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Contents

Abstract

Adolescence is a time of great psychological change and research highlights the importance of self-esteem in relation to wellbeing. However, it is not clear which parental techniques contribute to high levels of self-esteem. In this research parental behavior strategies are investigated in relation to self-esteem of adolescents. The first aim of the study was to investigate the association between autonomy support and psychological control (AS/PC) and self-esteem in adolescents. Secondly, we explored if the relationship between observed parental behavior and self-esteem was mediated by adolescent gender and/or cognitive emotion regulation skills (CERS). Data from 142 parents and 80 healthy control group adolescents from the larger, ongoing Dutch research project 'Relations and Emotions in Parent-Adolescent Interaction Research' (RE-PAIR) were used. Self-esteem and CERS were measured with the Rosenberg self-esteem scale and Cognitive Emotion Regulation Questionnaire (CERQ). Multiple hierarchical regression analyses showed that AS/PC did not significantly predict self-esteem in adolescents and no moderating effect of adolescent gender was found. However, we did find a moderating effect from CERS on the relation between AS and self-esteem, with a weaker relation between AS and self-esteem for higher levels of CERS (β = -1.97, p = .002). Further studies are recommended to investigate the underlying mechanisms between parental behavior strategies and self-esteem in adolescents.

Keywords: Adolescence, self-esteem, autonomy support, psychological control, cognitive emotion regulation skills, Multiple regression

The Influence of Parental Behavior and the Importance of Self-Esteem in Adolescents

Adolescence is a time of great psychological and physical change. Decades of empirical research have highlighted the importance of self-esteem, supporting its positive association with psychological adjustment and well-being during adolescence (Martín-Albo et al., 2007, Rodríguez-Fernández et al., 2016). Self-esteem has been regarded as an important construct since the earliest days of psychology. In the first psychology textbook, William James (1890) suggested that the tendency to strive to feel good about oneself is a fundamental aspect of human nature. Self-esteem reflects adolescents' self-belief and is susceptible to internal and external changes during adolescence (Erol & Orth, 2011). Rosenberg defined self-esteem as an individual's set of thoughts and feelings about his or her own worth and importance (Winch & Rosenberg, 1965). According to findings from Bajaj, Gupta, and Pande (2016) self-esteem might be a key factor in enhancing positive well-being indicators and reducing negative affect. High self-esteem is according to previous research, related to several well-being conditions, such as high happiness and life satisfaction (Alan & Duffy, 2014), as well as low anxiety, depression and loneliness (Cacioppo et al., 2009). Conversely, low self-esteem may entail an important risk to adolescents' psychological and emotional health (Boden et al., 2008, Schönfeld et al., 2016, von Soest et al., 2016). Self-esteem also plays a critical role in the way adolescents interact with their environment and adapt to its changes: hence individuals with low self-esteem are expected to show poorer adaptive coping and more internalizing symptoms in relation to stressful life events (Álvarez-García et al., 2015, Babore et al., 2017, Thompson et al., 2016).

Accordingly, research suggests that high levels of self-esteem in adolescents are a remedy for many psychological and social problems (Leary, 1999). However, it is not clear which factors contribute to a higher self-esteem in adolescents and whether parental behavior can influence self-

esteem in adolescents. Therefore, it is important to investigate which factors contribute to higher levels of self-esteem in adolescents and specifically, which parental behavior strategies will positively affect self-esteem in adolescents.

Parental Autonomy Support

Parental autonomy support (AS), refers to a form of parenting that exerts a strong influence on the development of the emotional world of adolescents and facilitates the establishment of a secure, stable, and positive sense of self (Brenning et al., 2015; Ryan & Deci, 2017). Theories of development suggest that the development of autonomy is one of the most important developmental tasks during adolescence (Tulviste, 2010). According to the traditional view, emotional AS from parents was seen as an important aspect of individualization (Chen, 1999). Autonomy-supportive parenting tends to be empathic, encouraging adolescents to express their emotions and desires. Furthermore, this type of parenting offers meaningful choices to adolescents and creates a warm environment that allows discussion of rules and exploration and reflection of emotions. By offering them these choices, adolescents learn to carry out an activity on their own and that they can influence their own behavior. This underlying mechanism provides opportunities for a child to form his own norms, values and opinions, so that they learn to have faith and trust in their selves which are important components for the development of self-esteem in adolescents (Joussemet, Landry, & Koestner, 2008b).

Several studies have shown that AS is positively correlated with well-being (van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017), socio-emotional development (Matte-Gagné, Harvey, Stack, & Serbin, 2015) and vitality (Costa, Cuzzocrea, Gugliandolo, & Larcan, 2016). Researchers have found that parental AS predicts other types of positive outcomes as well, such as higher academic achievement, adjustment to school, and adaptive emotion regulation for

adolescents (e.g., Froiland, 2011; Joussemet, Koestner, Lekes, & Landry, 2005; Roth & Assor, 2012), which in turn were predictive for increases in self-esteem (Brenning, Soenens, Van Petegem, & Vansteenkiste, 2015). There are several ways for parents to create an autonomous environment that adolescents can benefit from and research states that this may be beneficial for their mental health.

Self-Determination Theory

According to Self-determination theory, which states that people are motivated to grow and change by three innate and universal psychological needs, suggests that people are able to become self-determined when their needs for competence, connection, and autonomy are fulfilled (Deci & Ryan, 2000). The social contexts that are responsive and supportive can facilitate young people to engage in self-initiated, self-regulated, and volitional behavior (Deci & Ryan, 2000). Self-determination comes from intentional, conscious choice, and decision and refers to volitional actions taken by people based on their own will, and this behavior (Nota, Soresi, Ferrari, & Wehmeyer, 2011). Parents play an important role in creating an autonomous environment and in encouraging their adolescent to develop self-determination. For example, research studies have provided evidence that parents who are autonomously supportive provide their children with choices and options and allow them to explore and enact according to their own interests and values (Lancaster & Howard, 2004; Ryan, Deci, & Grolnick, 1995). This can be accomplished by showing genuine interest to their children's needs and being empathic to their views and perspectives (Ryan & Solky, 1996). By doing this, parents help their children to develop themselves as active and volitional agents. Second, the provision of structure by parents, such as giving clear expectation about behavior, promotes children's competence, understanding of ways to attain success, and perceived personal control (Grolnick, 2009). Third, parental involvement facilitates children's

motivation to achieve, internalization of values, and students' academic self-regulation (Grolnick, 2009), (d'Ailly, 2003). A caring and supportive home environment also satisfies children's needs for relatedness. In this way adolescents learn to make decisions on their own and feel supported for making these choices and this will, among other things, contribute to developing higher levels of self-esteem from a young age (Hui & Tsang, 2012).

Parental Psychological Control

Psychological control (PC) on the other hand, refers to parenting behaviors that intrude upon children's thoughts and feelings, and has been characterized as parents who excessively implement manipulative parenting techniques, such as guilt-induction, love withdrawal, instilling anxiety and invalidation of the child's perspective (Barber, 1996). Guilt-induction, refers to the use of guilt-inducing strategies to pressure children to comply with a parental request; contingent love or love withdrawal, is where parents make their attention, interest, care, and love contingent upon the children's attainment of parental standards; instilling anxiety, which refers to the induction of anxiety to make children comply with parental requests; and invalidation of the child's perspective, which pertains to parental constraining of the child's spontaneous expression of thoughts and feelings (Soenens & Vansteenkiste, 2010).

Hence, a psychologically controlling parental style, focuses on outcome rather than process and controlling techniques tend to undermine children's intrinsic motivation and internalization (Joussemet, Landry & Koestner, 2008). Psychologically controlling parents further ignore adolescents' perspectives and use manipulative behaviors such as guilt-tripping and emotional cut-off to impose their own viewpoints, thereby reducing adolescents' expression of opinions and emotions (Ryan & Deci, 2017). According to self-determination theory (Deci & Ryan, 2000), by showing psychological controlling behavior towards children, the basic psychological need for

autonomy is being violated. This may have negative consequences that may lead to health and well-being issues such as: psycho pathology and ill-being like depression (Crocker & Hakim–Larson, 1997; Toth & Cicchetti, 1996). By interfering, with children's autonomy attempts (Vansteenkiste, Zhou, Lens, & Soenens, 2005) adolescents are more likely to experience externalizing problems and internalizing problems such as depression and diminished self-esteem (Barber & Harmon, 2002). Research shows that PC is indeed positively correlated with depressive symptoms (Barber et al., 1994; Fauber et al., 1990; Kunz et al., 2013 & Sheikh et al., 2010), low self-esteem, and low self-concept (Silk et al., 2003, Coopersmith, 1967 & Hauser, 1991), as well as problems with emotional regulation (León-del-Barco, Mendo-Lázaro, Polo-del-Río, & López-Ramos, 2019).

Most of the previous empirical research was measured with the the Psychological Control Scale–Youth Self-Report (PCS–YSR; Barber, 1996). This is a commonly used and widely discussed questionnaire, which contains items that reflect parental invalidation of the child's feelings and perspective (e.g., ''My mother/father changes the subject, whenever I have something to say"), guilt-induction/shaming (e.g., ''My mother/father blames me for other family members' problems"), and love withdrawal or manipulation of the attachment bond (e.g., ''My mother/father is less friendly with me if I do not see things her/his way"). Barber (1996) mentioned that parental strategies cannot always be identified as being internally or externally controlling and therefore he created an observational measure of PC, to measure this construct even more accurately. This was done by careful thinking about the behavioral components of the construct. This was valuable information because children can report on feeling controlled, but it is also important to know what parents specifically do that may fuel these perceptions (Barber, 1996).

PC, is consistently associated with maladjustment and ill-being (Soenens & Vansteenkiste, 2010). Previous studies have shown, in fact, positive relations with depressive symptoms (Bleys, Soenens, Claes, Vliegen, & Luyten, 2018), frustration intolerance (Filippello, Harrington, Costa, Buzzai, & Sorrenti, 2018) and relational aggression (Baumgardner & Boyatzis, 2017). It should be noted here that both constructs; parental AS and PC, are not considered to represent opposite ends of a continuum, as previously thought (Schaefer, 1965b), but can be viewed as two separate factors, where the presence of one does not necessarily indicate the absence of the other (Silk et al., 2003).

In conclusion, research states that lower levels of PC and higher levels of AS provided by parents, relate to better overall adjustment, mental health and higher levels of self-esteem in adolescents (Soenens, Vansteenkiste & Sierens, 2009).

Cognitive Emotion Regulation Skills

Research suggests that better emotion regulation skills also make a contribution to better overall wellbeing and higher levels of self-esteem in adolescents (Bajaj, Gupta, & Pande, 2016). Emotion regulation is defined as the ability to regulate emotions that promote emotional and intellectual growth. Emotion regulation is thereby one of the four components of emotional intelligence (Bisquerra, 2007; Mayer & Salovey, 1997). According to Kamalinasab and Mohammadkhani (2018), self-esteem is positively related to adaptive and negatively related to maladaptive cognitive emotion regulation strategies (CERS). This refers to the regulation of emotion in a conscious manner (Garnesfski & Kraaij, 2007) by cognitive processes during or after experienced a negative event (Garnefski, Kraaij, & Van Spinhoven, 2001). There is strong evidence that there is a relation between CERS and self-esteem and specifically, that more adaptive emotion regulation appears to act as a buffer for low self-esteem (Bajaj, Gupta, & Pande, 2016). CERS is assumed to be an important factor in determining wellbeing and/or successful functioning (Cicchetti

et al., 1995, Thompson, 1991). In this research we would like to investigate if there is a moderating effect from CERS on the relation between AS/PC and self-esteem in adolescents, meaning that higher/lower levels of CERS will lead to a stronger/weaker relation between AS/PC and self-esteem in adolescents. This will concern an explorative analysis, as, to our knowledge, a moderation effect of CERS has not yet been studied before. Based on the theoretical framework described before, we therefore expected to find a positive relation, in which higher levels of CERS, will lead to higher levels of self-esteem in adolescents.

Gender Differences

Lastly, there is evidence found that men and women regulate their emotions in different ways and gender differences have also been found in self-esteem (Gomez, Quiñones-Camacho & Davis, 2018). Previous research has shown that adolescent girls tend to have lower self-esteem than boys (Kearney-Cooke, 1999) but a stronger capacity to regulate their emotions (Gomez, Quiñones-Camacho & Davis, 2018). It is suggested that girl's self-esteem might be more sensitive to the support-and-nurturance of parental behavior than boys (Gecas & Schwalbe, 1986) and that girls are more strongly affected by parental quality than boys (Langenhof, Komdeur & Oldehinkel, 2016).

Based on these previous studies we therefore expect that there will be a stronger association between observed parental behavior (AS/PC) and self-esteem in girls, meaning that girls are more dependent on parental behavior to develop higher levels of self-esteem than boys. For this reason, we will lastly investigate if there's a moderating effect from gender on the relation between observed parental AS/PC and self-esteem in adolescents.

Current Study

The overall aim of the study is to identify several factors that contribute to higher levels of

self-esteem in adolescents. More specifically, we will examine the following research hypotheses:

1a. Investigate whether higher levels of AS provided by parents relate to higher levels of self-esteem in adolescents.

1b. If there is a moderating effect from CERS, between observed parental AS and self-esteem in adolescents. It is expected that higher levels of CERS, will lead to a weaker relation between AS and self-esteem in adolescents. Meaning that adolescent with high levels of CERS are less sensitive to parental AS in their levels of self-esteem.

1c. If there is a moderating effect from adolescent gender, in the relation between observed parental AS and self-esteem in adolescents. It is expected that there will be a stronger association between observed parental AS and self-esteem in girls than in boys. Meaning that girls are more sensitive to parental AS in their levels of self-esteem.

2a. Investigate whether higher levels of PC provided by parents relate to lower levels of self-esteem in adolescents.

2b. If there is a moderating effect of CERS, between observed parental PC and self-esteem in adolescents. It is expected that lower levels of CERS, will lead to a stronger relation between PC and self-esteem in adolescents. Meaning that adolescents with low levels of CERS are more sensitive to parental PC in their levels of self-esteem.

2c. If there is a moderating effect of adolescent gender, between observed parental PC and self-esteem in adolescents. It is expected that there will be a
stronger association between parental PC and self-esteem in girls than in boys. Meaning that girls are more sensitive to parental PC in their levels of self-esteem.

Implications of this research consist of; the role that self-esteem and CERS plays within adolescent's overall wellbeing and how observed parental behavior can positively affect adolescent's self-esteem. The ultimate goal of the study is to make a contribution to increase awareness and eventually, overall mental health in adolescents.

Methods

Participants

Data from the larger, ongoing Dutch research project 'Relations and Emotions in Parent-Adolescent Interaction Research' (RE-PAIR) were used. RE-PAIR is a multi-method, multi-informant, cross-sectional study. The current sample consisted of healthy control adolescents between the ages of 11- and 17-year-old and their parents. At least one parent had to participate together with the adolescent, but if possible two parents were asked to participate. This group needed to meet the following inclusion criteria: Adolescent age between 11 and 17 years old, at least going to high school, living with at least one primary caregiver. Adolescents were excluded if they had a current psychological disorder, a lifetime history of depressive disorder, and/or a history of a psychological disorder in the past two years. This was measured with the K-SADS semi-structured interview (Reichart, Wals & Hillegers, 2000). Also, a history of psychotherapy or other psychological treatments, no proper understanding of the Dutch language or using medication for psychological disorders or sleep medication were exclusion criteria.

Eventually 79 mothers participated together with 69 fathers and 80 adolescents. Of the 148 parents that participated in this study, six cases had to be excluded due to incomplete data, this resulted in a total of 142 cases for the parents and 80 adolescents. The different ethnicities that occurred in the sample of the parents were: Caucasian (Caucasian), including Turkish and

Moroccan (97.3%), African (0.7%), Mixed ancestry (1.4%), and Other European country (0.7%). They had the following education level: No diploma or a few years of primary school (0.7%), secondary vocational education (3.4%), lower vocational education (2.7%), secondary vocational education (18.9%), higher vocational or pre-university education (7.4%), secondary higher vocational education (43.2%), university (21.6%) and Other (2.0%). The different ethnicities that occurred in the sample of the adolescents were: Caucasian (Caucasian), including Turkish and Moroccan (91.2%), Asian (2.7%), African (1.4%), Antillean/Surinamese (0.7%), and Mixed ancestry (4.1%). They had the following education level: lower vocational education (10.9%), mix of lower and higher vocational education (6.8%), higher vocational education (26.4%), mix of higher vocational and pre-university education (6.8%), pre-university education (41.2%), Bilingual education (4.1%), and other (9.5%).

Procedure

The adolescents were recruited via schools, public areas and social media. Parents and the adolescent were asked to participate in the RE-PAIR study. After signing informed consent, participation in the RE-PAIR study consists of four parts: online questionnaires, participation in a number of tasks during a test day in the laboratory, two weeks of an electronic diary via an app on their phone, and an fMRI scan at Leiden University Medical Center (LUMC). In the current study part of the questionnaires and one of the observational tasks performed in the laboratory will be used. The RE-PAIR study was approved by the Medical Ethical Committee of the Leiden University Medical Center (LUMC) on May 2nd in 2018 (NL62502.058.17).

At the start of the test day the adolescent and parent(s) individually completed the Issues Checklist (Robin & Foster, 1989). Several topics were listed and parents and the adolescent had to indicate how often they had a discussion or argument on the topic in the last four weeks described in the checklist. If they had a discussion or argument about the topic, they also had to indicate how intense that discussion or argument was on a five-point scale ranging from 1= "calm" to 5= "very intense". On the back of the form, there was room for parents and the adolescent to write down topics that were not on the list.

The parent and the adolescent started thereafter with the problem-solving interaction task (PSI) in a dyad. Before this task started, the head researcher chose three topics, based on the completed issues checklists, wrote them down on paper, and numbered them one to three for the parent and adolescent to discuss. The dyad was told that they each had to give their opinion about the first topic and were asked to try to find a solution. The task lasted for 10 minutes and if the parent and adolescent were finished discussing the first topic, but still had time, they had to proceed with the second topic. This interaction task was videotaped for later coding.

Materials

Adolescent Cognitive Emotion Regulation

The Cognitive Emotion Regulation Questionnaire (CERQ) was used to assess adolescent's CERS. This is a self-report measure designed to assess individual differences in cognitive regulation of emotions in response to stressful, threatening or traumatic life events (Feliu-Soler et al., 2017). We used a 16-item short form of the original 36-item scale with the following subscales: Self-blame (4 items), rumination (4 items), positive reappraisal (4 items), and catastrophizing (4 items). The CERQ can be administered in normal populations and clinical populations, in different age groups. The CERQ has been assessed as reliable (Cronbach's α = .68), with sufficient construct

validity (Garnefski, Baan, & Kraaij, 2005). The short questionnaire has been validated, however Garnefski and colleagues (2007) indicated that reducing the number of items is detrimental to the entire validity of the questionnaire and that more items provide better reliability. However, based on our Alpha-value, we conclude that the reliability is sufficient. We implemented this instrument to assess the extent to which adolescents had healthy CERS, therefore we had to recode the self-blame, rumination, and catastrophizing subscales from this questionnaire, so for the overall CERS, we could calculate the sum score of all the subscales together.

Responses are given on a 5-point Likert scale ranging from 1 "(almost) never" to 5 "(almost) always". Therefore, sum scores can range from 4 to 20. A characteristic of the CERQ, in common with most multidimensional instruments, is that items are not grouped by dimension, but are dispersed throughout the instrument. In this research, we will look at the total sum scores of this questionnaire, with a higher sum score indicating better, adapted CERS in adolescents.

Adolescent Self-Esteem

The Rosenberg self-esteem scale is used, this is a 10-item scale measuring global self-worth by assessing both positive and negative feelings about the self. Statements are for example: "I feel that I am a person of worth, at least on an equal plane with others" or "I feel I do not have much to be proud of". The scale is believed to be uni-dimensional. All items are answered using a 4-point Likert scale format ranging from 0 "strongly agree' to 3"strongly disagree" (Rosenberg, 1965). The Rosenberg Self-Esteem Scale presented a high rating in reliability: Cronbach's alpha was .85, indicating that it had a good internal consistency. The criterion validity was .55, indicating sufficient confidence in the predictions made from the test scores (Rosenberg, 1965). This instrument was used to gain more insight into the level of self-esteem that adolescents had. Part of the items were reverse coded, to ensure that a higher score represent higher levels of self-esteem.

Scores are calculated as follows: For items 1, 2, 4, 6, and 7: Strongly agree = 3, agree = 2, disagree = 1 and strongly disagree = 0. For items 3, 5, 8, 9, and 10 (which are reversed in valence): Strongly agree = 0, agree = 1, disagree = 2 and strongly disagree = 3. The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem (Rosenberg, 1965).

Observed Parental Autonomy Support and Psychological Control

Parental AS and PC were coded by six independent, female master students in psychology and child studies based on the videotaped problem-solving interaction task. The coding system for these behaviors has been developed by the RE-PAIR researchers (Wentholt, Meurs, Janssen, van Houtum, Wever, & Elzinga, 2020). AS is coded based on three sub scales on a 9-point scale, with a higher score representing higher levels of AS: encouraging input, explaining motivations, and receptiveness to adolescent's expression. PC is coded based on three sub scales on a 9-point scale, with a higher score representing higher levels of PC: constraining expressions, guilt induction, and invalidation of emotions. The coders were trained in five sessions. The first session consisted of an introduction to the system and example fragments of the behaviors. For the next four sessions, the students coded three to six practice videos per session, coding was discussed during the training. A reliability set of thirty videos was coded after the training. Average intraclass correlation coefficients were computed to assess intercoder reliability per sub scale: Encouraging input: ICC is .92, Explaining motivations: ICC is .94, Receptiveness: ICC is .89, Constraining expressions: ICC is .90, Guilt induction: ICC is .88 & Invalidating emotions: ICC is .83. Biweekly intervision meetings were held and coders never coded multiple videos of the same parent. Cronbach's Alphas for the three AS sub scales and three PC sub scales were .82 and .64 respectively. Validity is yet unknown, because it concerns a new instrument that has not been used before.

Statistical Analysis

In this research two hierarchical multiple regression analyses were executed to investigate whether AS & PC are related to self-esteem in adolescents. Secondly, the study examined the moderating role of adolescent gender and CERS in these relations. The two hierarchical multiple regression analyses both consisted of three models. In model 1 only parental gender was included, to control for possible dependency between families. In model 2 the predictor variables of observed parental behavior (AS and PC in the first and second hierarchical multiple regression respectively), adolescent gender, and CERQ-scores were added to the model. This model (Model 2) indicates whether the predictors are related to self-esteem. In this step of the analyses the main effects will be investigated to test hypotheses 1a and 2a respectively. Lastly, in model 3 the interaction terms between AS * CERS and AS * adolescent gender, and respectively PC * CERS and PC * adolescent gender were added. In this third step of the model, we aim to investigate the possible moderating effect from CERS and adolescent gender on the relation between observed parental AS/PC and adolescents' self-esteem. With this step, we test hypothesis 1b+c and 2b+c from our study. Whenever we find a statistic significant effect, this will confirm our theoretical hypothesis. Furthermore, a Bonferroni correction will be used to correct for multiple testing, with a critical *p*-value of .05. Analyses will be performed in IBM SPSS version 1.0.0.1406.

Results

Preliminary Analyses

The data were restructured from a wide to long format, in order to fit data of adolescent constructs (i.e. CERQ and self-esteem scores) to parent constructs (AS and PC). To determine

whether AS and PC contributed to different levels of self-esteem in adolescents and if there is a moderating effect of CERS and gender, two hierarchical multiple regression analyses were performed. In order to run this analysis properly, a few assumptions were tested. First of all, the sample size ($N = 142$) indicated that each predictor had at least 20 cases, meaning that this assumption was met in our study. Also, the assumption of normality showed that self-esteem, CERS and AS were normally distributed. PC on the other hand needed to be transformed with a log10 transformation to become more normally distributed. The scatterplot indicated that the assumptions of normality, linearity and homoscedasticity were met. In addition, Mahalanobis distance did not exceed the critical x^2 of 4.27 for *df* is 7 (at $\alpha = .01$) for any cases in the data file. Meaning that there were no multivariate outliers in the dataset. Lastly, the assumption of multicollinearity was not exceeded because the variables in the correlation matrix showed that no variables correlated with a value higher than .80. In addition, all predictors in the regression model had a relatively high tolerance >10, indicating that multicollinearity will not interfere with the interpretation of the MRA outcomes.

To get a first look at the relation between all the variables, correlation analyses were performed (Table 1). There was a negative correlation between PC and AS of -.66. Meaning that higher AS scores relates to lower PC-scores and vice versa. There was also a significant, positive correlation between self-esteem and CERS ($r = .20$). Meaning that higher levels of self-esteem related to higher levels of CERS and vice versa.

Table 1. *Correlation Matrix*

Variable	1.	2.	3.	4.
1. Autonomy support	-	-	-	-
2. Psychological control	-.66**	-	-	-
3. Cognitive emotion regulation	.05	-.03	-	-
4. Self-esteem	.07	-.08	.20*	-

Note: * $p < .05$, ** $p < .001$.

Analyses Autonomy Support

It was predicted that higher parental AS scores relate to higher self-esteem scores in adolescents (Hypothesis 1a). A multiple hierarchical regression was conducted to predict self-esteem in adolescents based on observed AS, adolescent gender and CERS in adolescents.

In our first model, parental gender was added as a covariate. Our model summary (Table 2) illustrates that in Model 1, R^2 has a value of < .00, which can be interpreted that the covariates 'gender' did not account for any of the variance in total self-esteem scores in adolescents. Besides, this effect was statistically not significant, ($F(1,140) = .05$, $p = .83$).

In our second model we added the variables; AS, adolescent gender and CERS, to test whether there was a main effect between AS and self-esteem in adolescents. In Model 2, the value of R^2 increased to .145. Meaning that 14.5% of the variance in self-esteem scores was accounted for by these variables in the model and that this was a statistically significant increase ($F(4,137) = 5.82$, $p < .000$). This indicates that the full model of AS, gender and CERS predicted self-esteem significantly. The regression analysis however, shows that AS did not significantly predict self-

esteem, (β = .05, p = .56). Meaning that AS did not relate to self-esteem in adolescents. Thereby, hypothesis 1a was not confirmed.

Table 2. *Model Summary AS*

Model	R	R Square	R Square Change	Sig. F Change
1	.02	.00	.00	.83
2	.38	.15	.15	.00
3	.46	.21	.06	.01

In the last model the interaction terms: AS * CERS and AS * adolescent gender, were added. The third model was significant (F (6,135) = 5.91, p < .001), however, as shown in table 2 added minimal explained variance with R^2 = .06, meaning that 6.0% of the variance in self-esteem scores was explained by model three predictors. This was also a statistically significant change, which supports that a moderating effect is present. The multiple hierarchical regression in table 4 however, shows that the interaction effect of AS and adolescent gender is not significant, (β = .54, p = .21). These results indicate that there is no moderating effect of adolescent gender in the relation between AS and self-esteem in adolescents. The interaction between CERS and AS on the other hand, did significantly predict self-esteem in adolescents (β = -1.97, p = .002). Meaning that there is presumably a moderating effect from CERS, that negatively influences self-esteem scores in adolescents. This illustrates that for adolescents who have higher CERS-scores and therefore, better adapted CERS, the relation between parental AS and adolescent self-esteem weakens. Meaning that this group will be more independent to parental behavior in developing higher levels of self-esteem.

Hypothesis 1b was therefore, as expected for the interaction between CERS and AS, confirmed, based on our exploratory research.

Table 3. *AS,* Adolescent *Gender and CERS as predictors for self-esteem.*

	Unstandardized coefficients		Standardized coefficient	
Variable	*B*	*SE*	*β*	*t*
Model 1				
Parental gender	-0.13	0.63	-0.02	-0.21
Model 2				
Autonomy support	0.11	0.19	0.05	0.58
Adolescent gender	2.56	0.64	0.33	4.02
Cognitive emotion regulation	0.06	0.05	0.095	1.14
Model 3				
Autonomy support * adolescent gender	0.497	0.397	0.54	1.25
Autonomy support * cognitive emotion regulation	-0.10	0.03	-1.97*	-3.23

Note: * p <.05, ** p < .001.

Analyses Psychological Control

It was predicted that higher PC-scores, will lead to lower self-esteem scores in adolescents (Hypothesis 2a). Again, a multiple hierarchical regression was conducted. Parental gender was added in Model 1 as a covariate. R^2 has a value of < .00, which can be interpreted that the covariates 'parental gender' did not account for any of the variance in total self-esteem scores in adolescents. This effect was in addition statistically not significant ($F(1,140) = .05$, $p = .83$).

In our second model we added the variables; PC, adolescent gender, and CERS, to test whether there is a main effect between parental PC and self-esteem in adolescents. In Model 2, the value of R^2 increased to .14. Meaning that 14,0% of the variance in self-esteem scores was accounted for by these variables in the model and that this was a statistically significant increase, ($F(4,137) = 5.74$, $p < .001$). This indicates that the full model of PC, adolescent gender, and CERQ-scores predicted self-esteem significantly. The regression analysis however, shows that PC did not significantly predicted self-esteem in adolescents ($\beta = -.02$, $p = .76$). Meaning that PC did not predict self-esteem in adolescents. Thereby, hypothesis 2a was not confirmed.

Table 4. *Model Summary PC*

Model	R	R Square	R Square Change	Sig. F Change
1	.02	.00	.00	.83
2	.38	.14	.14	.00
3	.41	.17	.02	.16

Table 5. *PC, Adolescent Gender and CERS as predictors for self-esteem.*

	Unstandardized coefficients		Standardized coefficient	
Variable	*B*	*SE*	*β*	*t*
Model 1				
Parental gender	-0.132	.59	-0.02	-0.21
Model 2				
Pschycological Control	-4.67	1.53	-0.02	-0.31
Adolescent gender	2.55	0.65	0.33	3.96
Cognitive emotion regulation	0.06	0.05	0.097	1.17
Model 3				
Psychological control * adolescent gender	-2.52	3.24	-0.25	-0.78
Psychological control * cognitive emotion regulation	0.44	0.24	0.88	1.85

Note: * P<.05, ** P< .001)

Lastly, we tested whether there is a moderating effect from gender (hypothesis 2b) and CERS (Hypothesis 2c) between PC and self-esteem in adolescents. We added the interaction effects of PC * gender & PC * CERS in Model 3. Thereby, we tested whether the interactions, positively influences self-esteem scores in adolescents. Our model summary (table 4) illustrates that in Model 3, R^2 has a value of .17, but this effect was statistically not significant. Meaning that the interaction effect didn't make a significant contribution to account for any of the variance in total self-esteem scores in adolescents. R^2 change value is .02, which can be interpreted that the addition of Model 3 variables contributes 2,0% additional variance in self-esteem accounted for. This was however, not a statistically significant change, which indicates that there presumably is no moderating effect. This effect was however according to the analysis, statistically significant, $F(6,135)= 4,5$, $p<.00$. However, the multiple hierarchical regression in table 5 shows that the interaction between gender and PC (β = -2.52, p = .44) and CERS and PC (β = .44, p = .07), non-significantly predicted self-esteem in adolescents. This hypothesis was therefore, for both interaction effects, not confirmed.

Discussion

Research states that lower levels of PC and higher levels of AS provided by parents, relate to better overall adjustment, mental health and higher levels of self-esteem in adolescents (Soenens, Vansteenkiste & Sierens, 2009). The goal of this study was to investigate whether parental AS & PC contributed to higher levels of self-esteem in adolescents. Secondly, the study examined the moderating role of CERS and adolescent gender in the relation between parental behavior and self-esteem in adolescents. The results of this study confirm, contradict and propose new relevant insight in the relation between observed AS, PC and self-esteem in adolescents.

Theoretical and practical implications

To start with, the results in this research showed that no statistically significant main effect was found in our analysis from AS/PC on self-esteem in adolescents. Meaning that these constructs did not predict the amount of variance in self-esteem significantly. Secondly, we only found a significant, negative moderation effect from CERQ-scores on the relation between AS and self-esteem. Meaning that there presumably is a moderating effect from CERQ-scores that negatively influences self-esteem scores in adolescents. In conclusion, the relation between AS and self-esteem is presumably less strong for adolescents with better adapted CERS and they are therefore, in all probability, less prone to parental behavior to develop higher levels of self-esteem. The implication that emerges as a result of this research is that parental behavior is especially highly related to self-esteem for adolescents with lower CERS. This illustrates that for adolescents who have higher CERS-scores and therefore, better adapted CERS, the relation between parental AS and adolescent self-esteem weakens.

Meaning that this group will be more independent to parental behavior in developing higher levels of self-esteem. These results are worth communicating to health care organizations and/or educational centers, so they can use this information to improve their care and increase adolescent's overall mental health by focusing on positive parental behavior.

According to our results, AS is important for adolescents who have difficulty with emotion regulation strategies, to develop higher levels of self-esteem. This may provide important clues for clinical practice, as the results indicate that adolescents with lower CERS, will benefit from AS in developing higher levels of self-esteem. Therefore, this research clearly illustrates the importance of positive parental behavior, especially for adolescents with lower CERS. But it also raises the question if positive parental behavior, will also be beneficial for adolescents with better adapted CERS naturally and whether there are other variables that influence this relation. More research is

needed to understand these relations and to understand their mutual interaction. A desirable follow-up step would be to use these findings to create an intervention, aimed at positive parental behavior that might lead to higher self-esteem in adolescents. Because the current study concerns cross-sectional research, no causal conclusions can be drawn from it. But it does provide interesting leads in the effect of CERS in adolescents and the importance of positive parental behavior in relation to adolescent's self-esteem.

Strengths of the Study

As to our knowledge this was the first study to examine CERS as a moderator in the association between parental behavior and self-esteem in adolescents. The interaction between AS and CERQ-score, significantly predicted self-esteem in adolescents. Meaning that there is presumably a moderating effect from CERQ-scores that positively influences self-esteem scores in adolescents. As such, current research helped to contribute to the existing literature by giving a better understanding of the influence of parental behavior in predicting self-esteem in adolescents.

Furthermore, we used the CERQ and Rosenberg self-esteem scale, which had shown good reliability and validity. In addition, the PSI task had been recorded and therefore brought some advantages. According to Jeffcott and Mackenzie (2008), video recording may eliminate some of the challenges that occur in direct observation research in a primary care setting since video recording accurately records clinical events, allows researchers to verify their observations, and allows for the collection of systematic feedback by means of strategic participant review (Seagull & Guerlain, 2003).

Limitations for Further Research

In this research there were a couple of limitations that could possibly be improved in future research. The first limitation is the variance in the PC variable. The preliminary analysis showed no

normal distribution scores, and therefore this variable needed to be transformed with a log10 transformation in SPSS. More variation in the independent variable PC could have possibly added quality to this study, because low variation in scores of variables might create problems in the covariance of multiple variables.

Another limitation was found in the short version of the CERQ that was used in this study. The short questionnaire has been validated, however Garnefski and colleagues (2007) indicated that reducing the number of items is detrimental to the entire validity of the questionnaire and that more items provide better reliability. As a result, the authors indicated that when the opportunity and time were available, the normal version of the CERQ was preferred. Accordingly, future research might consider implementing this, as it has a higher reliability and is therefore more valid.

In addition, variables in this study were examined using self-report questionnaires on self-esteem, CERS and the issues checklist. Although a standard method, the assessment is still vulnerable to recall bias and therefore questionable. However, this was the most desirable way to collect information from the participants because it concerned constructs that could not sufficiently be observed otherwise.

As the coping strategies were measured retrospectively, with the CERQ over time, a potential problem would lie in the data accuracy due to degradation of memories or pathological reasons that makes the trauma of events underrated (Bernstein et al., 2003). Lastly, social desirability might also occur when reporting behaviors considered socially inappropriate such as sex or drugs/alcohol use (Cross et al., 2015, Reinert et al., 2007). Future research might consider combining questionnaires or interviewing family members to discuss topics that are most relevant to reduce these biases.

Our final limitation was the fact that no research was done before to the moderating effect of gender/CERS on the relation between parental behavior and self-esteem and our findings existed of exploratory findings. It is therefore, important to interpret our results with a caveat that scientific research is recommended to further investigate and determine the moderating effect of gender/CERS on the relation between parental behavior and self-esteem in adolescents.

Conclusion

Self-esteem plays an important role for wellbeing in adolescents. There is strong empirical evidence found that parental behavior strategies, such as AS and PC influence the level of self-esteem in adolescents. Therefore, we strived to investigate whether parental behavior strategies influenced self-esteem in adolescents.

In addition, research suggests that better emotion regulation skills make a contribution to better overall wellbeing and higher levels of self-esteem in adolescents (Bajaj, Gupta, & Pande, 2016). Therefore, we strived to investigate if there is a moderating effect from CERS on the relation between AS/PC and self-esteem in adolescents, meaning that higher/lower levels of CERS will lead to a stronger/weaker relation between AS/PC and self-esteem in adolescents. This research concerned an explorative analysis, as, to our knowledge, a moderation effect of CERS has not yet been empirically studied before. However, based on theoretical links described earlier (See methods section), it was expected that that higher levels of CERS in adolescents will lead to higher levels of self-esteem in adolescents.

Lastly, there is evidence found that men and women regulate their emotions in different ways and gender differences have also been found in self-esteem. Based on these previous studies we therefore expected that there will be a stronger association between observed parental behavior (AS/PC) and self-esteem in girls, meaning that girls are normally more dependent to parental

behavior to develop higher levels of self-esteem than boys. It is important to increase knowledge about adolescent's mental health and what factors may contribute to higher levels of self-esteem in adolescents. This study indicates that observed parental behavior plays an important role in the relation between AS and self-esteem in adolescents. Also, the role of CERS is seen as an important predictor when considering the amount of self-esteem, one experiences in combination with positive parental behavior.

Given the importance in previous research of self-esteem in relation to better wellbeing of adolescents, it is recommended for future research to address the possible underlying mechanisms that hopefully contribute to higher levels of self-esteem and in this way, eventually contribute to better overall wellbeing in adolescents.

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