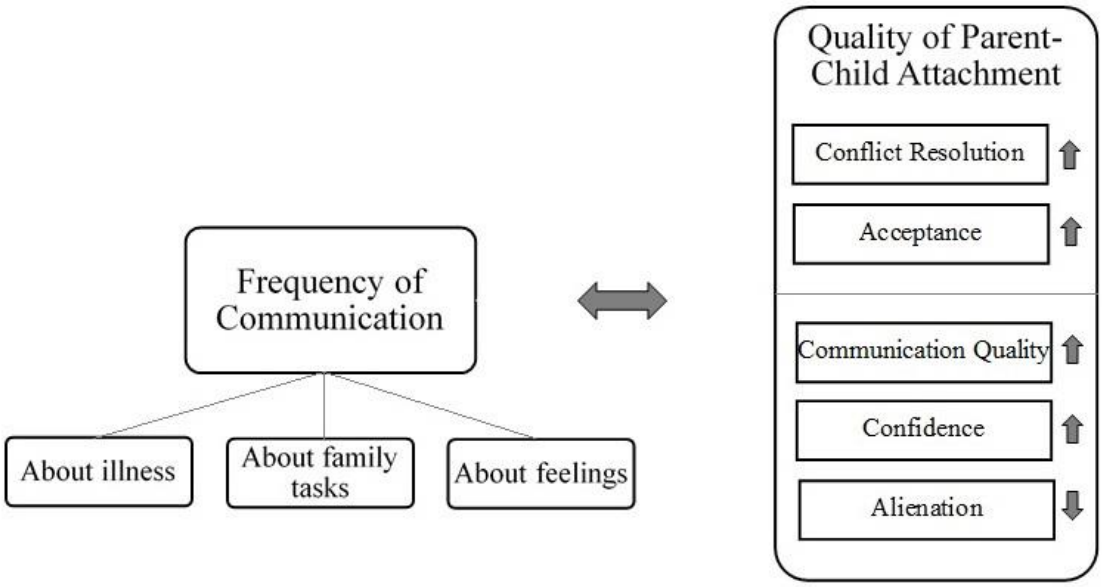

Figure 1. Illustration of the relationship between frequency of communication and quality of parent-child attachment.

Method

Participants

Participants were all family members living together of 97 families with at least one parent with CMC (97 parents with CMC and 81 healthy parents). In the majority of families, parents were coupled, whereas 14 families consisted of single parents. From these families, 155 adolescents ranging between 10 and 20 years of age (M = 15.05, SD = 2.32; 77 female, 76 male) participated in the study. Parents' chronic illnesses had to be present longer than six months causing functional impairment. Parental CMC included multiple sclerosis (30.9 %), rheumatoid arthritis (18.6 %), muscle disease (15.5 %), brain damage (14.4 %), spinal cord injury (7.2 %), inflammatory bowel disease (6.2 %), Parkinson disease (5.2 %), and diabetes type I with physical complications (2.1 %).

Of 104 families initially participating in the study, seven families were excluded. Data from three families were omitted because of missing data of the children, and another three families were taking out of the data set because of missing data of the parent with CMC. In one family, both parents had CMC and the data of the less disabled were excluded from the analyses.

Measures

Quality of parent-child attachment. To investigate the quality of parent-child attachment evaluated by the child, the Inventory of Parent and Peer Attachment – verkorte versie *(*short version; IPPA-V; see Appendix*)* was used. Adolescents answered 24 items about their attachment to both parents on six different subscales, namely *quality of communication with father* and *quality of communication with mother* (e.g. "Talking over my problems with my father/mother makes me feel ashamed or foolish"), *confidence in father* and *confidence in mother* (e.g. "My father/mother accepts me as I am"), and *alienation from father* and *alienation from mother* (e.g. "I feel angry with my father/mother"). Items were rated on a 4-point frequency scale from 1 (*almost never*) to 4 (*almost always*), where six items were being recoded because they were negatively formulated in the questionnaire (Armsden & Greenberg, 1987). To investigate the quality of parent-child attachment for each parent separately, total scores were generated as a sum of the subscales. Thus, higher scores meant a better quality of parent-child attachment. The internal reliabilities (α = .87 for mothers, α = .89 for fathers) and convergent validity of the IPPA-V as a measure of attachment in adolescence has been shown to be good (Armsden & Greenberg, 1987). In this study, the reliability (Cronbach's alpha) for the different subscales was: *communication with father* (α = .76), *confidence in father* (α = .83), *alienation from father* (α = .79), *communication with mother* (α = .77), *confidence in mother* (α = .77), and *alienation from mother* (α = .70). The reliability for the sum score of the questionnaire was α = .90.

To establish the quality of parent-child attachment as evaluated by parents, the Parent-Child Interaction Questionnaire – Revised (PACHIQ-R; see Appendix*)* was applied. Twenty-one items were distributed into two subscales, comprised of *conflict resolution* (e.g. "There are many conflicts between my children and me which we cannot solve") and *acceptance* (e.g. "I take my time to listen to my children"). The items were rated on a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) with 13 items being recoded due to negative formulations. Higher total scores indicated a better quality of parent-child attachment (Lange, Evers, Jansen, & Dolan, 2002). Lange and colleagues present evidence of the reliability of the PACHIQ-R due to high internal consistency (α = .78 to .95; Lange et al., 2002). Moreover, concurrent validity is presented by demonstrating high correlations between the test scores and other assessments measuring parents' and children's functioning. The reliability of the sum score of the PACHIQ-R in this study was α = .86.

Communication. The Gezincommunicatie Vragenlijst (Family Communication Questionnaire) was developed by Sieh (2012; see Appendix) as part of the Screening Instrument for Adolescents of Parents with Chronic Medical Condition (SIAPCMC) to identify the frequency of communication in families. Sieh developed separate questionnaires for children and their parents, which include three subscales comprising 13 items. Respondents could indicate the frequency of their communication about the *illness*, *family tasks*, and *feelings* on a 4-point scale ranging from 1 (*never*) to 4 (*daily*). In the current study, we used a shorter version of the Gezincommunicatie Vragenlijst containing only six items for the children's questionnaire and three items for the questionnaire for parents with CMC. For the children's questionnaire, each subscale included two items (*communication with ill parent* and *communication with healthy parent*, α = .77). The questionnaire for parents only contained one subscale with three items, namely *communication with the child*. Therefore, the item reliability (α = .60) of the questionnaire for the parent with CMC is relatively low.

Procedure

Families were recruited in hospitals, rehabilitation and community centers, schools and public places between September 2008 and April 2010 across the Netherlands. Further, 30 random general practitioners and organizations treating chronically ill patients were asked to recruit additional participants by providing brochures, hanging posters in their waiting rooms, or verbally inviting them to take part in the study. When participants indicated interest through e-mailing or calling the researcher, they received additional information about the study design and details about participation. They were then screened via telephone to determine whether they met the inclusion criteria. Finally, participants were provided with an informed consent form and an additional information package. After written consent had been obtained, trained research assistants made an appointment with the families and administered questionnaires at the families' homes, following a research protocol. Children and their parents both filled out the test battery, which included the outcome measures of the variables of interest: quality of parent-child attachment and frequency of family communication. As an incentive, adolescents could choose between tickets for a movie theater, a mobile phone cover, or a gift voucher after they completed the test battery. The families were updated through a newsletter on the status of the research project on four occasions. The study was approved by the ethical board of the Research Institute of Child Development and Education of the University of Amsterdam in 2012.

Statistical analysis

Preparation of data. Prior to the statistical analysis, we excluded participants that had missing values in the Gezincommunicatie Vragenlijst, which would have caused biased data because of the existence of only a few items per scale. Then, Little's MCAR test was conducted to investigate whether the remaining missing values in the data were missing completely at random (MCAR). Analyses showed the missing values of the children's and healthy parents' data set to be non-significant, meaning that the missing values were missing completely at random. The data set of the parents with CMC, however, had a significant

outcome and values missing completely at random could not be assumed. However, since less than 5% of values were missing, we could assume that the values were at least missing at random (MAR). Taking this into consideration, we performed multiple imputation (regression method) to estimate values for the missing data. During the process, a pooled value for each missing value was estimated after five iterations were performed, making the data sets complete.

Preliminary analysis. As a first step of the statistical analysis, we checked for statistical assumptions about the data to prevent erroneous results. The assumptions suggest data to be normally distributed, linear, independent and the variances and regression slope to be homogeneous (Field, 2009). After the assumption check, we analyzed frequencies of communication scores and quality of parent-child attachment scores of both, parents with CMC and their children, looking at the descriptive means and standard deviations. Moreover, we examined demographic statistics (socioeconomic status, education, age, and gender) to control for their potential confounding influence.

Main analyses. For the first three hypotheses, partial correlational analyses were computed to examine the relationship between the variables of interest. Hereby the Pearson product-moment correlation coefficient (Pearson's *r*) was estimated, indicating the direction of the correlation. Starting with the first hypothesis, we explored the relationship between the frequency of children's communication about the illness, family tasks, and feelings (independent variable IV1) and the evaluated quality of parent-child attachment by the child towards the ill parent (dependent variable DV1). For the second hypothesis, the relationship between the frequency of children's communication about the illness, family tasks, and feelings (IV1) and the quality of parent-child attachment evaluated by the child towards their healthy parent (DV2) was assessed. For the third hypothesis, we examined the relationship between the frequency of communication of the ill parent about the illness, family tasks, and feelings (IV2) and the quality of parent-child attachment evaluated by the parent (DV3). For

the first two hypotheses, a partial correlation analysis was performed to control for the covariates age, gender, and parental education and socioeconomic status. For the third hypothesis the partial correlation analysis only included parental education and socioeconomic status. Additionally, we observed how the correlations of the variables of interest change when investigating different levels of parental education, socioeconomic status and age of children.

In the following, regression analyses (enter method) were conducted for all three hypotheses separately to demonstrate the relationship between the variables of interest while controlling for age, gender, parental socioeconomic status, and education (Moore, McCabe, & Craig, 2012).

To test the fourth hypothesis, gender differences in the frequency of children's communication was examined by using an analysis of covariance (ANCOVA; Rutherford, 2001). This analysis tests whether the means of the dependent variable (frequency of communication about illness, family tasks, and feelings; DV4) are equal across all levels of the categorical independent variable (gender of child; 0=male, 1=female; IV3), while controlling for effects of other variables that are not of primary interest, namely covariates such as parental socioeconomic status and education, and age of child. All statistical analyses were performed with SPSS (Howitt & Cramer, 2008), version 22.

Results

Preparatory analysis

For the analysis of our data, we chose to make use of correlation analyses, regression analyses and ANCOVA. In order to correctly use these procedures, we checked the statistical assumptions as a precondition. Correlation analyses and regression analyses require normal distribution of the data (Shapiro-Wilk test, histograms), a linear relationship between independent and dependent variable (Scatterplots), statistical independence of the errors (Durbin-Watson test), and homoscedasticity between the errors (Scatterplots of the residuals).

For ANCOVA, independence of the covariates (Non-significant differences between means of the covariates across levels of the independent variable) and homogeneity of the regression slope (Non-significance of interaction effect of the covariates) were assumed (Field, 2009). All of these assumptions were met, except the assumption of normality. The data of the dependent variables were negatively skewed; nevertheless, according to the Central Limit Theorem (CLT), data of samples larger than 30 can be assumed to be normally distributed regardless of their shape (Field, 2009). In order to detect outliers, a boxplot graph was created and the Cook's Distance was analyzed to detect whether the outliers significantly influence the data. All values of Cook's distance were below 1, allowing us to keep the outliers in the data. As part of the preparatory analysis, frequencies of communication scores and quality of parent-child attachment scores of parents with CMC and their children were conducted. Further, before the execution of the ANCOVA to test the fourth hypothesis, the correlations between the covariates and gender were estimated, which were all non-significant. Therefore, the use of an ANCOVA was not justified and a normal one-way ANOVA was performed, including the variables gender and frequency of children's communication.

Descriptive statistics

Descriptive statistics for the data of the children and their parents with CMC are displayed in Table 1. In general, children's mean scores of frequency of communication were normally distributed (M = 13.71, SD = 3.29), indicating that most participants talk regularly about the illness, family tasks, and feelings with their parents. On the contrary, children's mean scores on the IPPA, evaluating the quality of attachment towards their ill parent, were high (M = 39.74, SD = 6.12), with the majority of participants scoring higher than 35 out of 48. The mean scores of the IPPA, evaluating the attachment towards the healthy parent, were similarly high (M = 38.01, SD = 7.59), though significantly different from the attachment scores towards the ill parent, $t(152) = 2.68$, $p = .008$.

Corresponding to their children, ill parents' frequency of communication scores were as well normally distributed (M = 7.29, SD = 1.51), with the majority indicating to communicate regularly about the illness, family tasks, and feelings with their children. Likewise, parents experiencing CMC mostly evaluated the attachment with their children positively, which is indicated by the high mean scores on the PACHIQ-R (M = 89.13, SD = 10.33).

Table 1

Descriptive statistics of communication scores and quality of parent-child attachment scores of children and their parents with CMC

	Children			Parents with CMC	
	Total communication	Attachment ill parent	Attachment healthy parent	Total communication	Attachment child
N	153	153	153	97	97
Minimum	6	13	12	3	49
Maximum	22	48	48	11	104
Mean	13.71	39.74	38.01	7.29	89.13
SD	3.29	6.12	7.59	1.51	10.33

Note. Means are based on total scores of the Gezincommunicatie Vragenlijst, IPPA, and the PACHIQ-R

Main analyses

Correlation analyses. Prior to the regression analyses, correlation analyses were performed to analyze the correlation between the independent variable and the dependent variable for each hypothesis, controlling for parental socioeconomic status and education, and the child's age and gender. The frequency of children's communication about the illness, family tasks, and feelings with their parents significantly correlated with the parent-child attachment towards their ill parent, $r(117) = .32$, $p < .001$, and their healthy parent, $r(117) = .26$, $p = .005$. Moreover, the frequency of communication of the parent with CMC was as well

significantly correlated with the quality of parent-child attachment with their children, $r(76) = .23$, $p = .038$.

In addition to observing the correlations for our main hypotheses, we were also interested in examining the correlations between the covariates only. Hereby, we could see that the education of both parents and their socioeconomic status were all positively correlated (see Table 2). Furthermore, we were looking at the different levels of parental education, socioeconomic status and children's age and gender to see whether the correlations between the independent variables and dependent variables of each hypothesis changed depending on the different levels of the covariates. The independent and dependent variables for the first two hypotheses correlated when the ill parent, $r(42) = .32$, $p = .038$, and the healthy parent, $r(42) = .50$, $p < .001$ attended higher academic education (Kweekschool, ped. academia, soc. academia, HTS, HEAO, or HBO[1]). Further, the correlation between the frequency of children's communication and the quality of parent-child attachment towards the healthy parent was only significant when children were 12 years old, $r(20) = .52$, $p = .015$. The correlation between the frequency of children's communication and the quality of parent-child attachment towards the ill parent was only significant when children were 17 years old, $r(17) = .58$, $p = .012$. Moreover, the correlation between the frequency of children's communication and the quality of parent-child attachment towards their ill parent was significant when the child was female, $r(76) = .41$, $p < .001$, whereas the correlation between the frequency of communication and the quality of parent-child attachment towards the healthy parent was significant regardless of the gender of the child, $r(75) = .28$, $p = .014$ for boys and $r(76) = .48$, $p < .001$ for girls. That means that only girls evaluate the quality of parent-child attachment towards both parents as more positive when the frequency of communication is high. Finally, the frequency of communication of the parent with CMC

[1] Kweekschool = college, ped. academia = Pedagogic academy, soc. academia = Social academy, HTS = Higher level technical school, HEAO = School for higher education in economics and managment, HBO = University of applied sciences

correlated with the evaluated quality of parent-child attachment when the parent attended secondary education, such as VHMO Gymnasium, HBS, Atheneum, MMS, or HAVO[2], $r(10) = .79$, $p = .004$.

Table 2

Correlations between education of both parents and their socioeconomic status

		Education Ill	Education Healthy	SES
Education Ill	Correlation	1.000	.42	.53
	Significance		.000	.000
	Df	0	122	122
Education Healthy	Correlation	.42	1.000	.52
	Significance	.000		.000
	df	122	0	122

Note. Only the significant correlations between the covariates are displayed

Regression analyses. Testing the first three hypotheses, multiple regression analyses were completed. For the first two hypotheses, the aforementioned covariates were included, whereas in the third hypothesis only parental socioeconomic status and level of education was contained.

The first hypothesis predicted frequency of children's communication about the illness, family tasks, and feelings to be positively associated with experienced quality of parent-child attachment by the child towards the ill parent. Using the enter method, the frequency of children's communication and the covariate age explained a significant amount of variance in the evaluated quality of parent-child attachment towards their ill parent, $F(2, 150) = 10.63$, $p < .001$ $R^2 = .12$, $R^2_{Adjusted} = .11$. The analysis showed a significant effect, supporting our hypothesis that the frequency of children's communication is positively

[2] VHMO Gymnasium = Secondary school (including ancient languages, ages 12-18), HBS = Higher mixed education (ages 12-17), Atheneum = Secondary school (excluding ancient languages, age 12-18), MMS = Middle-level girl's school (ages 12-17), HAVO = Higher general continued education (ages 12- 17)

associated with the evaluated quality of parent-child attachment towards the ill parent when age was controlled for, $\beta = .24$, $t(152) = 3.17$, $p = .002$.

The second hypothesis predicted the frequency of children's communication about the illness, family tasks, and feelings to be positively associated with evaluated quality of parent-child attachment by the child towards the healthy parent. In this regression analysis, only the frequency of communication explained a significant amount of variance in the model, $F(1,151) = 25.34$, $p < .001$, $R^2 = .14$, $R^2_{Adjusted} = .14$, which resulted in the performance of a simple regression analysis including only the independent and dependent variable. The analysis presented a significant result, supporting the second hypothesis that the frequency of children's communication is positively associated with the evaluated quality of parent-child attachment towards their healthy parent, $\beta = .38$, $t(152) = 5.03$, $p < .001$.

The third hypothesis predicted that the frequency of communication of the ill parent about the illness, family tasks, and feelings is positively associated with experienced quality of parent-child attachment by the parent. Here again only the frequency of communication of the parent with CMC explained a significant amount of variance in the evaluated quality of parent-child attachment towards their children, $F(1, 95) = 4.44$, $p = .038$, $R^2 = .04$, $R^2_{Adjusted} = .03$, resulting in another simple regression analysis. The analysis revealed that the frequency of communication of the parent suffering from CMC is positively associated with the evaluated quality of parent-child attachment, $\beta = .21$, $t(96) = 2.11$, $p = .038$.

Figures of the regression lines per hypothesis can be found in Figures 1, 2, and 3, respectively.

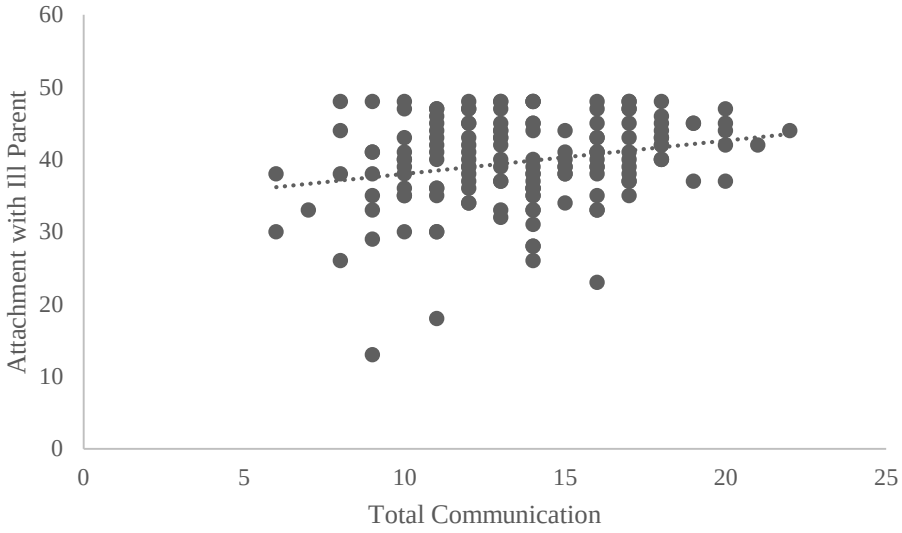

Figure 1. Relationship between frequency of children's communication and the evaluated quality of parent-child attachment towards their ill parent.

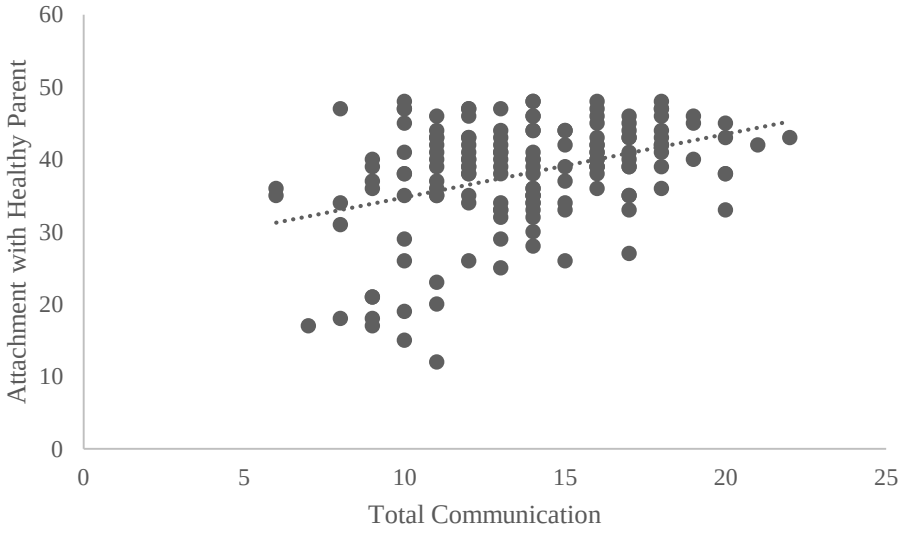

Figure 2. Relationship between frequency of children's communication and the evaluated quality of parent-child attachment towards their healthy parent.

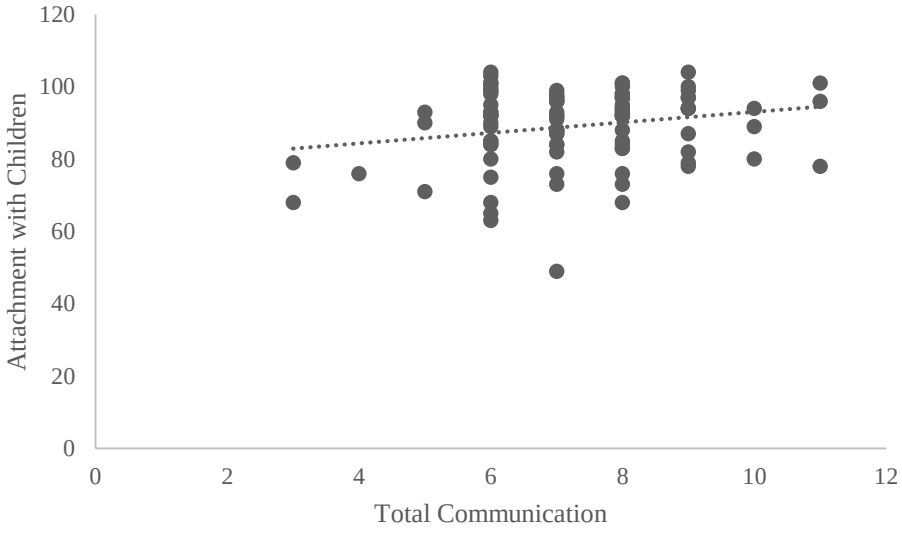

Figure 3. Relationship between frequency of communication of parent with CMC and the evaluated parent-child attachment towards their children.

ANOVA. To test the fourth hypothesis, stating that girls communicate more compared to boys, an ANOVA was performed. Results showed a significant effect of gender in the frequency of children's communication at a 0.05 significance level, $F(1, 151) = 4.17$, $p = .043$, $R^2 = .027$, $R^2_{Adjusted} = .020$, meaning that girls display a higher frequency of communication compared to boys.

Discussion

The aim of this study was to investigate the relationship between the frequency of communication and the quality of parent-child attachment in families with parental CMC. The results of all hypotheses were significant, confirming the theory that the frequency of communication is positively related to the quality of parent-child attachment. As expected, the frequency of children's communication about the illness, family tasks, and feelings was positively associated with the quality of parent-child attachment towards both parents. Further, the frequency of communication of the parent with CMC about the illness, family tasks, and feelings had a positive relationship with their evaluation of quality of parent-child attachment. Lastly, we found that girls have a higher frequency of communication with both

parents about the illness, family tasks, and feelings compared to boys. Discovering a positive relationship between the frequency of communication and the quality of parent-child attachment is in line with prior research (Bolby, 1988; Shaw & Dallos, 2005), suggesting that communication is an influencing factor in parent-child attachment. Beginning in early childhood, infants try to communicate with their caregivers with crying, for example. Depending on whether the parent reacts with providing comfort or ignoring the child, the child memorizes the consequences of its action and with that how these actions shape the parent-child attachment (Shaw & Dallos, 2005). A child that learns that the parent provides comfort when feeling uncomfortable may have a more secure parent-child attachment than a child that is being ignored when not feeling well (Shaw & Dallos, 2005). Furthermore, the frequency of communication predicted a better quality of parent-child attachment when family members talked about family tasks. Communicating about family tasks could prevent children from distancing themselves emotionally or physically from their parents because they feel like they take over too many tasks that are usually carried out by their parents, as it was depicted by Dearden and Becker (2004). If parents appreciate the help of their children and ask their children how they are dealing with the family tasks, it presumably will increase the quality of parent-child attachment because the ill parent is still providing emotional support for the child. Kochanska (1997, 2002) indicated two components of parent-child attachment, which are positive affect or good times and mutual cooperation or responsiveness (MRO). Hereby, MRO includes coordinated routines, mutual cooperation, harmonious communication and emotional ambiance, which can all be expressed by communication. So, when a parent is physically unable to provide positive affect by playing or spending time with the child, for instance, the MRO component of the parent-child relationship could still be maintained by communication. Particularly, assuming there is an additional healthy parent supporting the children with family tasks and everyday-life issues and who is available as a caregiver, the children feel more supported and the quality of parent-child attachment should

not be strained. Finally, the communication about feelings appears to be the most important topic, since emotions are also involved in the communication about the illness and family tasks. Current literature (Krattenmacher et al., 2013; Kaplow et al., 2013) displays that the expressive ability of children predicts better coping strategies with the illness of the parent and better functioning of the child in general. Moreover, communication and positive parenting is associated with a better quality of parent-child attachment. These findings are consistent with the outcomes of Leibowitz's and colleagues study (2002), exploring communication about emotions to enhance a more secure attachment, which was depicted in lower SAT scores. Moreover, the results of our study endorse the assumption that girls communicate more compared to their male counterpart. Leibowitz's and colleagues' investigation that boys inhibit communication with their parents by denying their emotions more often than girls could be a plausible explanation for the findings. Further, boys' developmental needs do not include open communication with their parents and the willingness for disclosure and parental solicitation. Consistently, their level of secrecy is high (Keijsers and Poulin, 2013). This means, that boys might not feel the need to share information about themselves and their feelings with their parents and therefore communicate less than girls, whose need for disclosure is higher in adolescence than for boys (Keijsers and Poulin, 2013). In contrast to Sohr-Preston and colleagues (2013), we could not find significant results for socioeconomic status or education affecting the relationship between the frequency of communication and quality of parent-child attachment. This could be due to a well-educated sample population, in which the majority has at least a secondary school degree and many completed higher education, such as university. Concerning the socioeconomic status, most parents earned 2000 euros or more per months, representing a rather wealthy sample. Therefore, conclusions about differences to less educated families or families with a lower monthly income were difficult to draw from this study's sample. Age, however, was a significant covariate in the relationship between children's frequency of communication and

the quality of parent-child attachment towards the parent with CMC. Age being only significant when concerning the quality of parent-child attachment with the ill parent but not with the healthy parent, leads to the assumption that children experience the illness of their parents differently depending on their age. For instance, children of different ages have a different conceptualization of illness and therefore a different coping style with the CMC of their parent (Burbach & Peterson, 1986). In this line, older children have a better understanding of the illness because of their more mature cognitive ability and consequently cope differently with CMC compared to younger children (Burbach & Peterson, 1986). This difference may influence the relationship between the frequency of communication and the quality of parent-child attachment in our study. Further, the parent-child attachment might change due to the severity of the illness of the parent. Depending on the onset of the illness, older children might already live longer with an ill and maybe even more impaired parent compared to younger children.

Regarding family systems theory (Bowen, 1966), parental illness most likely will have an influence on the rest of the family (Dura & Beck, 1988). Several interventions for the treatment of parental CMC that include the whole family of the patient are discussed in current literature (Årestedt et al., 2014; Golby, 2014; Shields, Finley, Chawla, & Meadors, 2012). For parental psychiatric disorders it has already been shown that adopting communication about the illness in families is effective in preventing psychiatric problems in children, as shown in the Beardslee's family intervention (Beardslee, Gladstone, Wright, & Cooper, 2003). Looking at our results, we can assume that including family communication about the illness could also be effective in the treatment of CMC to enhance family functioning and well-being among a family's members. Levin, Dallago, and Currie (2012) explored parent-child communication to predict children's life satisfaction and well-being. In their study, children indicated how easy or difficult it is for them to talk about things that are bothering them with their parents on a 4-point rating scale. Difficult communication with one

parent predicted reduced life satisfaction for boys. Similar results were found for girls, however, easy parent-daughter communication additively reduced the chance of experiencing low life satisfaction for girls. As our results showed that girls communicate more than boys, interventions fostering the frequency of communication may especially be helpful for sons of parents suffering from CMC. Additionally, interventions could include advice for ill parents, teaching them how to approach their children with the topic. Learning skills of how to start a conversation about the illness, may reduce parental fear of confronting their children and will make conversation about other topics related to the illness more accessible, for instance, communication about family tasks and ones feelings. Furthermore, psychoeducation could be helpful in providing knowledge about the illness, which will make it easier to convey information to family members. We assume that family communication will not only benefit children of parents with CMC but also the parents themselves. Even though there are different viewpoints on whether parent-child conflict has an impact on the health outcome of ill parents (Umberger et al., 2014; Rotherman-Borus, Robin, Reid, & Draimin, 1998), we surmise that a low quality of parent-child attachment could be a great burden for parents besides the symptoms they already experience. Umberger and colleagues (2014), for instance, explained that children often express anger towards their parents and their illness when they are not able to express their feelings or are in the middle of a grieving process. This anger can be demonstrated in disrespectful outbursts, for example, which may create more distance in the parent-child relationship. Yet, there is only little research on how the child's response to parental CMC effects the ill parent. Nevertheless, we presume that communication about the illness, family tasks and feelings initiated from both sides, from the parent with CMC and their children, is important in enhancing the well-being for all family members.

This study has some limitations. The generalizability of the results may be constrained because of several reasons. First, we expect families displaying interest in such a study to be more open about the illness than families not interested in the study. Additionally, participants

that volunteer to take part in a study distinguish themselves from nonvolunteers in characteristics such as education, socioeconomic status, gender and age, among many others (Kazdin, 2003). Second, concerning the age of the children in our sample, we included children between 10 and 20 years of age. Yet, the majority of children (79%) were between 12 and 17 years old, reducing the generalizability to populations older or younger than that. In future studies, it would be interesting to expand the age range to see whether there are differences between various age groups, also including children younger than 10 and older than 20 years. Third, there might be a lack of diversity in the sample population. Participants were all Dutch, reflecting the Dutch culture and western society, which differs in communication and attachment compared to other countries. Agishtein and Brumbaugh (2013) found that the country of origin, cultural identification, ethnicity, religion, as well as living in a collectivistic culture have an influence on one's attachment. Furthermore, culture can also have an impact on people's communication. Individualistic and collectivistic cultures differ in their modes of attention. For instance, in individualistic countries, the mode of attention is rather focal, meaning that people's attention is more objective (Senzaki, Masuda, Takada, & Okada, 2016). Since the mode of attention is also displayed in communication, Dutch families might focus more on the illness itself in conversations, whereas families from collectivistic cultures might concentrate more on contextual information concerning the illness. More detailed information about the illness and its consequences will likely help the children of parents experiencing CMC to better understand the illness (Årestedt et al., 2014; Pihkala et al., 2012). Nevertheless, all too frequent communication about parental illness can also have negative effects, such as concentrating solely on the illness in conversations or making the child more aware of the consequences for the parent, such as death, which can be terrifying for children (Årestedt et al., 2014; Caughlin, Mikucki-Enyart, Middleton, Stone, & Brown, 2011). However, most literature describes not communicating about the illness as having worse outcomes for the child of an ill parent than talking too regularly about it

(Paliokosta et al., 2009; Park & Koo, 2009; Kennedy & Lloyd-Williams, 2009). Another drawback of the study is that we did not use a healthy comparison group, with which the results could be conferred with. It would be interesting to examine whether healthy families communicate as much as families with a parent suffering from CMC. Though, it would be difficult to compare both family types due to the fact that families with healthy parents would not communicate about an illness. Nonetheless, results might depict that the frequency of communication plays an even more important role in families with an ill parent because a positive attachment might be comprised due to circumstances linked to the illness, such as taking over family tasks or caring for the parent. Besides, the severity of the symptoms of the illness and its adverse effects, such as depression, can have an impact on family functioning, which includes communication and attachment between family members (Bogosian, Moss-Morris, & Hadwin, 2010; Rolland, 1999). Rolland's family systems model (Rolland, 1999) addresses different chronic illnesses and the strains they put on family functioning. Rolland states that the impact the illness has on the family functioning depends on the illness' onset, course, outcome, and the level of incapacity and trajectory. For instance, family functioning might be more strained when a parent suffers from an illness with an acute onset, a progressive course, a possible fatal outcome and which is additionally causing cognitive and motor deficits compared to other illnesses. Further, the results need to be treated with caution because the data of the attachment variables were not normally distributed. Even though, the mean should approximately be normally distributed due to the large sample size (Central Limit Theorem), one should keep in mind that data were not originally normally dispersed. Finally, the reliability of Gezincommunicatie Vragenlijst, measuring the frequency of communication, is rather low, which needs to be taken into account when interpreting the results of our study.

Despite some limitations, our study stresses how important communication in families with a parent suffering from CMC is. When children are informed about the illness and have

the possibility to exchange their feelings with their parents, including worries and uncertainties, family functioning might be sustained or improved by gaining a better insight on the well-being of all family members. Hence, everybody's needs can be taken into account and children might learn how to deal with the complications that come along when living with an ill parent. When the illness becomes a common topic in the family by regularly talking about it, a child might be less terrified by it, since it is openly addressed in the family. That way, the child experiences a better psychosocial adjustment (Shands, Lewis, & Zahlis, 2000), which could mean that stress, problem behavior and a reduced quality of parent-child attachment may be minimized. To enhance family functioning and well-being, communication among family members should be integrated and promoted in the treatment of CMC. Moreover, our results show that the frequency of communication not only was associated with the quality of parent-child attachment towards the ill parent but also towards the healthy parent. This means, that regular communication in general might be important in maintaining a positive parent-child attachment. However, in order to gain more certainty, further research replicating our findings is needed. Future research should use a more diverse sample, including participants from other cultures and children with a wider age range. Furthermore, it would be interesting to divide future samples into illness types of the parent because they might influence the relationship between the frequency of communication and the quality of parent-child attachment due to its severity. Yet, for now, family members of families with parental CMC should regularly approach each other saying: Let's talk.

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Appendix

Content of the questionnaires used in the study

IPPA-short version

1. My mother/father has her own problems, so I don't bother her with mine.
2. If my mother/father knows something is bothering me, she/he asks me about it.
3. I tell my mother/father about my problems and troubles.
4. My mother/father helps me to understand myself better.
5. My mother/father accepts me as I am.
6. I wish I had a different mother/father.
7. My mother/father respects my feelings.
8. When I am angry about something, my mother/father tries to be understanding.
9. I don't get much attention from my mother/father.
10. I get upset easily around my mother/father.
11. I feel angry with my mother/father.
12. Talking over my problems with my mother/father makes me feel ashamed or foolish.

PACHIQ-R

1. When my children do not feel like clearing up their rooms, they do not have to.
2. My children break our house rules almost every day.
3. I find it difficult to say something kind to my children.
4. There are many conflicts between my children and me which we cannot solve.
5. I don't accept criticism from my children.
6. I am often dissatisfied with my children.
7. My children really trust me.
8. I take my time to listen to my children.
9. I show my appreciation clearly when my children do something for me.

10. When I spend the whole day with my children, they start to get on my nerves.
11. I like to listen to my children's stories.
12. It seems like my children think they are the boss in the house.
13. I enjoy physical contact with my children.
14. I decide which friend my children can see.
15. I don't feel like listening to what my children have been doing.
16. When my children and I differ in opinion, I shout at them.
17. If my children don't do what I say, I usually don't bother about it.
18. My children listen when I explain something.
19. I am very proud of my children.
20. I compliment my children.
21. When my children are upset, it is often unclear to me what is going on.

Gezincommunicatie Vragenlijst (Family Communication Questionnaire) – short version

For parents:

1. I talk about my illness with my child/children.
2. I talk about family tasks with my child/children.
3. I talk about my feelings with my child/children.

For children:

1. I talk about the illness of my parent with my parent that is ill/with my parent that is healthy.
2. I talk about family tasks with my parent that is ill/with the parent that is healthy.
3. I talk about my feelings with my parent that is ill/with my parent that is healthy.