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The link between perceived parenting and adolescent negative affect in daily life: the moderating role of parental empathy.

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The link between perceived parenting and adolescent negative affect in daily life: the moderating role of parental empathy.

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Abstract

Parental criticism and a lack of parental warmth are associated with more internalizing problems and less overall well-being in adolescents. Negative affect could be an indicator for internalizing problems, but little is known about how fluctuations of perceived parental warmth and criticism of both mothers and fathers are linked to fluctuations of adolescent negative affect in daily life. The current study aimed to examine these daily micro-level processes. In addition, the moderating role of parental empathy (i.e. perspective taking and empathic concern) was investigated, as a lack of parental empathy is related to less warm parenting and more child psychopathology. The sample of this study consisted of 80 Dutch adolescents (29 boys and 51 girls) between 12-17 years old ($M = 15.9$) who completed four ecological momentary assessments per day for two consecutive weeks in which they reported their affect and perceived parenting. Their parents were asked to fill in a questionnaire to rate their level of empathy. Results from the multilevel regression analyses showed that, on average, adolescents experienced less negative affect on days when they perceived their mothers and fathers to be warmer and less critical. Furthermore, adolescents perceived their mothers to be more critical and warmer than their fathers. For both mothers and fathers, more parental empathic concern strengthened the negative association between daily parental warmth and daily negative affect. These findings could help clinical practice to better tailor preventive interventions in the field of psychopathology for adolescents and families.

Keywords: Ecological momentary assessment (EMA) · Daily life · Adolescent negative affect · Within-family level · Parental warmth · Parental criticism · Parental empathy

Introduction

Adolescence is an important period characterized by great biological, social, and behavioral changes (Steinberg, 2005). These changes make the period of being an adolescent an important, but vulnerable period for the onset of possible internalizing problems (Dahl et al., 2018). It is a time when individuals begin to develop their own identity while separating themselves from their parents. Research showed that a positive relationship with parents is of great importance for healthy adolescent maturation and detachment (Garber & Little, 2001; Peterson & Bush, 1999).

Empirical studies showed that parental criticism and a lack of parental warmth are associated with internalizing problems in adolescents (McLeod, 2007; Nelemans et al., 2014; Pinquart, 2017; Yap & Jorm, 2015). However, the majority of these studies is based on retrospective self-report measurements and longitudinal designs with long time intervals (i.e., years). While parenting and adolescent negative affect can fluctuate dynamically over days (Keijsers & Van Roekel, 2018). The results of past studies may therefore not provide reliable information on how parental warmth and criticism and adolescent negative affect are linked on a more micro-level scale (i.e., days, hours). Considering the fact that adolescent negative affect could be an indicator of internalizing problems (Maciejewski et al., 2019) and that the fluctuations in adolescent affect may be linked to parent-adolescent interactions in daily life (Keijsers et al., 2016), it might be that fluctuations of parental warmth and criticism are also associated with adolescent negative affect in daily life. The current study therefore aimed to examine the link between perceived parental warmth and criticism and adolescent negative affect in daily life, by using the ecological momentary assessment (EMA) in which respondents give answers to questions in momentary situations in their natural environment (Csikszentmihalyi & Larson, 2014). Doing research with real-time data on the daily fluctuations of adolescent perceived parenting and negative affect may contribute to developing preventive interventions for families and the mental health of adolescents (Maciejewski et al., 2019). Furthermore, this study aimed to examine the moderating role of parental empathy in the link between perceived parental warmth and criticism and adolescent negative affect in daily life.

Parental warmth and criticism and adolescent negative affect

It is well-known that parenting plays a crucial role in adolescent development (Hoskins, 2014). Parental warmth and parental criticism are two important dimensions of parenting behavior. Parental warmth can be defined as an overall positive involvement towards the child. This includes verbal and nonverbal expressions of affection, acceptance,

and support (Epkins & Harper, 2016). Parental criticism involves expressing disapproval or negativity towards the child. Critical remarks can be seen as critical on the basis of their content or because of a particularly negative voice tone that is used (Hooley, 2007; Rohner et al., 2012).

In general, previous studies about parental warmth and criticism focused on mothers or on both parents combined. However, research on parent-adolescent relationships showed that mothers and fathers have a different and unique relationship with their children (Laible & Carlo, 2004; Wille, 1995). It might therefore be unwise to combine the sexes when collecting data. Results of a previous study have suggested that mothers respond more supportive towards their children when they display negative emotions than fathers (Cassano et al., 2007). On the other hand, research has suggested that fathers encourage their children to take risks and teach them obedience (Majdandžić, 2014), and generally respond more punitively to their children's negative emotions than mothers. These findings might indicate that mothers show more warm and less critical behavior than fathers towards their adolescent child, but how this unfolds on a daily basis is yet unknown. Therefore, the first aim for this study is to examine whether adolescents' perceptions of daily parenting of mothers and fathers differ.

Research showed that warm parenting behaviors are related to adolescent positive well-being (Moran et al., 2018), such as a lower risk of mental illness, substance abuse, unhealthy eating behaviors, and insufficient sleep (Chen et al., 2019). Conversely, criticizing parenting generally results in more negative adolescent outcomes (Repetti et al., 2002), such as a higher risk of depressive symptoms (Armstrong et al., 2011), low self-esteem (Harris & Howard, 1984), and higher levels of stress (Williams et al., 2018). Previous studies moreover showed that higher levels of parental warmth are associated with lower levels of internalizing problems in adolescents whereas lower levels of parental warmth are associated with higher levels of internalizing problems in adolescents (McLeod, 2007; Piquart, 2017; Yap & Jorm, 2015). Furthermore, previous studies showed that parental criticism is a predictor for the onset of internalizing problems in adolescents (Nelemans et al., 2014; Yap & Jorm, 2015). These findings about parenting and internalizing problems are all based on retrospective data of questionnaires (McLeod, 2007; Nelemans et al., 2014; Piquart, 2017; Yap & Jorm, 2015). However, parenting can fluctuate over days, so it is relevant to investigate parenting on a more micro-level of daily life and how it relates to negative affect, which can be seen as an indicator of internalizing problems in adolescents (Maciejewski et al., 2019) and can even lead to psychopathology such as depression and anxiety (Stanton & Watson, 2014). Since negative affect is not static, but can fluctuate from moment to moment in response to external stimuli such as other people and circumstances (Kuppens et al., 2010), it is important to

examine how parenting is related to negative affect. Therefore, the second aim for this study is to examine the link between parenting and negative affect on a micro-social level as it occurs in daily life. A systematic review of 46 studies found ten studies that investigated the micro processes of parenting and seven studies that examined the link between parenting and adolescent negative affect in daily life. These seven studies showed that there is a positive association between negative parenting behavior and adolescent negative affect in daily life (Boele et al., 2019). A recent study supported this and found evidence for the positive link between perceived parental lack of support and negative affect in daily life using ecological momentary assessments (EMA) (Janssen et al., 2020). This method prevents recall bias, because there is a minimal period between the situation and the momentary assessment of that situation (Stone & Shiffman, 1994). Despite this previous work on the micro processes, it remains unknown whether specifically parental warmth and criticism relate to adolescent negative affect in daily life. This will be examined in the current study.

Parental empathy

Empathy generally refers to the capacity to understand and grasp the emotional and mental states of others. It plays an important role in interpersonal relationships and one of those relationships is that of the parent and child (Psychogiou et al., 2008). The parental capacity to see things from the child's point of view is of central importance to sensitive parenting which facilitates parents to act on the needs of their child (Psychogiou et al., 2008).

The term empathy is widely used and can refer to multiple aspects, but a dichotomy is often used, that is *perspective taking* and *empathic concern*. Perspective taking, also referred to as cognitive empathy, is about thinking what the other person is thinking. It is having accurate knowledge about the content of someone's thoughts and seeing from their perspective in a logical way (Bos, 2020). The second aspect of empathy is called empathic concern or compassion. This is the affective aspect of empathy. It concerns feeling what the other feels and having concern for the unfortunate of others (Bos, 2020; Davis, 1980).

Studies showed that parental lack of empathy is related to less warm parenting behavior, as well as to more child psychopathology (Psychogiou, et al., 2008; Watson et al., 2008). This may suggest a moderating role of parental empathy in the link between perceived parental warmth and criticism and adolescent negative affect. Past research focused on warm parenting behavior and psychopathology in a retrospective manner, while parenting and adolescent well-being can fluctuate dynamically throughout days. To gain more insight in how parental empathy could influence these daily fluctuations, the third aim of this study is to examine whether parental empathy (i.e. perspective taking and empathic concern) moderates

the link between perceived parental warmth and criticism and adolescent negative affect in daily life.

The current study

The first aim of this study is to examine whether adolescents perceive their mothers to be warmer and less critical than their fathers. Based on previous findings that suggested mothers and fathers to have different parenting roles (Laible & Carlo, 2004; Restifo & Bögels, 2009; Wille, 1995; Cassano et al., 2007; Majdandžić, 2014), it was hypothesized that adolescents report more daily parental warmth of mothers than of fathers and more daily parental criticism of fathers than of mothers. Moreover, this study aimed to examine the association between perceived parental warmth and criticism of mothers and fathers and adolescent negative affect in daily life. Based on previous studies that showed the positive correlation between parenting behavior and adolescent negative affect (Boele et al., 2019), the second hypothesis is that more perceived parental warmth is associated with less adolescent negative affect in daily life and more perceived parental criticism is associated with more adolescent negative affect in daily life. Lastly, this study aimed to investigate the moderating effect of parental empathy in this relationship. Based on the finding that parental lack of empathy is related to less warm parenting behavior, as well as to more child psychopathology (Psychogiou, et al., 2008; Watson et al., 2008), the third hypothesis for this study is that parental empathy, both perspective taking and empathic concern, moderates the link between perceived parental warmth and criticism and adolescent negative affect in daily life for mothers and fathers. That is, the negative association between daily parental warmth and negative affect will be stronger if parents show higher levels of empathy. It is also expected that the positive association between parental criticism and adolescent negative affect will be stronger if parents score lower on empathy.

Methods

Design

Data was used from the RE-PAIR study: '*Relations and Emotions in Parent-Adolescent Interaction Research*' which investigates the bi-directional relation between parent-child interactions and depressive symptoms in adolescents. It is a multi-center, multi-method, multi-informant cross-sectional study consisting of different parts: online questionnaires, a research day, ecological momentary assessment (EMA), and neuroimaging (fMRI). In the RE-PAIR study, data from a group of adolescents with a major depressive disorder or dysthymia and their parents, and a group of adolescent without psychopathology and their parents is compared. For this specific study, the ecological momentary assessment (EMA) and the 'Interpersonal Reactivity Index (IRI)' questionnaire were used from the healthy adolescents and their parents.

Participants

The study included 80 adolescents, 29 boys and 51 girls, between 12-17 years old. The mean age was 15.9 ($SD = 1.35$). In total, 79 mothers and 74 fathers participated with a mean age of 49.0 ($SD = 5.85$) who filled in the IRI questionnaire. Inclusion criteria for the adolescents were having an age between 11-17 years old, living with at least one parent, and participation of at least one parent. Exclusion criteria were no good command of the Dutch language, a current psychological disorder, a history of a psychological disorder in the past two years, a history of ever having a major depressive disorder or dysthymia, a history of psychotherapy or other psychological treatments, and using medication for psychological disorders or sleep medication. To make sure that the participants of the control group were indeed healthy, they were screened for current and previous psychopathology at the research day with a face-to-face structured interview of 'The Kiddie-Schedule for Affective Disorders and Schizophrenia' (K-SADS) (Reichart et al., 2000). No specific inclusion criteria for the parents were used. The exclusion criteria for the parents were no good command of the Dutch language.

Procedure

The participants for this study were recruited via advertisements on Facebook, LinkedIn, Twitter, the website of Leiden University, via general practitioners, in pharmacies, at municipal health services, via the magazine of the Royal Dutch Touring Club ('de kampioen'), and via the social network of employees of Leiden University. The focus was on primary caregivers, so stepparents and guardians could also participate if they were involved

in the upbringing of the adolescents for at least 5 years, and if the adolescent perceived the parent to be the primary caregiver.

Families who were interested could contact the research team via the website or mail and first received an information letter about the RE-PAIR study. Within one to two weeks after sending the letter, someone of the RE-PAIR team called a parent to ask if they were still interested, whether there were any questions, and to possibly screen the parent and family situation for suitability for the study. After that, a call appointment was made with the adolescent for screening purposes. If the parent and the adolescent turned out to be eligible for the study, a call was made with the parent to give some extra information and to schedule an appointment for the lab day.

Two weeks before the research day, participants received online questionnaires which they needed to complete before the research day. At the end of the research day, participants received instruction for the EMA. Afterwards, the mobile app (Ethica) was installed on the phones of the participants. The EMA lasted for fourteen days, starting on Monday after the lab day. The EMA did not take place during holidays and was postponed until the Monday after the holidays. The participants received at least 4 questionnaires a day: one in the morning, two during the afternoon, and one in the evening. The one in the morning came at a set time, the others came within a specific time-frame. The participants were asked to complete the surveys right after the notification, nevertheless they remained available for some time. Table 1 shows the time window and expiration time of the questionnaires.

Table 1. Time and expiration EMA questionnaires

Questionnaire	Time (window)	Expiration
EMA morning	7:00 (weekdays)	After 2,5 hours
	9:00 (weekend days)	
EMA day	12:00 – 13:00	After 60 minutes
	16:00 – 19:00	
EMA evening	20:15 – 20:45 (adolescents)	After 3 hours
	21:00 – 21:30 (parents)	

Measures

Daily negative affect. Daily negative affect of adolescents was assessed 4 times a day using two items: ‘How do you feel at this moment? – Sad’ and ‘How do you feel at this moment? – Irritated’. The answer categories ranged from 1 (*very*) to 7 (*not*). For each time point the average of the two items was calculated, resulting in an overall score on negative

affect on that specific moment. After that, the daily average per person was calculated which was used in the analyses.

Daily parental warmth and criticism. Daily perceived parental warmth and daily perceived parental criticism were both assessed one time a day at the end of the day. First, adolescents were asked if they talked to their parents during the day. If they did, they received some questions about the parenting behavior. To assess daily perceived parental warmth and criticism, the adolescent was asked ‘Throughout the day, how critical was you mom/dad?’ and ‘Throughout the day, how warm was your mom/dad?’ with answer categories ranging from 1 (*very*) to 7 (*not*). This study primarily focused on the parents with whom the adolescents lived. This was in most cases the biological mother and father and in some cases the stepmother or/and –father, who will be referred to as mother and father in this study.

Parental empathy. The level of parental empathy was assessed using the Interpersonal Reactivity Index (IRI) questionnaire which was completed by parents themselves. This questionnaire originally consists of four seven-item scales (Davis, 1980; De Corte, 2007). The Dutch version of the IRI has shown good validity and reliability (De Corte, 2007). In the current study, only the scales *perspective taking* and *empathic concern* were used to assess two different aspects of parental empathy. An example question from the scale perspective taking is ‘I sometimes find it difficult to see things from the "other guy's" point of view’ and an example question from the empathic concern scale is ‘I often have tender, concerned feelings for people less fortunate than me’. The items were answered on a 5-point Likert scale ranging from ‘Does not describe me well’ to ‘Describes me very well’. The negative formulated questions were reversed to calculate the valid total scores of the two scales. These two subscales were analyzed separately. The two scales of the IRI both have satisfactory internal consistency with the scale perspective taking having a Cronbach’s alpha of .73 and the scale empathic concern having a Cronbach’s alpha of .74.

Statistical analysis

For this research, SPSS Statistics 25 was used. First, a paired samples t-test was performed to examine whether daily parental warmth was reported significantly higher for mothers than for fathers and whether daily parental criticism was reported significantly higher for fathers than for mothers.

Next, multilevel regression analyses were used to assess the link between daily parental warmth and criticism and adolescent daily negative affect. This method was used, because the participants were repeatedly measured for multiple days, with data being nested within participants. Before performing the analyses, the assumptions of the multilevel

regression analyses were checked (multicollinearity, normality, linearity, independence of residuals, and homoscedasticity). If the assumptions were met, the multilevel analyses were performed. First, an unconditional model was specified with only negative affect to calculate the ICC to determine if using multilevel analyses is indeed necessary to account for the within person variance and to gain insight in how much variance was due to differences within adolescents and between adolescents. Next, to test whether perceived daily parental warmth and criticism were related to adolescent daily negative affect, four separate models were tested with daily maternal warmth and criticism and daily paternal warmth and criticism as independent variables and adolescent daily negative affect as dependent variable ($\alpha < .05$).

Finally, parental empathy was added to the model as well as an interaction between parental empathy and daily parental warmth and criticism to test parental empathy as moderator. This was done using the previous four models with parental perspective taking and parental empathic concern and the interaction term between parental warmth and criticism and parental empathic concern as extra independent variables ($\alpha < .05$), resulting in eight separate models. If the interaction term was significant, plots were made to interpret the findings.

Results

Descriptive statistics

Descriptive statistics for age, negative affect, daily parental warmth and criticism, and parental empathy are presented in Table 2. A total of 80 adolescents and their 153 parents participated in the study. The overall response rate for the adolescents of all EMA questionnaires was 65.8%. For the evening questionnaires, the response rate was 77.1%. In 96.4% of the filled in evening questionnaires, the adolescent reported to had contact during the day with their mother, in 83.3% with their father and in 94.6% with others.

Table 2. Sample characteristics

Variables	Obs/n	<i>M</i>	<i>SD</i>	Min.	Max.
<i>Filled in questionnaires</i>					
<i>Adolescents (EMA)</i>					
Daily negative affect	1051	1.50	0.79	1.00	6.00
Daily maternal criticism	833	2.00	1.32	1.00	7.00
Daily maternal warmth	833	5.92	1.01	1.00	7.00
Daily paternal criticism	750	1.83	1.25	1.00	7.00
Daily paternal warmth	750	5.83	1.37	1.00	7.00
<i>Parents (IRI)</i>					
Empathic concern mother	79	4.72	0.60	3.29	5.86
Perspective taking mother	79	4.17	0.60	2.71	5.43
Empathic concern father	74	4.24	0.64	2.86	5.71
Perspective taking father	74	3.86	0.57	2.43	5.14

Differences parenting of mothers and fathers

To test whether adolescents perceived their mothers to be warmer and less critical than their fathers, a paired samples t-test was performed. The mean score of the answers to the questionnaires about daily maternal warmth was significantly higher ($M = 5.88$, $SD = 0.80$) than the mean score of the answers to the questionnaires about daily paternal warmth ($M = 5.78$, $SD = 0.96$); $t(1077) = 5.256$, $p < .001$, indicating that, on average, adolescents reported mothers to be warmer than fathers. The mean score of the answers to the questionnaires about daily maternal criticism was also significantly higher ($M = 2.08$, $SD = 1.01$) than the mean score of the answers to the questionnaires about daily paternal criticism ($M = 1.89$, $SD = 0.90$); $t(1077) = 10.67$, $p < .001$, indicating that, on average, adolescents reported mothers to be more critical than fathers.

Link between parenting and adolescent negative affect

First, an unconditional model with daily negative affect was specified. The intraclass correlation coefficient (ICC) of negative affect was .563 suggesting that 56.30% of the variance was due to differences between adolescents and 43.70% due to within person fluctuations over time. This shows that using multilevel analyses was necessary to account for the within person variance.

Next, four separate multilevel analyses were specified to test whether daily parental warmth and criticism were related to daily negative affect. A significant association was found between daily maternal criticism and daily negative affect ($B = 0.041$, $SE = .017$, $df = 749$, $t = 0.225$, $p = .015$), indicating that adolescents reported more daily negative affect on days when they also reported more daily maternal criticism. Daily maternal warmth was found to be significantly associated with daily negative affect ($B = -0.061$, $SE = .023$, $t = -2.662$, $p = .008$), indicating that a higher score on daily maternal warmth was related to less daily negative affect. Thirdly, the association between daily paternal criticism and daily negative affect was found to be significant ($B = 0.392$, $SE = .018$, $t = 2.138$, $p = .033$), indicating that a higher score on daily paternal criticism was related to more daily negative affect. Lastly, a significant link was found between daily parental warmth and daily negative affect ($B = -0.107$, $SE = .022$, $t = -4.935$, $p < .001$), indicating that a higher score on daily parental warmth was related to less daily negative affect.

Maternal empathy as moderator

To examine the possible moderating effect of parental empathy in the relation between daily parenting and daily negative affect, the main effect of parental empathy and an interaction between daily parenting and parental empathy were added to the models (see Tables 7 to 10). Maternal perspective taking did not moderate the link between daily maternal criticism and daily negative affect ($B = -0.040$, $p = .220$), daily maternal criticism was no longer significantly related to daily negative affect when taking into account maternal perspective taking ($B = 0.211$, $p = 0.131$), and there was no significant association between maternal perspective taking and daily negative affect ($B = 0.009$, $p = 0.939$) (see Table 7). A similar pattern was found concerning empathic concern. No moderating effect of maternal empathic concern was found in the association between daily maternal criticism and daily negative affect ($B = -0.044$, $p = .120$), daily maternal criticism was no longer significantly related to daily negative affect when taking into account maternal empathic concern ($B = 0.248$, $p = 0.065$), and maternal empathic concern and daily negative affect were not significantly associated ($B = 0.148$, $p = 0.203$) (see Table 8).

Maternal perspective taking did not moderate the association between daily maternal warmth and daily negative affect ($B = -0.043, p = .294$), there was no longer a significant link between daily maternal warmth and daily negative affect ($B = 0.127, p = 0.483$), and there was no significant association between maternal perspective taking and daily negative affect ($B = 0.009, p = 0.939$) (see Table 9). There was, however, a moderating effect of maternal empathic concern on the relation between daily maternal warmth and daily negative affect ($B = 0.092, p = .015$) (as presented in Figure 1), indicating that the link between daily maternal warmth and daily negative affect was stronger when mothers indicated showing more empathic concern. Daily maternal warmth was still significantly associated with daily negative affect ($B = -0.508, p = 0.006$). Maternal empathic concern was not related to daily negative affect ($B = 0.148, p = 0.203$) (see Table 10).

Paternal empathy as moderator

Paternal perspective taking did not moderate the link between daily paternal criticism and daily negative affect ($B = 0.045, p = .252$), daily paternal criticism was no longer significantly associated with daily negative affect when taking into account paternal perspective taking ($B = -0.146, p = 0.350$), and there was no significant link between paternal perspective taking and daily negative affect ($B = 0.024, p = 0.855$) (see Table 7). Also, no moderating effect of paternal empathic concern was found in the relation between daily paternal criticism and daily negative affect ($B = -0.048, p = .196$), daily paternal criticism was no longer significantly linked with daily negative affect when taking into account paternal empathic concern ($B = 0.242, p = 0.140$), and paternal empathic concern and daily negative affect were not significantly associated ($B = -0.021, p = 0.863$) (see Table 8). Paternal perspective taking did not moderate the link between daily paternal warmth and daily negative affect ($B = 0.022, p = .596$), daily paternal warmth was no longer significantly associated with daily negative affect when taking into account paternal perspective taking ($B = -0.194, p = 0.228$), and there was no significant link between paternal perspective taking and daily negative affect (see Table 9). Lastly, a moderating effect of paternal empathic concern in the association between daily paternal warmth and daily negative affect was found ($B = 0.125, p = .003$) (as presented in Figure 2). Daily paternal warmth was still significantly associated with daily negative affect ($B = -0.643, p < 0.001$). This link between daily paternal warmth and daily negative affect was negative when paternal empathic concern was one standard deviation above the mean or at the mean and was positive when paternal empathic concern was one standard deviation below the mean. There was no significant association between paternal empathic concern and daily negative affect ($B = -0.021, p = 0.861$) (see Table 10).

Table 7. Results of the models on the association between daily parental criticism and daily negative affect, and the moderating role of parental perspective taking

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
	<i>Mothers</i>				<i>Fathers</i>			
Intercept	1.470	0.490	2.998	0.004	1.422	0.509	2.719	0.007
Daily parental criticism	0.211	0.139	1.513	0.131	-0.146	0.156	-0.936	0.350
Parental perspective taking	0.009	0.116	0.077	0.939	0.024	0.130	0.183	0.855
Daily parental criticism * parental perspective taking	-0.040	0.033	-1.227	0.220	0.045	0.039	1.147	0.252

Table 8. Results of the models on the association between daily parental criticism and daily negative affect, and the moderating role of parental empathic concern

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
	<i>Mothers</i>				<i>Fathers</i>			
Intercept	0.810	0.546	1.483	0.142	1.602	0.515	3.109	0.003
Daily parental criticism	0.248	0.134	1.849	0.065	0.242	0.164	1.477	0.140
Parental empathic concern	0.148	0.115	1.285	0.203	-0.021	0.120	-0.173	0.863
Daily parental criticism * parental empathic concern	-0.044	0.028	-1.555	0.120	-0.048	0.037	-1.293	0.196

Table 9. Results of the models on the association between daily parental warmth and daily negative affect, and the moderating role of parental perspective taking

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
	<i>Mothers</i>				<i>Fathers</i>			
Intercept	1.470	0.490	2.998	0.004	1.423	0.510	2.792	0.007
Daily parental warmth	0.127	0.180	0.701	0.483	-0.194	0.160	-1.207	0.228
Parental perspective taking	0.009	0.116	0.077	0.939	0.023	0.130	0.181	0.857
Daily parental warmth * parental perspective taking	-0.043	0.041	-1.050	0.294	0.022	0.041	0.530	0.596

Table 10. Results of the models on the association between daily parental warmth and daily negative affect, and the moderating role of parental empathic concern

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
	<i>Mothers</i>				<i>Fathers</i>			
Intercept	0.810	0.546	1.483	0.142	1.604	0.516	3.110	0.003
Daily parental warmth	-0.508	0.185	-2.742	0.006	-0.643	0.182	-3.541	<0.001
Parental empathic concern	0.148	0.115	1.248	0.203	-0.021	0.120	-0.176	0.861
Daily parental warmth * parental empathic concern	0.092	0.038	2.430	0.015	0.125	0.042	2.960	0.003

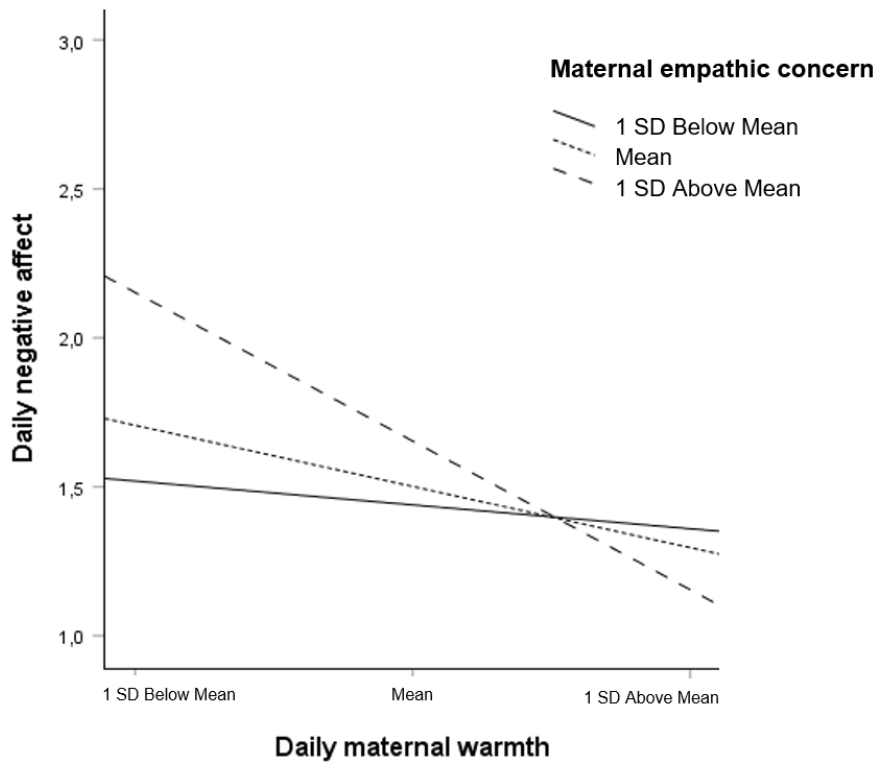


Fig. 1 The link between daily maternal warmth and adolescent daily negative affect with mothers low or high in empathic concern based on (± 1) Standard Deviation.

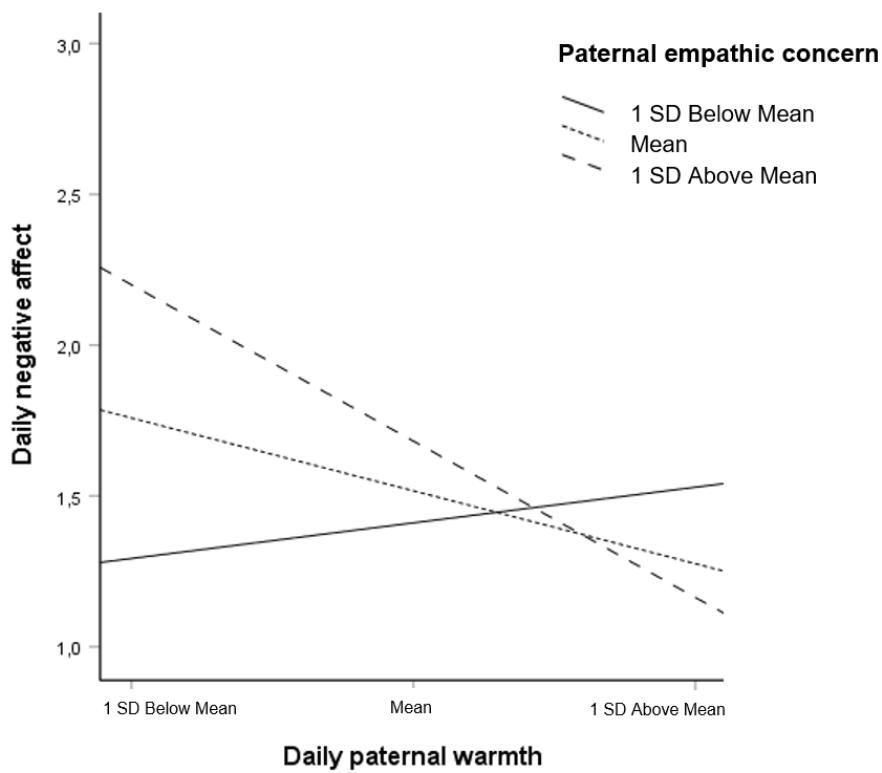


Fig. 2 The link between daily paternal warmth and adolescent daily negative affect with fathers low or high in empathic concern based on (± 1) Standard Deviation.

Discussion

Parenting plays a crucial role for adolescent emotional well-being (Hoskins, 2014). Results of previous empirical studies and reviews showed that parental criticism and a lack of parental warmth are associated with more internalizing problems and less overall well-being in adolescents (McLeod, 2007; Moran et al., 2018; Nelemans et al., 2014; Pinquart, 2017; Yap & Jorm, 2015). These results are, however, based on retrospective self-report measures and longitudinal designs with long time intervals. To gain more reliable information on a more micro-level scale with real-time data, this study aimed to understand the micro-social processes in families using EMA by examining to what extent perceived daily parental warmth and criticism of mothers and fathers is related to adolescent daily negative affect. With the use of EMA, the results of this study could provide more insight in the daily life processes of families. These insights could also ultimately help to tailor clinical preventive interventions, as negative affect could be a precursor of psychopathology (Stanton & Watson, 2014).

The results of this study showed that, on average, adolescents perceived mothers to be warmer and more critical than fathers. Moreover, it was found that daily parental warmth and criticism of both parents were linked to daily negative affect. Next, empathic concern of both mothers and fathers moderated the link between daily parental warmth and daily negative affect.

Differences parenting of mothers and fathers

Mothers and fathers have different parenting roles (Laible & Carlo, 2004; Restifo & Bögels, 2009; Wille, 1995). Based on prior research that suggested that mothers respond more encouraging towards their children when they display negative emotions than fathers (Cassano et al., 2007), it was expected that adolescents would report their mothers to show more warm behavior than their fathers in daily life. The findings of this study showed that indeed, on average, adolescents reported more daily parental warmth of mothers than of fathers. This adds to prior research that only examined children in a retrospective manner, suggesting that in daily life, mothers are also perceived as warmer than fathers by adolescents. Father-adolescent relationships are usually characterized by encouragement to take risks and by the teaching of obedience (Majdandžić, 2014) and compared to mothers, fathers respond more punitively to their children's negative emotions (Eisenberg et al., 1999). It was therefore hypothesized that adolescents would perceive their fathers to be more critical than their

mothers. The results of the current study, however, seem not to be in line with prior research and showed the contrary: mothers were perceived more critical than fathers. A possible explanation for this might be that in adolescence, mothers are usually seen as the primary caregiver (Pinquart, 2017) and relationships with mothers tend to be closer (Laursen & Collins, 2003; Klimes-Dougan et al., 2007; Lamb & Lewis, 2013). This may lead to a stronger influence of behaviors of mothers on the affective life of the adolescent. In line with this, the current study found that adolescents indeed had more contact with their mothers on a daily basis. Daily maternal warmth and criticism may therefore have more influence on adolescent affect compared to paternal warmth and criticism. Furthermore, it might be that when adolescents receive criticism from their mothers, it is perceived as more critical than when the same amount of criticism would be given by the father, because mothers are warmer than fathers. These high levels of warmth might ensure that even small levels of criticism are perceived as very critical by the adolescent, because adolescents are used to mothers showing high levels of warmth. In addition, the current findings are based on a micro-level scale of daily measurements, whereas past research on parenting roles were retrospective in nature. It might be that adolescents perceive their mothers as more critical than their fathers when questioned on a daily basis. While retrospectively, they might view mothers as less critical than their fathers. The reason for this might be that it is a common idea that fathers are more critical towards their child than mothers. This might cause adolescents to think they perceive their fathers to be more critical when asked retrospectively, because this would confirm their already existing belief.

Parenting and adolescent negative affect

Results of previous empirical studies showed that more warm parenting relates to more adolescent positive well-being and lower levels of internalizing problems (Moran et al., 2018; McLeod, 2007; Pinquart, 2017; Yap & Jorm, 2015), it was therefore expected that more parental warmth would be associated with less negative affect in daily life. As negative affect could be an indicator for internalizing problems (Maciejewski et al., 2019). The results showed that, indeed, adolescents reported less negative affect on days when they perceived their mothers and fathers to be warmer. Secondly, the current findings showed that adolescents experienced, as was expected, less negative affect when they perceived their mothers and fathers to be less critical. This is in line with previous retrospective research that showed that parental criticism is a predictor for the onset of internalizing problems in

adolescents (Nelemans et al., 2014; Yap & Jorm, 2015). These results suggest that previous findings based on retrospective studies on the link between warm and critical parenting and adolescent well-being that used long time intervals such as years are generalizable to the micro-level of daily life.

Parental empathy

Empathy plays an important role in parent-child relationships (Psychogiou et al., 2008). Results of empirical studies showed that parental lack of empathy is related to less warm parenting behavior, as well as to more child psychopathology (Psychogiou, et al., 2008; Watson et al., 2008). Based on these findings, the current study hypothesized that both aspects of empathy (i.e., perspective taking and empathic concern) would moderate the association between perceived parental warmth and criticism and adolescent negative affect in daily life. In line with the expectations, it was found that empathic concern of both mothers and fathers moderated the link between daily parental warmth and daily negative affect. For mothers, more maternal empathic concern strengthened the negative association between daily maternal warmth and daily negative affect. This indicates that the association between daily maternal warmth and daily negative affect is stronger for adolescents whose mothers score higher on empathic concern than for adolescents whose mothers score lower on empathic concern. For fathers, the direction of the link between daily paternal warmth and daily negative affect was dependent of the level of empathic concern. The link was negative when empathic concern for fathers was one standard deviation above the mean or at the mean and was positive when paternal empathic concern was one standard deviation below the mean.

The reason that empathic concern moderated the negative link between parental warmth and adolescent negative affect might have to do with the fact that empathic concern can lead to increased helping behavior, which in turn can increase warm feelings towards the person that receives help (Batson et al., 2007; Hu et al., 2016; Spreng et al., 2009). It might be that these warm feelings are also sensible for the person that is helped, the adolescents in the case of this study. In contrast to the expectations, perspective taking of mothers and fathers did not moderate the association between daily parental warmth and daily negative affect for both mothers and fathers. An explanation for this might be that affective proximity and the associated warm feelings are not necessarily involved in perspective taking. Perspective taking or in other words cognitive empathy, requires effort aimed at understanding the

thoughts and experiences of others while being able to keep a certain affective distance (Lamothe et al., 2014).

Furthermore, neither parental perspective taking nor parental empathic concern moderated the link between daily parental criticism and daily negative affect for both mothers and fathers. A possible explanation for this might be that previous studies on the impact of parental empathy on adolescents focused more on parental warmth and not on parental criticism. It might be, based on the current findings, that parental empathy only influences the degree of parental warmth, but not the degree of parental criticism. Moreover, the amount of perceived criticism that adolescents reported in this study is low. It might be that parental empathy only influences the level of parental criticism when the degree of perceived criticism is above a certain level.

Strengths, limitations, and future recommendations

By using repeated assessments each day, multiple times a day, in a naturalistic environment, this study gained more insight in the link between adolescent negative affect and parenting behavior in daily life. The EMA design that was used for this study helped reducing recall bias and enhanced ecological validity (Russel & Gajos, 2020). Next to the strengths of this study, limitations should be acknowledged. First, this study included a healthy sample, considering that adolescents who experienced a lifetime major depressive disorder and dysthymia or psychopathology in the last two years were excluded. Therefore, findings might not be applicable to adolescents who experience (sub)clinical mental health problems. A suggestion for future research could be to conduct a similar study in a clinical sample of adolescents. Second, the sample of the study consisted of only Dutch speaking adolescents and parents. It is unknown whether the findings of this study are generalizable to other nationalities. For future research, a suggestion could be to conduct similar studies in other countries. Moreover, limitations of the research design should be acknowledged. Firstly, being asked the same questions several times a day or daily for several days could increase adolescents' awareness of their negative affect. This awareness might lead the adolescents to perceive their affect differently. Moreover, the viewpoint of adolescents on the amount of parental warmth and criticism can differ from the parents' viewpoint (Janssen et al., 2021). Adolescents might be influenced by how they feel or by what they recently experienced at the time of taking the questionnaire. For future research, a multi-method approach such as including observations by a clinician or researcher, or parental reports is advised to examine

this possible perceptual bias. Moreover, this research focused on the bidirectional effects between perceived parenting and adolescent negative affect, so nothing can be said about causality. It might be, for example, that adolescents perceived their parents to be warmer when the adolescents had less negative affect. Future research should assess the direction of the effects. Next, it should be noted, that unlike separately examining mothers and fathers, we did not examine boys and girls separately. Previous research suggested that girls are more sensitive to the affective family environment than boys (Van Lissa, 2019) and mothers behave more supportive towards daughters than sons (Leaper et al., 1998). These findings might suggest that parental warmth and criticism have more impact on the negative affect of girls than on the negative affect of boys. For future research, it could be interesting to examine boys and girls separately to examine the differences between the sexes.

Conclusion

Previous studies have suggested that parental criticism and a lack of parental warmth are associated with more internalizing problems and less overall well-being in adolescents. However, past research used retrospective measurements, while parenting and adolescent negative affect can fluctuate dynamically throughout days. The current study aimed to examine the micro processes between perceived daily parental warmth and criticism of mothers and fathers and daily negative affect in a sample of adolescents by using EMA. Furthermore, this study investigated parental empathy as a possible moderator in this association.

On days that adolescents reported more parental warmth and less parental criticism of mothers and fathers, adolescents also reported less negative affect. Furthermore, for mothers, more parental empathic concern strengthened the negative association between daily parental warmth and daily negative affect. For fathers, the direction of the link between daily paternal warmth and daily negative affect was dependent of the level of empathic concern. The link was negative when empathic concern for fathers was one standard deviation above the mean or at the mean and was positive when paternal empathic concern was one standard deviation below the mean.

These current findings shine light on what could be linked to the development of adolescent negative affect. It is important to investigate the micro-social processes in families to provide insight into the possible causes of mental health problems, since adolescent negative affect can be a precursor for the development of psychopathology such as depression

or anxiety (Stanton & Watson, 2014). The results of this study are therefore informative and could help clinical practice to better tailor preventive interventions for adolescents and parents.

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