Parental Rejection and Internalizing Problems during Childhood: Parental Educational Level and Differences among Early Childhood, Middle Childhood and Adolescence

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Abstract

Over the years, parental behaviors were proved to influence children's mental health. Rejection constitutes one of the main behaviors that affect the socioemotional adjustment of the child. Existing literature suggests that low educated parents are more rejecting, while their children show higher levels of internalizing problems compared to their peers. Even though parents constitute the most significant others of the child, as children grow older, they become more functionally autonomous. In the current study, three analyses were conducted to examine the correlation between parental rejection and internalizing problems exclusively in observed parent-child interactions (k = 20, N = 3.689), parental educational level as a confounder of the latter correlation (k = 12, N = 1.579) and children's age as a possible moderator (k = 19, N = 2.613). Results show positive effects for the correlation between rejection and internalizing problems (ES = .11). Both moderator analyses were insignificant. In the future, it is necessary to examine the individual effect of parental educational level on rejecting behaviors and internalizing problems. More studies are needed to examine whether the strength of the correlation between parental rejection and internalizing problems alters based on diverse developmental stages of the child.

Keywords: parental rejection, internalizing problems, parental educational level, early childhood, middle childhood, adolescence

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1 Introduction

1.1 Scientific background

It is broadly accepted that parents contribute significantly to the psychological and behavioral well-being of their children (Festen et al., 2013). Indeed, parenting behaviors influence either the development or maintenance of children's psychopathology. Therefore, over the years a multitude of studies has investigated the association between diverse parenting dimensions and offspring's outcomes.

Parenting dimensions constitute the features that describe the nature of parenting (Skinner, Johnson & Snyder, 2005). Based on literature, six parenting dimensions are identified and divided into three dipoles: acceptance versus rejection, structure versus chaos and autonomy versus coercion. Acceptance or warmth is characterized as the dimension of caregiving (Rohner, 1976) and is dominated by feelings of love, appreciation, genuine caring and support. On the other side of the continuum, parental rejection is defined as a set of behaviors that indicate unresponsiveness or disapproval of the child (Rohner, 1980). Structure is related to the authoritative parenting style (Baumrind, 1971) and constitutes a component of demandingness and restrictiveness. On the contrary, chaos, which is considered as environmental confusion, refers to noncontingent and inconsistent parenting behaviors. As it concerns the last dipole, autonomy encloses those behaviors that encourage children to express their thoughts, which are considered important and is defined as the opposite of coercion. The latter constitutes the primary element of authoritarian parenting style (Baumrind, 1971) and is characterized by overcontrol, that leads to obedience (Skinner et al., 2005).

Each of the above-mentioned parenting dimensions is correlated with diverse behaviors and mental health outcomes of the children. The focus is on the dysfunctional side of the continuum. For instance, as PART theory indicates, parental rejection correlates with immature dependence or defensive independence, impaired self-esteem and self-adequacy, depression, anxiety and internalizing problems (Rohner, 1980). Chaos is claimed to be associated with increased behavioral problems such as externalizing ones (Dumas et al., 2005). Lastly, coercive parenting is relevant to conduct disorders, internalizing and externalizing problems (Skinner et al., 2005). Therefore, given the evidence of parenting's influence on children's well-being, it is required that meta-analyses establish well-defined conclusions based on the already existing relevant literature.

1.2 Parental rejection and internalizing problems

Rejection is claimed to constitute one of the parental behaviors that affect the socioemotional adjustment of the child the most (Barber, 1996). Based on existing literature, the latter behavior has been found to correlate with diverse dimensions of children's mental health. Among those dimensions, a multitude of studies has proved the correlation of parental rejection with children's internalizing problems. However, the existing literature has not distinguished among diverse ways of assessing the above-mentioned behaviors such as self-reports and observation and therefore, this meta-analysis aims to systematically examine the rejection – internalizing problems association exclusively in observed parent-child interactions.

Rejection is defined as disapproval, criticism and lack of contact with the child (Rapee, 1997). According to PARTheory, a study that started in the 1980s, children all over the world need to feel accepted by their parents. Otherwise, regardless their cultural background or other demographic characteristics, they tend to form impaired and distorted perceptions of themselves and the world. In the continuum of parental warmth and rejection, rejection is considered the opposite of warmth, given that it is dominated by the absence of all the feelings that characterize latter (Rohner, & Rohner, 1980). Parents that fall under the category of warmth, are usually affectionate and show their love either verbally or physically to their children. The above-mentioned behaviors range from hugging and kissing to complimenting and praising (Rohner, 1980).

Rejection occurs in every possible combination of four forms: hostility, neglect, lack of warmth and undifferentiated rejection (Rohner, & Khaleque, 2005). Hostility is defined as feelings of anger, bitterness and animosity, whereas neglect includes parental indifference and lack of interest. Hostile parents can become aggressive either verbally or physically and express their feelings either by hitting, pushing, kicking the child or saying mean things. Indifferent parents tend to be physically or psychologically distant and unresponsive to their child's needs. The latter category usually does not spend a lot of time with their children and forgets promises and needs, that are significant to the child's happiness. Undifferentiated rejection is defined as the child's perception of the parent's withdrawal of love without indications of objectively measured hostility, neglect or indifference (Rohner, 1980).

Internalizing problems constitute intropunitive emotions such as guilt, sorrow and worry. Prolonged emotions of sadness and anxiety dominate internalizing problems, while the subject tends to put effort to suppress these feelings (Zahn–Waxler, Klimes–Dougan, & Slattery, 2000). Internalizing problems are characterized by excessive control and occur in the form of social withdrawal, anxiety, depression, somatic problems or inhibited behaviors. The excessive control leads to the decrease of social interactions and thus, contributes to the impaired social and psychological adjustment of the child (Aunola & Nurmi, 2005).

A long research tradition has demonstrated the association between parental rejection and internalizing problems (Caron, Weiss, Harris, & Catron, 2006; Chen, Liu, & Li 2000; Javo, Rønning, Heyerdahl, & Rudmin, 2004; Mills et al., 2012; Muris, Meesters, & van den Berg, 2003; Roelofs, Meesters, Ter Huurne, Bamelis, & Muris, 2006; Rohner & Britner, 2002). Meta-analytic evidence showed that higher levels of criticism and rejection by parents is related to higher levels of internalizing problems of the child (McLeod, Weisz, & Wood, 2007). However, the agreement of literature on the correlation between parental rejection and internalizing problems still raises one question. It is proved that diverse means of assessment of parenting and psychopathology moderate the association of the latter variables. Self-reports could lead to inflated ES, as depressed subjects tend to form a negative self-perception and perception of others (Beck, 1967). This fact applies for studies relying exclusively on either parents' or children's self-reports. In the case of the previous meta-analysis (McLeod et al., 2007), both types of parenting behaviors and assessment tools were examined as moderators and subsequently, the effect of each parenting behavior was not assessed separately for each tool. Given the latter fact and that measurements less susceptible to bias produce more accurate outcomes (McLeod et al., 2007), the current study aims to examine the correlation of rejection and internalizing problems in exclusively observed interactions between parents and children.

A possible explanation of the association between parental rejection and internalizing problems was given by Mead (as cited in Rhoner, 1980), who claimed that people tend to internalize the view that their beloved ones have for them. Therefore, when a child is rejected, they acquire a negative self-evaluation of unworthiness. Even though rejected children usually become more dependent and crave affection, they tend to hide their feelings and their need for love. Rejected children usually are not able to form satisfying and warm relationships with their peers, which in turn, reinforce their negative self-evaluation. The idea is generalized to how

they perceive the world, which is considered as a hostile and unpleasant place to live (Rhoner, 1980).

Therefore, this meta-analysis aims to examine if the already broadly accepted correlation of parental rejection and internalizing problems can indeed be confirmed in exclusively observed interaction between parents and their children. It predicts that rejecting behavior is indeed correlated with internalizing problems.

As it concerns the directionality of the correlation between parental rejection and internalizing problems, earlier socialization research focused on the parental effects on offspring's behavior, whereas genetic research examines the effects of children on parenting behaviors, since genetically transmitted traits of children can also, affect their environment (O'Connor, Deater-Deckard, Fulker, Rutter, & Plomin, as cited in Berg-Nielsen, Vikan, & Dahl, 2002). The primary focus currently inclines to bidirectionality. Specifically, it is claimed that childrearing patterns and psychopathological behaviors of children interact in a cyclical way. Temperamental factors of children interact with the personality of the parent and elicit parental rejection. Rejection may increase children's pathology, which in turn is likely to amplify rejection (Rapee, 1997).

1.3 Parental educational level as a confounder of the correlation between parental rejection and internalizing problems

Parental education seems to affect parenting behaviors, investment and sensitivity (Conger & Donnellan, 2007). Specifically, low educated parents are correlated with higher levels of rejection (Dwairy, 2010). Parents with different educational background differ as it concerns the amount of time, that they spend with their children with the higher educated ones spending more time (Guryan, Hurst, & Kearney, 2008). Verbal responsivity is positively correlated with parental education (Bornstein, 2019). Highly educated parents are correlated with more warmth (Klebanov, Brooks-Gunn, & Duncan, as cited in Davis-Kean, Sexton, & Magnuson, 2005) and less hostility in parent – child interactions (Fox, Platz, & Bentley, as cited in Davis-Kean et al., 2005). Overall, it is broadly accepted that parental educational level is negatively correlated with parental rejection.

Additionally, literature shows evidence of the association between parental educational level and children's psychopathology. Children with low educated parents had 0.25 standard deviations higher psychopathology than their peers with higher educated parents. It is 68% more likely for children with low educated parents to show psychopathology compared to their peers living in highly educated families (Peverill et al., 2020). Specifically, children with low educated parents are more likely to show internalizing problems (Hopkins, Lavigne, Gouze, LeBailly, & Bryant, 2013; Mills et al., 2012) and highly educated parents are associated with lower anxiety and depressive symptoms (Ursache, Merz, Melvin, Meyer, & Noble, 2017). Thus, parental educational level seems to be negatively correlated with internalizing problems during childhood. Given the fact that previous literature supports the correlation between parental educational level with both rejecting behaviors and internalizing problems, this meta-analysis aims to examine the educational background of parents as a confounder of the correlation between rejection and internalizing problems.

The study aims to examine the educational background of the parents as a confounder of the correlation between rejection and internalizing problems. In other words, it predicts that part of the significance of the rejection – internalizing problems correlation is due to the parental educational level. The already existing literature has indicated a correlation between broader socioeconomic status with both rejection and internalizing problems. Parental educational level constitutes a primary component of the SES and thus, its examination in the context of SES leads to vague results, as the outcome cannot be distinguished from the ones of other components. In the above-mentioned context, the interpretation of the outcome must be interpreted cautiously, as it might be affected from the broader SES of the participating families.

1.4 Children's age as a moderator of the correlation between parental rejection and internalizing problems

The existing literature does not agree on the level of autonomy from parents, that children acquire as they grow up and in extension, on the level of influence, that parents have on their offspring's well-being across different developmental stages. According to Erickson, family constitutes the main contextual influence on the child's development (Weisskirch, 2018). A number of theories support that regardless offspring's age parents are considered their main source of social support (Furnham & Buhrmester, 1992) and therefore, it is likely that parental

rejection could affect children in late developmental stages at the same amount, that it affects them in earlier stages.

On the contrary, another part of the existing literature claims that already since middle childhood the relationship between parents and children alters. Children aged five to twelve years old tend to spend more time with their peers than parents, whereas the latter constituted their main social interactions in the past. It is this period of children's life, that they realize how they can fulfill their social needs through a variety of people apart of their family members and start to consider their peers as potential sources of support (Furman, & Buhrmester, 1992). However, peer and parent relationships remain complementary (Hartup, 1984).

Adolescence is dominated by several specific primary goals. Teenagers aim to acquire autonomy and tend to rely more on their peers for social support. Individuation, as it is called, constitutes one of the main aspects of adolescence and is related to separation from the infantile perception of parents' authority (Koepke, & Denissen, 2012). Specifically, identity is formed through a combination of intrapsychic characteristics and characteristics, that subjects obtain through interaction with their social environment. Through individuation the child renegotiates their relationships with their significant others and aims for more equal relationships with mutual responsibilities (Youniss, & Smollar, 1987). Moreover, teenagers aim to obtain more self-control and feelings of self-agency, while they seek for self-determination (Blos, 1967).

In conclusion, the existing literature is characterized by discrepancy in parental influence on children's well-being and emotional autonommy from their parents over the different developmental stages. Therefore, this study aims to examine meta-analytically whether the age of the children moderates the association between rejection and internalizing problems. The study predicts that the offspring's age does moderate the latter association. Specifically, it predicts that the correlation will be stronger during early childhood than middle childhood and stronger during middle childhood than adolescence, as later developmental stages are characterized by the distribution of emotional dependency into diverse sources of support.

1.5 Current Study

This meta-analysis aims to systematically examine the correlation between parental rejection and internalizing problems in children. Specifically, it expects to confirm the already broadly accepted correlation between the two constructs. Moreover, it aims to test whether parental educational level confounds the above-mentioned correlation and expects to find that part of

the main correlation is attributed to the educational level of the parent. Lower educated parents are expected to be more rejecting and therefore, children with lower educated parents are expected to show higher levels of internalizing problems. Lastly, the study aims to test whether the age of the children moderates the correlation between rejection and internalizing problems. In other words, it aims to examine if the above-mentioned correlation is stronger in diverse developmental stages of the child. It is hypothesized that the correlation is stronger in early childhood than middle childhood, and middle childhood than adolescence.

2 Method

2.1 Selection of studies

In the current study data from a broader meta-analysis on the relation between observed parent-child interactions and childhood depression were used. A systematic research in three digital databases was conducted. Studies written in English, French, German or Spanish and published before October of 2020 were derived from PsychINFO, Web of Science, and ProQuest Dissertations and Theses. Titles, abstracts and keywords were searched using the following terms; moth* or matern* or fath* or patern* or parent* and observ* or lab* or cod* or interact* and internalize* or depress* or dysthym* or affective or bipolar and adolesce* or youth* or child* or puberty or teenage*. The initial search resulted in 10,101 records. After the deletion of duplicates, 9.199 records were screened for eligibility based on titles and abstracts resulting in 649 records, which were screened based on full text. The above-mentioned procedure resulted in 362 studies, which were assessed based on the inclusion criteria for the broader project and twenty studies were deemed eligible for the current meta-analysis. The flow chart of the above-mentioned search process is presented in Figure 1.

2.2 Inclusion / exclusion criteria

Several criteria were defined, in order for the accurate studies to be included in the broader project. Studies should have examined observed parent – child interactions. The assessment of either childhood depression or internalizing problems constituted the second criterion. Participating children of the studies had to be younger than nineteen years old.

Contrariwise, the use of an entailed measure of the assessment rather than a direct one constituted an additional reason to exclude studies. Intervention studies that did not measure the variables prior to the intervention were also, excluded.

In order to identify the eligible data for the current meta-analysis among the components of the existing dataset, some additional criteria were applied. Only studies that examined parental rejection in observed parent-child interactions and that assessed child internalizing problems were included. Secondly, included studies should concern participating children aged from two to eighteen years old.

2.3 Study sample

The meta-analysis included twenty cross-sectional studies published from 1997 to 2019, that examined the correlation between parental rejection and internalizing problems. Ten studies were articles published in journals, whereas the other half constituted dissertations. The total sample consisted of 3.689 parents, whose age ranged from 23 to 41.25 years old and approximately 3.071 children with an age range from 2.72 to 13.7 years. Among the parents, approximately 2.808 (76.12%) were mothers and among the children, approximately 936 (30.48%) were girls. Eighteen studies reported on the ethnic composition of the sample. Five studies included mostly Caucasian sample (i.e, more than 50% Caucasian), four studies were comprised mostly of Afro-Americans, two studies included mostly Hispanic sample. Furthermore, another study consisted of a Dutch sample, four studies were comprised of other ethnicities (i.e. Caucasian, Hispanic, European American, Native American, Asian) and two studies included a sample of multiple ethnicities, among which the Caucasian percentage was higher than 40%. Studies included in the meta-analysis are denoted with asterisks in the References.

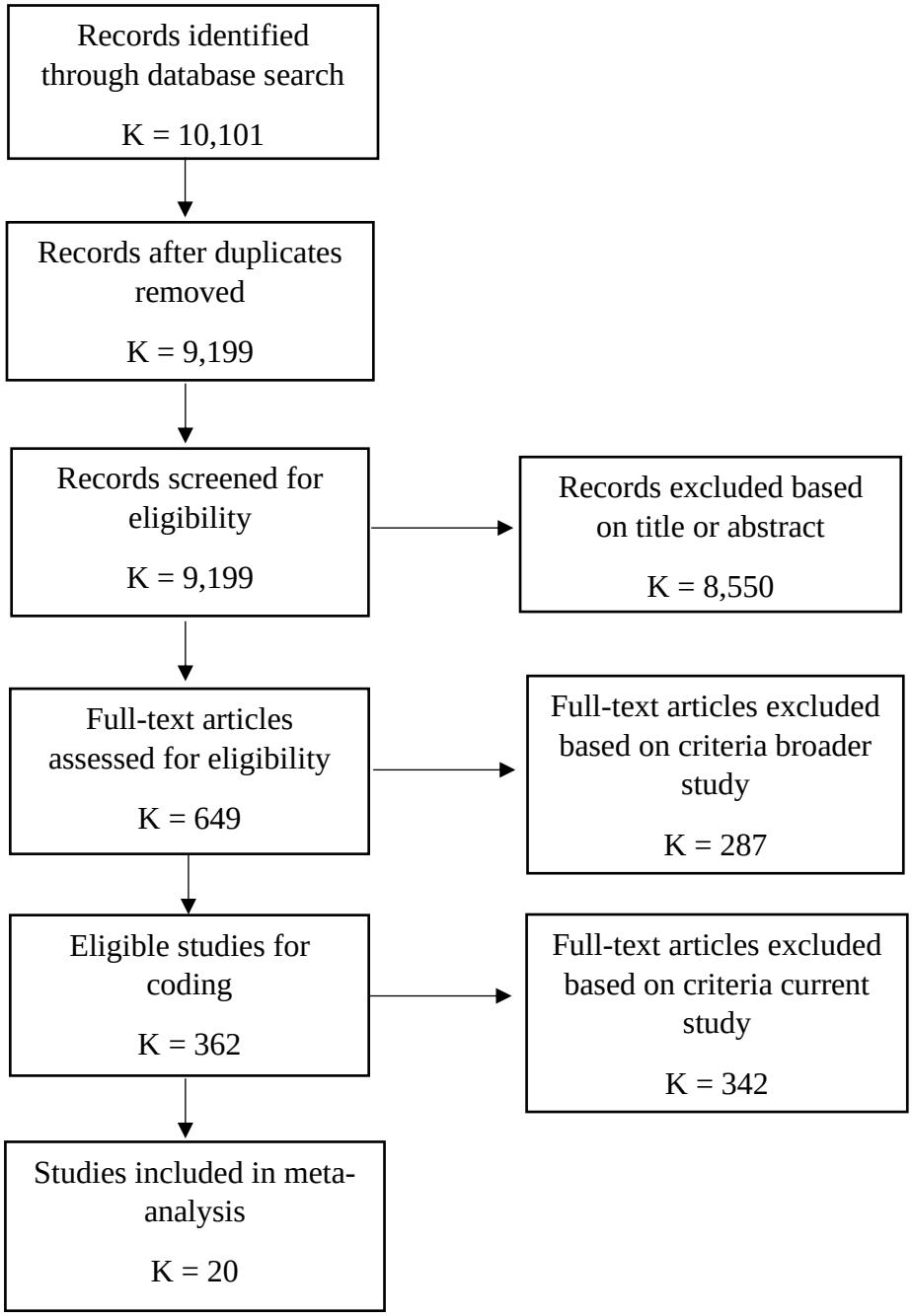
2.4 Coding of the studies

Three Master's students used Excel forms to extract and code the data derived from the existing literature based on the aim of the RE-PAIR meta-analysis. They independently coded a random sample of 30 articles, in order to assess the intercoder agreement. After they were trained to a good level of reliability, each coded independently 100 articles. Meanwhile, they attended weekly meetings to prevent for rater drift by discussing concerns related to the coding

procedure. For the continuous variables, that were included in the current meta-analysis the interrater reliability was good; intraclass correlations ranged from .97 to 1.00 [*M* = .99, *SD* = .02], whereas for the categorical variables interrater reliability ranged from moderate to strong with kappa ranging from .71 to .95 [*M* = .83, *SD* = .11].

Figure 1

Flow chart and selection process



2.5 Information extracted

Study information such as title, author, year, continent and country of participant recruitment and data collection, outlet and journal were coded. Demographic information for both parents and children were also, coded: age, sex, type of caregiver, socioeconomic status and educational level, number of family members participating in the study, parental marital status, psychopathology, childhood maltreatment of parents in their own past and childhood maltreatment of children in the study samples. Moreover, information on the interaction task such as setting, type of interaction, coding system, independency of coders and information on the assessment of depression such as type of assessment, measurement, subtype and timeframe of depression, type of informant and comorbidity were derived from the broader dataset and coded. As it concerns this meta-analysis, parental rejection, children's internalizing problems, parental educational level and the age of the offspring comprised the key constructs.

2.5.1 Parental rejection

As a variable rejection is comprised of hostility, neglect, lack of warmth or undifferentiated rejection (Rohner & Khaleque, 2005). However, undifferentiated rejection relies on the perception of the child regarding the parent's withdrawal of love and is not based on objectively measured indicators of hostility or neglect. Given that the meta-analysis aims to examine the correlation between parental rejection and internalizing problems exclusively in observed interactions between parents and children and that undifferentiated rejection is not observable, only studies that examined hostility, neglect or lack of warmth were used in the analysis.

2.5.2 Internalizing problems

Among the studies that were included in the meta-analysis, eighteen studies examined internalizing problems continuously, whereas two studies produced group comparisons. Internalizing problems were assessed by parent-reports in nine cases, self-reports in two cases, parent, child and teacher reports in two cases, parent and self-reports in three cases and parent, teacher reports in four cases.

2.5.3 Parental educational level

The distinguishment between highly educated parents and low educated ones was executed with the use of ISCED classification. Parents who had completed upper secondary education (ISCED-3 level) at the most were considered as low educated in contrast to highly educated ones, who had attained at least some post-secondary education (ISCED-4 level) (Schneider, 2013). More studies used percentages rather than mean scores to assess parental educational background and reported the percentages of highly educated parents than low educated ones. Thus, the percentages of high education were used in the analysis. Among the twelve studies that reported the percentages, eight studies had a percentage larger than 50% of highly educated parents.

Among the twelve studies, eight reported whether educational level was considered a factor of the SES. Specifically, six studies did not examine the educational level as part of SES, whereas two studies assessed it in the broader context of SES.

2.5.4 Age of the children

The study aimed to compare early childhood, middle childhood and adolescence. The early childhood group ranges from two to six years old. The middle childhood group includes children aged from six to twelve years old and adolescence group was comprised by teenagers aged from twelve to eighteen years old. For the analysis the mean age of the sample was used. Where the mean age was not reported, the age range was used. Among the nineteen studies that yielded ES for the age of children, eight studies included children during early childhood, nine studies were conducted during middle childhood and two studies comprised of adolescents. The analysis was conducted twice. First, the early childhood was used as the intercept, whereas the second analysis used adolescence as the intercept to examine the difference between adolescence and middle childhood.

2.6 Effect size Extraction

The main analysis included twenty studies. To ensure independent samples in the analysis, studies that used the same sample were excluded. However, if the studies reported data of the same sample on diverse outcome variables, they could be included. Specifically, four studies used their sample to assess different forms of rejection, such as neglect and lack of warmth. Additionally, one study used multiple instruments (e.g., HOME and global tasks) to measure

and code the same construct and one assessed the levels of internalizing problems separately based on the gender of the child. Moreover, three studies included different types of observed interactions among parents and children, such as play or compliance situation, and five studies used diverse types of reports of internalizing behaviors, such as parent or teacher report. For the above-mentioned cases, data of the different constructs and assessment tools were averaged in the meta-analysis.

Correlation coefficient *r* and SE were extracted and used in the analyses. For one study (Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003) the correlation was calculated based on the reported χ^2 using the online calculator, that was developed by Wilson (Lipsey, & Wilson, 2001). For a different study (Donenberg & Weisz, 1997) correlation was calculated based on reported M/SD with Wilson's calculator. Regarding the rest of the studies, the reported correlation was used. Overall, SE was computed based on the sample size with the above-mentioned calculator.

2.7 Meta-analytic method

Statistical analyses were executed with JASP 0.14.1.0 software, a graphical, open-source statistical platform (Love et al., 2019). All the data derived from the larger database were converted to effect sizes (ES). The ES was expressed in correlation coefficient, which is used to explore the linear association between two variables. Often referred also as Pearson's product – moment *r* or *r* coefficient, correlation coefficient demands both a magnitude and direction of either positive or negative (Taylor, 1990).

For the main meta-analysis, both a Fixed Effects and a Random Effects model were used. The Fixed Effects Model relies on the assumption that all the studies used in the meta-analysis share a common true Effect Size. Since all studies have the same true effect, FE model implies that the difference between the effect sizes is due to the sampling error (Borenstein, Hedges, Higgins, & Rothstein, 2011).

The Random Effects Model supports a different theory. Given that the studies used in a meta-analysis differ based on a variety of variables, there is no reason to assume that there is only one true effect size identical in all studies. Random Effects Model controls for this variation across studies. In this case, it is assumed that the effect size varies among the studies and therefore, the mean ES represents a random sample of effect sizes. Given that the RE model

takes into consideration the between-studies variance too, which is not used by the FE one, the variance is expected to be larger in the RE model (Borenstein, et al., 2009).

A forest plot, which indicates the mean effect size taking into consideration the weight of the studies will be created to visualize the point estimates and confidence intervals. *Q*-statistic will be used to test for the presence or absence of homogeneity, whereas I^2 identifies the percentage of heterogeneity in the study (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006).

The individual effect sizes were transformed into *z* scores. Given that if the data are normally distributed, 99.9% of the observations fall within 3.29 standard deviations around the mean (Tabachnick & Fidell, 2013), a cutoff score of $-3.29 < z < 3.29$ was used to identify possible outliers. No study met the above-mentioned score and therefore, the meta-analysis did not include any outliers.

To control for possible publication bias a funnel plot, trim-and-fill procedure, Kendall's τ and Egger's Regression Test will be used. The problem of publication bias reflects the idea that non statistically significant results are less likely to be reported in primary-level studies and subsequently, are less likely to be included in meta-analytic reviews. In other words, there is a risk in meta-analyses of publication bias with the included studies having upwardly biased effect sizes (Dalton, Aguinis, Dalton, Bosco, & Pierce, 2012).

Based on the funnel plot, the trim-and-fill procedure calculates a pooled estimate (Peters, Sutton, Jones, Abrams, & Rushton, 2007) and aims to correct asymmetry (Duval, & Tweddie, 2000). The above-mentioned procedure trims the asymmetrical outlying parts, assesses the true centre of the funnel and fills the funnel plot with the missing counterparts of the trimmed studies (Duval, & Tweddie, 2000). For a more formal assessment of a possible overestimation of the effect sizes in the meta-analysis, Kendall's τ and Egger's regression will be used. Kendall's τ examines the rank correlation between the individual effect sizes and their variance, whereas Egger's regression uses precisely the actual values of the effect sizes (Borenstein, 2005).

3 Results

Twenty studies with a total of 3.689 parents were included in the main analysis, that examined the correlation between parental rejection and internalizing problems of the child (Table 1).

Table 1

Characteristics and Effect Size of the studies included in the meta-analysis

Author (s)	*N*	*r* [CI95%]	Observed Behavior	Parental Education	Age Children	Outcome Variable
Donenberg & Weisz (1997)	60	.08 [.02, .14]	Belittling, blaming, walling off, distancing	-	MC	Internalizing problems
Robinson et al. (2009)	189	.31 [.29, .33]	Anger intensity, lack of positive affect	-	EC	Internalizing problems
Callahan et al. (2011)	55	.29 [.25, .33]	Negativity, hostility	-	EC	Internalizing problems
Gordis (1998)	178	-.01 [-.06, .03]	Hostility	-	MC	Internalizing problems
Karreman et al. (2010)	89	-.14 [-.16, -.12]	Warmth (RC)	60.75	EC	Internalizing problems
Sturge-Apple et al. (2006)	420	-.03 [-.03, -.02]	Neglect, distancing	-	MC	Internalizing problems

Kang (2006)	67	.27 [.24, .30]	Nonhosti-lity (RC)	49.3	EC	Internalizing problems
Sirian (2002)	91	.05 [.03, .08]	Negative, lack of positive attention	-	EC	Internalizing problems
Samuelson et al. (2017)	52	.09 [.05, .13]	Nonhostility (RC)	-	MC	Internalizing problems
Van der Bruggen et al. (2010)	44	.06 [-.01, .12]	Rejection, lack of warmth	-	EC	Internalizing problems
Van Doorn et al. (2016)	111	.13 [.11, .15]	Warmth (RC)	57	MC	Internalizing problems
Marceau (2013)	354	.15 [.14, .16]	Hostility	69.5	A	Internalizing problems
Colón (2016)	102	-.01 [-.03, .01]	Lack of warmth	79.41	MC	Internalizing problems
Whiteside-Mansell et al. (2009)	1076	.48 [.47, .48]	Harshness (negative regard, hostility)	-	-	Internalizing problems
Park (2004)	44	.12 [.07, .16]	Negative, lack of warmth	75	EC	Internalizing problems
		.04	Negative affect, lack			

Poyau (2019)	162	[.03, .06]	of positive affect	27	MC	Internalizing problems
Martin et al. (2017)	180	.13 [.12, .14]	Hostility	85	A	Internalizing problems
Sulik (2013)	214	.01 [.00, .02]	Lack of warmth	58.88	MC	Internalizing problems
Tolep (2014)	156	.04 [.03, .05]	Hostility	69.2	EC	Internalizing problems
Warren (2002)	45	.07 [.02, .12]	Lack of affectiona-te behavior	30	MC	Internalizing problems

Note. RC, reverse coded. Parental education, percentages of highly educated parents. EC, early childhood. MC, middle childhood. A, adolescence.

3.1 Main analysis

The Fixed Effects Model showed a significant and medium ES (r = .331, p <.001). Contrary to the expectations, the RE model showed a significant, but smaller effect size (r = .107, p <.001).

There was a significant but small effect size of r = .11, p < .001 (95% CI [.04, .17]) (Figure 2). Figure 2 presents the effect sizes of the included studies in a forest plot. A positive effect size indicates an increase in the internalizing problems. According to the forest plot, sixteen studies showed a positive result, whereas four showed a negative result. In other words, sixteen studies indicated that higher levels of parental rejection are correlated with higher levels of internalizing problems, whereas four studies showed that higher levels of parental rejection are correlated with lower levels of internalizing problems. Moreover, even though the ES ranged from almost zero to small in all cases, the study of Whiteside-Mansell et al. showed an almost medium ES of r = .48 with a small Standard Deviation. The Q statistic showed statistically significant heterogeneity, (Q = 55738.094, p < .001) and the percentage of variance was high

(I^2 = 99.853). Therefore, the hypothesis of the correlation between parental rejection and internalizing problems deviated from true homogeneity and the RE model fits the existing dataset.

Figure 2

Forest plot

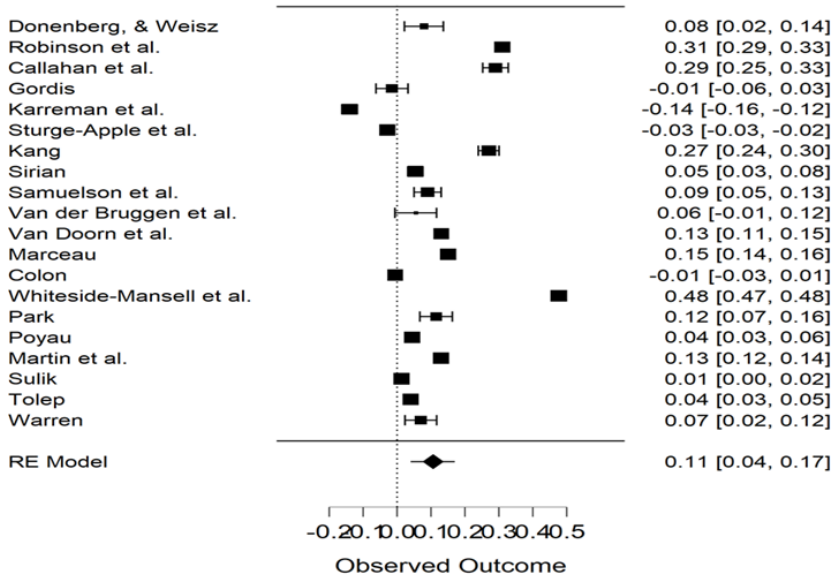
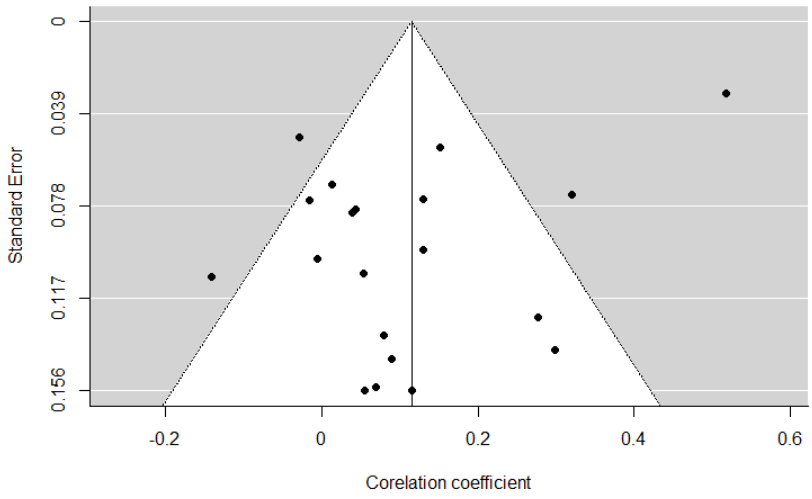


Figure 3

Funnel plot



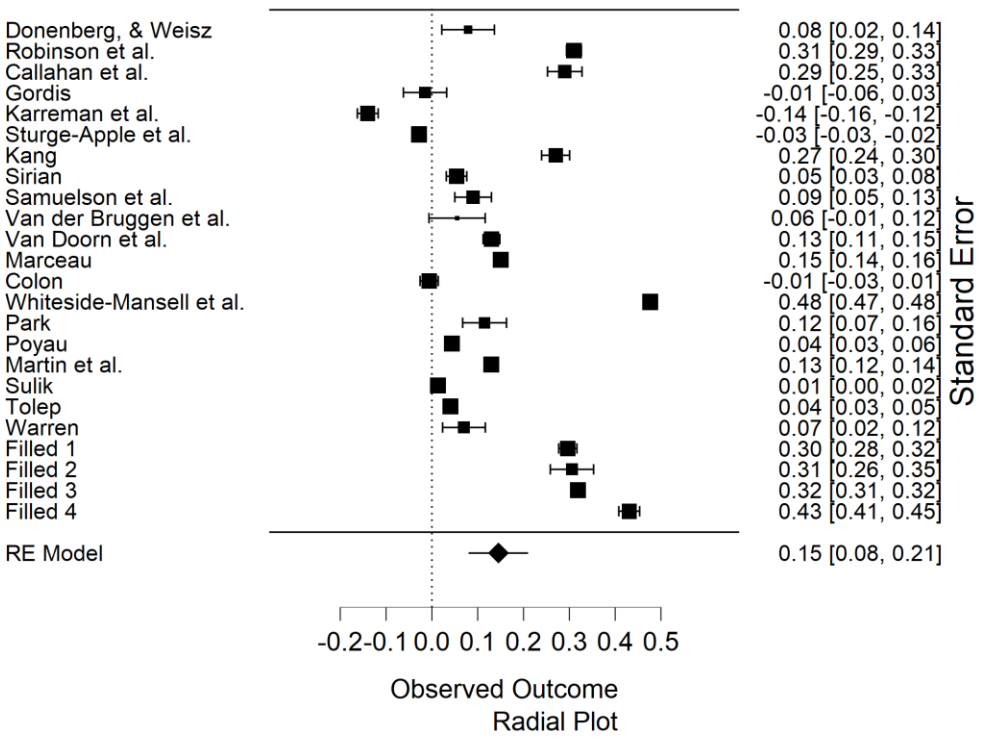
According to Figure 3, ten studies with big samples and in extension, small Standard Errors and one with a small sample size and in extension, big Standard Error deviated from the overall

ES. Eight studies inclined to zero, whereas three of them tended to higher ES. The funnel plot indicated that as the SE increased, the studies ranged inside the overall ES (Figure 3).

Based on the trim-and-fill analysis, four studies were added with effect sizes higher than the overall one. The adjusted ES, that takes into consideration publication bias was .15. In other words, the corrected ES was higher with almost .4 (Figure 4). For a more formal assessment of publication bias the statistical test of Kendall's τ and Egger's test were used. Kendalls' τ (τ = .411, p = .011; Table 3) and Egger's test were not significant (-0.645, p = .519). Overall, the results showed that there was no evidence of publication bias.

Figure 4

Trim-and-fill



3.2 Moderator Analyses

3.2.1 Parental educational level as a confounder of the correlation between parental rejection and internalizing problems

Twelve studies with a total of 1.579 parents yielded effect sizes for the first moderator analysis. The analysis examined whether the parental educational level confounds the

correlation between rejection and internalizing problems. The effect was not statistically significant (z = -0.056, p = .955). Therefore, the hypothesis of parental educational level confounding the correlation between rejection and internalizing problems was not confirmed. However, the I^2 was 99.501 and therefore, somewhat lower than the overall one, which indicated that the moderator explained a very small part of the heterogeneity regardless the significancy.

3.2.2 Children's age as a moderator of the correlation between parental rejection and internalizing problems

Nineteen studies with a total of 2.613 parents yielded effect sizes for the second moderator analysis. The latter analysis examined the children's age as a moderator of the correlation between parental rejection and internalizing problems. The analysis indicated that there was no statistically significant difference among the three age groups. In other words, the moderator did not explain the heterogeneity in the effect sizes. With comparison to the early childhood group (k = 8, n = 735; Table 2), neither the middle childhood group (z = - 1.535, p = .125) nor the adolescence group (k = 2, n = 534, z = 0.180, p = .857) differed significantly. The middle childhood group (k = 9, n = 1.344) did not differ significantly from the adolescent group (z = 1.146, p = .252; Table 3). Heterogeneity was still significant and I^2 = 99.439 was slightly lower than in the Overall ES. Therefore, the moderator explained only a small part of the heterogeneity.

Table 2

Effect of the age groups of children as a moderator of the correlation between parental rejection and internalizing problems with Early Childhood as intercept

Early Childhood (intercept)	*z*	*p*
Middle childhood	-1.535	.125
Adolescence	0.180	.857

With regard to the above-mentioned moderator analysis, one limitation should be taken into consideration for the interpretation of the results. Even though the early and middle childhood

groups included more than three studies, the adolescence group included only two studies. Therefore, the insignificant result could be explained by the low power of the moderator analysis.

Table 3

Effect of the age groups of children as a moderator of the correlation between parental rejection and internalizing problems with Adolescence as intercept

Adolescence (intercept)	*z*	*p*
Middle childhood	-1.146	.252
Early childhood	-0.180	.857

4 Discussion

The main objective of the study was to provide an estimate of the correlation between parental rejection and internalizing problems during childhood in observed interactions between parents and children. It was examined whether the above-mentioned correlation was confounded by the parental educational level and moderated by the age of the children. Publication bias was assessed and there was no evidence of it. A small, but statistically significant result was found for the main hypothesis confirming that observed parental rejection is correlated with internalizing problems. The covariate and moderator analyses had no significant results. Therefore, the correlation is neither confounded by the parental educational level nor moderated by the age of the children.

4.1 Parental rejection and internalizing problems

The results indicated that the broadly accepted correlation between parental rejection and internalizing problems was confirmed and therefore, contribute to a growing body of meta-analytic evidence that suggests the latter correlation. Eighteen out of twenty studies, that were included in the meta-analysis, examined the association continuously and therefore, the positive result indicates that as the parental rejection increases, the levels of internalizing problems increase too. Regarding the two studies that used group comparison, the effect indicates that children with internalizing problems experience higher levels of

parental rejection than their peers without internalizing behaviors. Parental rejection has traditionally been assumed to correlate with internalizing problems (Caron et al., 2006; Chen et al., 2000; Javo et al., 2004; Mills et al., 2012; Muris et al., 2003; Roelofs et al., 2006; Rohner & Britner, 2002). The ES was 0.11, which fulfills the Cohen's criteria for a small effect (Gignac, & Szodorai, 2016). Therefore, in the meta-analysis parental rejection is consistently, but fractionally related with internalizing problems.

A previous meta-analysis (McLeod et al., 2007) that examined systematically the correlation between parenting and childhood depression did not distinguish between the diverse assessment tools, such as self-reports and observations. However, subjects, when asked to recall memories in a bad mood, tend to recall more negative experiences (Burbach, & Borduin, 1986). In fact, depressed subjects tend to maintain a negative self-image and perception of others (Beck, 1967) and recall more poor family relations compared to non-depressed ones (Abrahams, & Whitlock, 1969). Given that thus far, no meta-analysis has examined the correlation between parenting and internalizing problems exclusively with observation tools, the already existing outcomes are criticized under the suspicion of inflation due to self-reports and biased memory. On the contrary, the present study examined the association exclusively in observed parent-child interactions. The result is still significant, and therefore, the meta-analytic review provides new information to the already existing literature. The correlation between parental rejection and internalizing problems is still significant, even when it is not claimed to be inflated by biased memory.

Regarding the results, the previous meta-analysis, that included both self-reports and observation tools yielded a medium effect size of .28 (McLeod et al.,2007), whereas the current meta-analysis yielded a small effect size of .11. Therefore, the effect is still significant but smaller, when it is examined exclusively in observed interactions. The above-mentioned deviation suggests that previous outcomes might have been indeed inflated due to self-reports. Based on literature that supports the recall bias of depressed subjects, it is likely that children with elevated internalizing problems, when asked to describe their parents' behaviors, recall more rejecting behaviors than warm ones leading to inflated outcomes.

Regardless the assessment tools and subsequently, the risk of inflated results, an effect, that indicates the correlation of parental rejection and children's internalizing problems is

apparent. Existing literature suggests several explanations of the above-mentioned effect with the main one being related to withdrawal of children's emotional needs. Through evolution, people developed a biological need for positive response from the significant ones, who vary based on the stages of life. During childhood, parents constitute the significant others, whereas in adulthood partners can be considered as important others too. When the need for caring behaviors such as comfort and support is not met, subjects are disposed to specific behaviors, which are mostly related to emotional dependence. Rejected subjects tend to become anxious and insecure, and subsequently increase their dependency on their significant others to receive caring behaviors. Others, when rejected, become defensively independent and do not seek for care and support, even though they are craving them. Regardless the level of dependence, which is based on how much the subject feels accepted, rejected people often feel intense emotions, such as anger. On the altar of self-protection, they keep to themselves. According to symbolic interaction, subjects tend to internalize the image, that they think their significant others have for them. In the case of rejection, subjects obtain a negative self-image, perception of others and the world (Donoghue, 2010). Overall, their need for self-protection and the negative self-image and perception of others and the world lead and reinforce the social withdrawal and development of internalizing problems.

However, the existing literature also suggests the bidirectionality of the correlation between parental rejection and internalizing problems in children. The timeline of the association was not examined in the meta-analysis, as only cross-sectional studies were included. Thus far, it is unknown whether parental rejection precedes or follows on from the development of children's internalizing problems. According to systemic approach, a family system is characterized by complex interdependencies. Specifically, a small change in the system is expected to lead to alterations in the rest of the system's components (Bornstein, 2015). In the above-mentioned context, a child's difficult temperament may lead to parental rejection. Rejection in turn, may increase psychopathology in the child, which is likely to reinforce rejecting behaviors (Rapee, 1997). Existing literature suggests that rejection constitutes one of the principal parenting behaviors that correlate with children's mental health issues (Barber, 1996) and that parents tend to show more negative behaviors towards children with psychopathology or difficult temperament (Campbell, as cited in Rapee, 1997). Therefore, in order to examine the bidirectionality of the correlation

between parental rejection and internalizing problems a meta-analytic review of longitudinal studies is needed.

As a variable rejection included hostility, neglect and lack of warmth. Different forms of rejection yielded diverse effect sizes. The effect sizes for hostility ranged from small to large, whereas neglect and warmth showed only small effect sizes. It is likely that the overall ES was inflated due to the correlation between hostility and internalizing problems. The latter conclusion seems rational, given that hostile parents can also, become physically and verbally aggressive. However, the already existing literature has not explored yet the different effects of hostility, neglect and lack of warmth on children's well-being. Given that according to the majority of the existing studies, hostility and neglect are considered the two aspects of childhood maltreatment, their individual effects have not been examined yet. Therefore, studies are needed in the future to focus on each of the above-mentioned parenting behaviors separately and examine their effects on the child's mental health and specifically, internalizing problems.

4.2 Parental educational level as a confounder of the correlation between parental rejection and internalizing problems

The results were not statistically significant and therefore, parental educational level does not confound the correlation between parental rejection and internalizing problems. The insignificant result adds a new aspect to the literature, which has indicated the correlation of educational level with both parental rejecting behaviors and internalizing problems. However, the meta-analytic review suggests that heterogeneity in the association between parental rejection and internalizing problems is not due to the educational background of the parents, that participated in the included studies.

Studies have shown that lower SES families are usually more punitive, harsh and less supportive. However, SES is comprised of both social indicators, such as educational level and economic factors, such as materials and resources (Roubinov, & Boyce, 2017). According to the family stress model, poverty constitutes a significant stressor for families and usually leads the parents to harsh behaviors, lack of warmth and hostility (Conger, Rueter, & Conger, 2000). Therefore, the existing outcomes that supported the correlation

of parental educational level with rejecting behaviors and internalizing problems in children may have been distorted by the generally low SES of the participating families. In other words, the economic component of SES and its combination with the social factor may affect more the basic needs of the families and subsequently, children's mental health than the parental educational level itself. In the future, more studies are needed to examine the individual effect of parental educational background on parental rejection and internalizing problems in children. Also, given that there is an overrepresentation of highly educated participants in scientific research, more studies are needed to examine the effect by including equally low and highly educated parents.

4.3 Children's age as a moderator of the correlation between parental rejection and internalizing problems

The results showed a non-statistically significant effect and subsequently, the strength of the main correlation between rejection and internalizing problems does not differ among diverse developmental stages of the children. According to Erikson, regardless the age of the children, family constitutes the main contextual influence on their development (Weisskirch, 2018). Parental emotional support is claimed to be more important than the brace of peers, as the latter is limited to specific aspects of the child's life, such as school (Meeus, & Dekovic, 1995). Even though several studies support that intimacy between parent and child decreases in middle and late adolescence, the existing literature also, suggests that it might not be affected by adolescence (Rice, & Mulkeen, 1995). In some cases, parents are still considered more significant than peers (Rosenberg, 1979), while the attachment with the former can be more powerful predictor of the teenagers' well-being than peer attachment (Greenberg, Siegel, & Leitch, 1983).

Even though previous studies are in accordance with regard to parents constituting the main source of support for children, literature also, suggests that the type and quality of interactions between parents and children alter, as the latter grow older. Specifically, since middle childhood children start to become more functionally autonomous from their parents. At the age of five, they experience alterations, that range from physical maturation to the development of cognitive abilities and expansion of social circle. The above-mentioned alterations affect the type of interactions between parents and children, that move

towards the idea of having mutual responsibilities and a more balanced relation. Parents are no longer considered the only ones to fulfill needs (Selman, 1980) and children start to explore and aim for self-determination (Ruck, Abramovitch, & Keating, 1998). Meanwhile, children tend to spend less time with the adults, as they expand their social interactions through their peers (Collins, Madsen, & Susman-Stillman, 2002). Even though typically parents remain their main source of support, children during middle childhood, realize that apart from their family different people can address their social needs (Bryant, 1985).

Prior to adolescence, children usually still consider their parents as the significant others that they will rely on for support and care, whereas adolescents tend to rely mostly on their peers and later in late adolescence also, on their romantic partners (Furman, & Buhrmester, 1992) Aiming for their autonomy they start to become more emotionally independent from their parents. However, they are usually not ready to be completely independent yet and therefore, they tend to rely on their peers. The individuation, as it is called, is based on separation from the infantile images of parents' authority (Koepke, & Denissen, 2012). Interactions between parents and adolescents are characterized by conflicts, which are mostly related to the renegotiation of the interaction's balance (Blos, 1967). The egaliterianism that characterizes the relationships with the peers reinforces the equality in the interactions between parents and children (Youniss, & Smollar, 1987). In other words, according to the already existing literature, adolescents decrease their emotional reliance on their parents, while they recreate a more balanced relationship with the latter.

Overall, the moderator analysis showed insignificant differences among the age groups, which could be explained by the parents constituting the main source of support for the children regardless the latter's age. However, it should not be disregarded that as children grow older, they expand their social interactions, develop their social abilities, reframe their relationships in a more balanced context and become more functionally autonomous from their parents. Thus, more studies are needed in the future to explore whether the strength of the correlation between parental rejection and internalizing problems alters based on the developmental stages of the children.

A few limitations of this study warrant attention. Regarding the analysis of parental educational level as a confounder of the main correlation, most of the sample included highly educated parents and subsequently, the result could have been affected by low

variation. During the testing of child's age as a possible moderator of the main association, the adolescence group comprised of only two studies and subsequently, the insignificant result could have been due to low power of the moderator analysis. In both moderator analyses, the I^2 was high, indicating a large variation, that could have affected the reliability of the overall ES. Moreover, the meta-analysis included only cross-sectional studies. Given that this type of study examines effects at set time points and does not indicate the timeline of the correlation, the directionality of the correlation between parental rejection and internalizing problems was not addressed.

Overall, rejection constitutes one of the main parenting behaviors that affect the mental health of the child. The meta-analytic review added an interesting aspect to the already existing literature, given that it confirmed the broadly accepted association specifically for observed interactions between parents and child. However, the timeline and directionality of the correlation remain unknown. Moreover, parental educational level was not found to significantly confound the main correlation. The accordance of the existing literature regarding the correlation of parental educational level with both rejection and internalizing problems in children, could be explained by the usage of education in the broad context of SES. The effect is not apparent, when the educational level is removed from the SES and subsequently, disentangled from the rest of the SES components. The strength of the association between parental rejection and internalizing problems was proved to remain the same among diverse developmental stages of the child. Even though literature is contradictory regarding the emotional independency that the child obtains by growing up, it can be argued that regardless the age of the offspring, the caregivers keep constituting their main source of emotional support and acceptance.

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