

Perceived parenting style and quality of life related to health among adolescents

Percepción del estilo parental y calidad de vida relacionada con la salud entre adolescentes

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Abstract:

The interaction between health-related quality of life and parenting styles can give rise to perceptions that influence behaviour in adolescents. It is thought to affect key elements in the emotional development of students at a very important stage. Therefore, the aim of this study was to explore the relationship between health-related quality of life and perceived parental educational style as a function of parental gender. A total of 253 adolescents aged 11 and 18 years were selected from secondary schools in a region of south-eastern Spain. The Scale of Norms and Demands Children's Version (ENE-H by its Spanish acronym) and the Short Form-36 Health Survey (SF-36) were used. This was a

quantitative research project and data mining was used for data analysis. The results showed that the inductive parenting style is related to physical role, emotional problems, vitality, emotional well-being, pain and general health. We also observed that the rigid style is negatively related to physical role, vitality, emotional well-being, social functioning, pain and general health. Finally, the indulgent style is negatively related to pain. The findings shed light on the need to provide health-related training programmes that consider family characteristics.

Keywords: adolescence, health-related quality of life, perceived parental styles, family, gender.

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Resumen:

La interacción entre la calidad de vida relacionada con la salud y los estilos parentales puede dar lugar a percepciones que influyen sobre el comportamiento de los adolescentes. Se considera que puede afectar a elementos clave en el desarrollo emocional del alumnado en una etapa de gran trascendencia. Por ello, el objetivo fue estudiar la relación entre calidad de vida relacionada con la salud y el estilo educativo percibido de los padres en función del género. Un total de 253 adolescentes de 11 y 18 años fueron seleccionados de centros de enseñanza secundaria de una región del sureste de España. Se administró la Escala de Normas y Exigencias - versión (ENE-H) y el Cuestionario de Calidad de Vida relacionada con la Salud (SF-36). Se trató de

una investigación de enfoque cuantitativo y para el análisis de datos se utilizó la minería de datos. Los resultados mostraron que el estilo parental inductivo se relaciona con el rol físico, problemas emocionales, vitalidad, bienestar emocional, dolor y salud general. Observamos que el estilo rígido se relaciona de forma negativa con rol físico, vitalidad, bienestar emocional, funcionamiento social, dolor y salud general. Por último, el estilo indulgente se relaciona de forma negativa con el dolor. Las conclusiones arrojan luz acerca de la necesidad de poner en marcha programas formativos relacionados con la salud.

Descriptor: adolescencia, calidad de vida relacionada con la salud, estilos parentales percibidos, familia, género.

1. Introduction

The family is the most important context in which the process of socialisation takes place, norms are internalised and personality and social skills are developed (Haslam et al., 2020), contributing to the development of expectations and perceptions in adolescents (Martínez & Julián, 2017; Jahng, 2019; Willroth et al., 2021). Some of the key aspects in family relationships are the type of communication (for example, acceptance or rejection, closeness or distance) and the parents' approach to guiding the behaviour of their children (for example, autonomy or control, indulgence or strictness) (Delvecchio et al., 2020; Moreno et al., 2020). If adolescents feel supported by their mothers and fathers, they are more likely to

develop a positive sense of self and display prosocial behaviours (Bagan et al., 2019). In this respect, parenting style is associated with emotional development during adolescence (Bahmani et al., 2022; Carlo et al., 2010; Maccoby & Martin, 1983; Setiyowati et al., 2019), and its influence can extend into adulthood (Marčinko et al., 2020). To explain this, Musitu and García (2001) designed a theoretical model of childrearing based on two dimensions: acceptance/involvement (receptiveness and dialogue) and strictness/imposition (punishment). These authors also defined four parenting styles by combining these two dimensions: *inductive* (consisting of a high level of acceptance, also known as involvement, as well as strictness and the imposition of rules and boundaries),

indulgent (consisting of a high degree of acceptance and involvement, and a low degree of strictness and imposition), *strict with low involvement* (in this case, a high degree of strictness and imposition and a low degree of acceptance) and finally *neglectful* (a low degree of acceptance and involvement, contrasting with strictness and imposition). Other theories have since continued in a similar vein, suggesting that the combination of aspects related to affection, communication and conduct produces the four parenting styles (Martínez et al., 2019; Queiroz et al., 2020), thus enriching and expanding the original model (Estlein, 2021; Louis, 2022; Pinquart & Gerke, 2019). As such, families who adopt an inductive style (associated with respect) share skills such as the ability to guide their children in developing healthy goals and a fair distribution of household responsibilities (Fan & Chen, 2020), better socio-economic skills and academic performance (Haslam et al., 2020, Newman et al, 2015) and optimal health, subjective well-being and a good quality of life (Alonso-Stuyck, 2020; Heinze et al., 2020; Wittig & Rodríguez, 2019; Zarra-Nezhad et al. 2020). In contrast, a strict upbringing is associated with greater emotional maladjustment (King et al., 2016) and violent behaviours (Moreno-Ruiz et al., 2018), while an indulgent upbringing has been linked to drug-taking (Liu et al., 2022).

That said, bearing in mind the variable of gender, not all parental educational styles are applied with the same frequency. For example, mothers tend to use the inductive and indulgent styles more often

than the negligent or strict styles; while fathers tend to make greater use of the strict and negligent styles (García, 2020). A study by Jahng (2019) showed the importance of the parenting style adopted by mothers in their children's perception of emotions and satisfaction. In a review that covered over 15 countries, Yaffe (2020) concluded that mothers tend to be seen as indulgent while fathers are seen as stricter, and that this perception was passed down from generation to generation. However, Kuppens and Ceulemans (2019) found that sometimes there are more similarities than differences in the parenting styles of mothers and fathers, with perhaps a slight discrepancy in the implementation of rules and the application of discipline, mainly observed in mothers and fathers, respectively.

However, health-related quality of life (HRQL) is a concept that covers not only physical but also psychological health and social adjustment (Guevara et al., 2021; Kim et al., 2021; Motamed-Gorji et al., 2019; Wallander & Koot, 2016). HRQL consists of various indicators such as social relationships, social support, depressive moods and the perception of cognitive performance. It can also help with the early detection of deficiencies in personal well-being and the most at-risk groups (Barlow et al., 2020). There are some variables, such as socio-familial circumstances, that can affect how adolescents perceive HRQL (Baña, 2015; Kim et al., 2021). In general, a positive perception of intrafamily relationships is related to a better quality of life in adolescents, associated with greater psychological

well-being. In turn, a negative perception of intrafamily relationships is linked to feelings of abandonment (Chávez-Flores et al., 2018) and poor emotional adjustment (Gorostiaga et al. 2019). A link has also been found between the development of parental autonomy and HRQL in adolescents (Jiménez-Iglesias, et al., 2014). Similarly, variables such as rejection from the mother or the father or having an overprotective mother have also been closely linked to the HRQL of children (Xu et al., 2017).

In terms of the analysis of this phenomenon, artificial intelligence and the related methodologies are currently developing at great pace, allowing for the study of complex relationships between different variables (Luan et al., 2020; Morales-Rodríguez et al., 2021); however, there is still room for growth in the field of education in comparison to other areas (Chen et al., 2020).

That said, the general aim of this study is to establish a link between perceived parental educational style and HRQL, as a function of the gender of the parents and the children. The specific objectives of the study were as follows: (1) to analyse the link between educational style and HRQL in adolescents; and (2) to determine if there are any gender-based differences. The starting hypotheses were as follows: (H1) we expected to find a link between certain parenting styles and the HRQL of the respective children, insofar as children with a higher perceived HRQL will have families with more functional styles based on the analysed literature; and (H2) we

expected to find gender-based differences in terms of parenting styles and perceived HRQL, depending on the role of mother, father, son or daughter.

2. Method

2.1. Participants

A total of 368 adolescents took part in the study; 179 boys and 189 girls aged 11–19 (mean = 14.30, $SD = 1.59$), enrolled at state secondary schools in the south-east of Spain. In general, from a socio-economic and cultural perspective, the families could be considered as middle or middle-to-upper class. Prior to the data analysis, the data was pre-processed and any participants with one or more pieces of information missing in an item were removed from the dataset. In the end, there was a total of 253 participants aged 11–18 (mean = 14.43; $SD = 1.51$), with 53.4% girls (mean = 14.6; $SD = 1.5$) and 46.6% boys (mean = 14.2; $SD = 1.5$). Of this total, 80.24% (203) were in compulsory secondary education and the remaining 19.76% (50) were in their first year of *bachillerato* studies (non-compulsory post-secondary education for students aged 16–18).

2.2. Instruments

The Scale of Norms and Demands (Escala de Normas y Exigencias – ENE-H), in its original Spanish version (Bersabé et al., 2001), was used in this study. The ENE-H is used to evaluate the educational style of parents and there are two versions of the scale; the children's version was used in this study. In each sub-scale (dimension), the predicted reliability for

internal consistency was sufficient. A self-report scale was used to evaluate the parenting styles, including the following three factors: inductive, strict and indulgent. There are 10 items for the first two factors and 8 items for the third factor, featuring a Likert-type scale with five degrees of frequency (never, rarely, sometimes, often and always). There was good internal consistency with Cronbach's alpha of 0.85, 0.73, 0.60, 0.80, 0.72 and 0.64 for Factor I-father, Factor II-father, Factor III-father, Factor I-mother, Factor II-mother and Factor III-mother, respectively. Cronbach's alpha would decrease as items are eliminated, which is indicative of the respective contribution. It is also important to note that the corrected item-total correlation was >0.40 .

The Short-Form Health Survey (SF-36) (Ware y Sherbourne, 1992), which is used to evaluate HRQL, was also used in this study. The SF-36 consists of 36 questions that evaluate physical and mental health and quality of life. It was translated into Spanish by Alonso et al. (1995). The psychometric properties of the Spanish adaptation were similar to those of the original survey (varying between 0.78 and 0.94), except for the reliability of the 'social function' dimension, which was lower (<0.70). It has 36 items and different scales: Physical functioning, physical health, pain, energy/fatigue, social functioning, emotional well-being, emotional problems and general health. It includes both items with two possible responses and items with Likert-type scales featuring different degrees of intensity or frequency depending on the

item. Internal consistency (Cronbach's alpha) is 0.8 for all the scales.

2.3. Process

Firstly, a telephone call was made to the selected secondary schools to present the study and invite them to take part. Following initial agreement from the school, the research plan was emailed to the school management, guidance counsellors, teachers, parents and legal guardians, highlighting the importance of emotional education in our health and overall development. Given the age of the students, informed consent was also requested. After selecting the classes, days and times for completing the surveys, a team of researchers was sent to the schools. In the classroom, there was a brief presentation of the study and the survey, guaranteeing the confidentiality and anonymity of all responses. There was also a presentation to teachers with the opportunity to raise any questions or doubts. The surveys were completed in 45 minutes. The data were collected before the COVID-19 pandemic. The study took into account all applicable legislation in Spain and, in particular, Law 3/2018, of 5 December, on the Protection of Personal Data, which establishes the need for the legal guardians of minors to expressly consent to the minors participating in a research study. This study was approved by the University's Ethics Committee.

2.4. Data analysis

Several types of data analysis were performed: univariate descriptive analysis, means and standard deviations;

t-test to compare the means of independent samples; analysis of the relationship between different parenting styles, measured using the ENE-H scale and the SF-36 dimensions of quality of life, using the Pearson product-moment correlation coefficient. The associated probability level and effect size were used to analyse the correlation values (< 0.30 weak; $0.30-0.49$ moderate; > 0.49 strong). To explore the relationship between the dimensions of quality of life and the perceived parenting styles, a range of multiple linear regression analyses were performed. Each dimension of quality of life was the dependent variable and the perceived parenting styles were used as the independent variables.

Lastly, data mining was used to find patterns and correlations between the ENE-H items and the SF-36 dimensions of quality of life. Given that, to date, there are no interpretation rules or cut-off points to classify the dominant type of parenting style, data mining was used to relate these aspects, which began by examining the ENE-H results per item.

The use of items and the combination of items allowed for very specific relationships to be studied not only between macro-aspects (HRQL and parenting styles) but also between specific dimensions. In general, given the six dimensions of parenting style (three dimensions for each parent) and the eight dimensions of HRQL, a total of 8×3 different problems arose. Each problem focused on studying whether a specific dimension of parenting style influenced a

specific dimension of HRQL. The process involved (a) selecting the items that corresponded to a dimension of parenting style (for example, the inductive style), (b) associating them with a dimension of HRQL (for example, physical functioning) and (c) studying the relationship. Firstly, we looked at whether there was a lineal relationship between the associated aspects. From the total number of problems, we selected problems with at least a moderate correlation coefficient of 0.3, using Cohen's criteria (1988). Then, for problems that were selected because the correlation was significant, we performed a discretization of the predicted variable (in our example, physical functioning) into 2, 3 or 4 classes, using equal-frequency binning. The PART classifier (Quinlan, 1993) was used to see whether the items that measured parenting style (in our example, the inductive style) allowed us to predict the class to which the variable belonged (for example, low or high) with sufficient precision. Evidently, in this process, the expressiveness of the language used to describe the problem was reduced, in exchange for greater precision and ability to explain the findings. The regression phase and the successive classification were both performed in full training mode (to establish the existence of a relationship) and in 10-fold cross-validation mode (to guarantee the stability of the findings).

For problems with a classification precision of over 0.5, the most significant prediction rules were selected for interpretation. The 0.5 threshold was chosen

because, after equal-frequency binning, there were always problems with classification balance. The rules were selected in the final stage based on their confidence/support relationship. In some cases, the combination resulted in correlations of less than 0.3. However, these can give rise to significant rules with low support, which could indicate that there are special circumstances to be considered. All analyses were performed using the open-source software WEKA (version 3.8, University of Waikato) and the open-source software libraries NumPy (Oliphant, 2006) and SciPy (Jones et al., 2001).

3. Results

3.1. Quality of life and parenting styles

Table 1 shows the different means and standard deviations for each of the variables used in this study. These results are presented for total participants and according to gender, including the results of the *t*-test for the differences between the means for boys and girls. Statistically significant differences ($p < 0.05$) were found in the SF-36 dimensions of emotional problems, vitality, emotional well-being, bodily pain and general health, where in all cases girls scored lower than boys.

TABLE 1. Means and standard deviations in ENE-H and SF-36.

	Total N=253	Girls N=135	Boys N=118	Difference between means
	Media (DT)	Media (DT)	Media (DT)	<i>p</i>
SF-36				
Physical functioning	92.5 (13)	91.44 (12.39)	93.68 (13.62)	.086
Physical role/physical health	82.9 (27.8)	82.22 (28.0)	83.7 (27.6)	.338
Emotional problems	75.9 (34.8)	70.4 (37.7)	82.2 (30.1)	.003*
Vitality	62.5 (20.7)	58.7 (20.2)	66.7 (20.6)	.001*
Emotional well-being	68.70 (19.1)	65.8 (18.4)	72 (19.3)	.005*
Social functioning	84.6 (19.6)	82.9 (18.8)	86.5 (20.3)	.068
Bodily pain	77.4 (22.4)	74.4 (22.5)	80.8 (21.8)	.011*
General health	74.6 (18.7)	71.7 (18.5)	77.9 (18.4)	.004*
ENE-H				
Inductive-Father	37.3 (8.1)	37.8 (7.9)	36.7 (8.4)	.143
Inductive-Mother	38.5 (7.8)	39.2 (7.6)	37.8 (8.1)	.083
Strict-Father	26.8 (7.8)	26.6 (8.2)	27.1 (7.4)	.310
Strict-Mother	28.0 (7.8)	27.8 (8.1)	28.2 (7.5)	.330
Indulgent-Father	17.7 (5.8)	17.6 (5.4)	17.8 (6.1)	.409
Indulgent-Mother	18.1 (5.6)	18.0 (5.1)	18.2 (6.3)	.431

Note. SF-36: Short Form-36 health-related quality of life survey. ENE-H: Scale of parental educational styles, children's version. *SD*: Standard deviation.

Source: Own elaboration.

Table 2 shows the correlation between the scores for each parenting style evaluated using the ENE-H scale and the SF-36 dimensions of quality of life. Statistically significant positive correlations were found between inductive parenting styles in fathers and mothers and the dimensions of emotional well-being and general health. Statistically significant positive correlations were also found between the inductive style in fathers and vitality and bodily pain, and between the inductive style in mothers and physical role and emotional problems. In contrast, statistically significant negative correlations were found between strict parenting styles in fathers and mothers and the dimensions of emotional well-being, vitality and general health. Statistically significant negative

correlations were also found between the strict style in mothers and physical role, social functioning and bodily pain. However, the effect size of all statistically significant correlations is low.

Table 3 presents the results of the linear regression models adjusted to each of the dimensions of HRQL. The parenting styles were included in each model as potential explanatory variables.

In general, all the obtained models showed a low percentage of variance. The model for the emotional well-being dimension presented the best fit, where the selected variables were the perceived strict educational style in fathers and the inductive style in mothers.

TABLE 2. Correlation between parenting styles (EHE-H) and quality of life (SF-36) (N=253).

	Inductive-Father	Inductive-Mother	Strict-Father	Strict-Mother	Indulgent-Father	Indulgent-Mother
Physical functioning	.087	.111	.038	-.036	-.023	.041
Physical role	.076	.106*	-.073	-.129*	.033	.036
Emotional problems	.103	.123*	.020	-.092	-.049	-.030
Vitality	.133**	.112	-.200**	-.191**	-.035	-.044
Emotional well-being	.162**	.184**	-.224**	-.204**	-.051	-.060
Social functioning	.087	.103	-.082	-.142*	-.115	-.043
Bodily pain	.142*	.096	-.117	-.195**	-.094	-.108*
General health	.177**	.167**	-.127*	-.161**	-.047	-.070

Note. * $p < .05$ ** $p < .01$.

Source: Own elaboration.

TABLE 3. Results of the stepwise linear regression analysis.

Quality of life dimensions	Parenting styles (explanatory variables)	β	t	p	R ² -adj
Physical functioning	-----				
Physical health	Strict-Mother	-.13	-2.07	.040	.013
Emotional problems	-----				
Vitality	Strict-Father	-.20	-3.23	.001	.036
Emotional well-being	Strict-Father	-.22	-3.54	<.001	.073
	Inductive-Mother	.17	2.84	.005	
Social functioning	Strict-Mother	-.14	-2.27	.024	.016
Pain	Strict-Mother	-.20	-3.16	.002	.034
	Inductive-Father	.16	2.57	.011	
General health	Strict-Mother	-.14	-2.28	.023	.043

Note. *p*: Significance.

Source: Own elaboration.

3.2. Patterns of relationships between the ENE-H items and the SF-36 dimensions

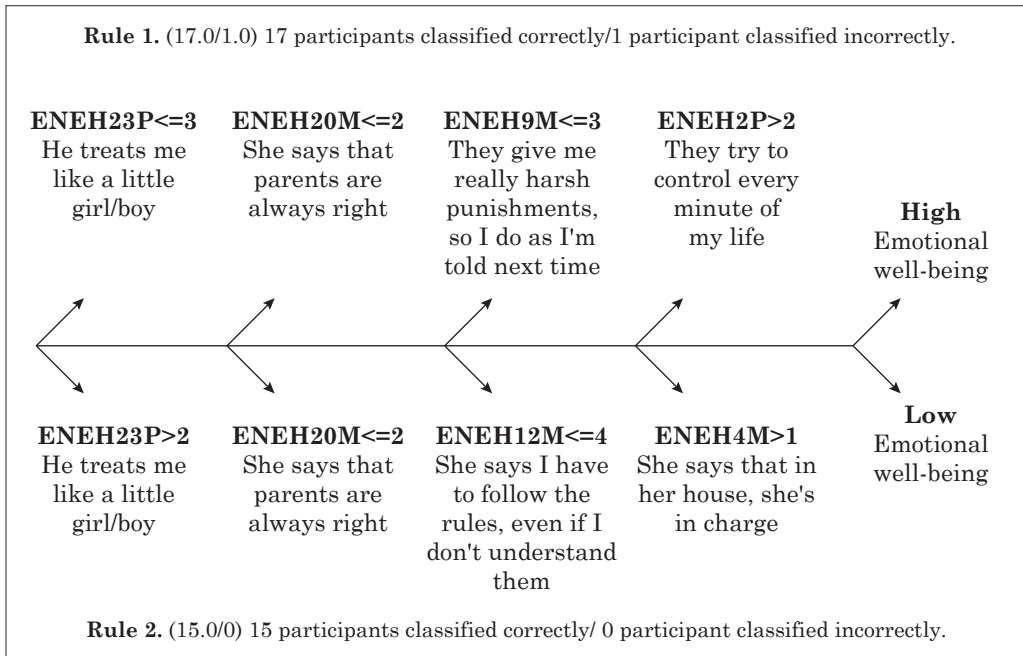
As mentioned in the data analysis section, data mining was used to explore correlations and patterns between the EHE-H items and each of the dimensions of HRQL. The most significant rules in each case (those with the best support/confidence relationship) were extracted from the various analyses. As such, when considering the total sample group, the rule of strict parenting style versus emotional well-being proved significant (see Graph 1). In this rule, of the 253 participants, 16 out of 17 (94%) showed high levels of emotional well-being. In addition, 15 participants (100%) showed a low level of emotional well-being.

Graph 1. Rules for strict parenting style/emotional well-being in the total sample group. In addition, when considering the variable of the group according to gender, the following rules were identified. For

girls, the significant extracted rules were: father with an indulgent parenting style versus physical functioning (see Graph 2); father with an indulgent parenting style versus emotional well-being (see Graph 3); father with a strict parenting style versus emotional problems (see Graph 4); father with a strict parenting style versus pain (see Graph 5); mother with an indulgent parenting style versus physical functioning (see Graph 6); and mother with a strict parenting style versus energy (see Graph 7).

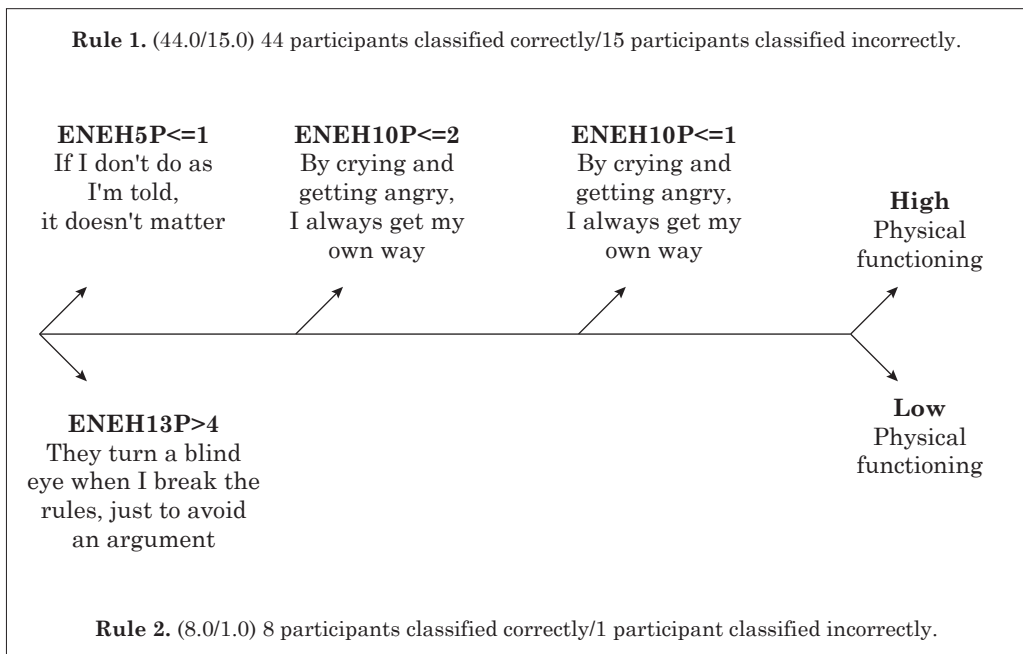
The following rules were identified for boys: father with an indulgent parenting style versus emotional well-being (see Graph 8); father with a strict parenting style versus pain (see Graph 9); mother with an indulgent parenting style versus physical functioning (see Graph 10); mother with a strict parenting style versus social functioning (see Graph 11); and mother with a strict parenting style versus pain (see Graph 12).

GRAPH 1. Rules for strict parenting style/emotional well-being in the total sample group.



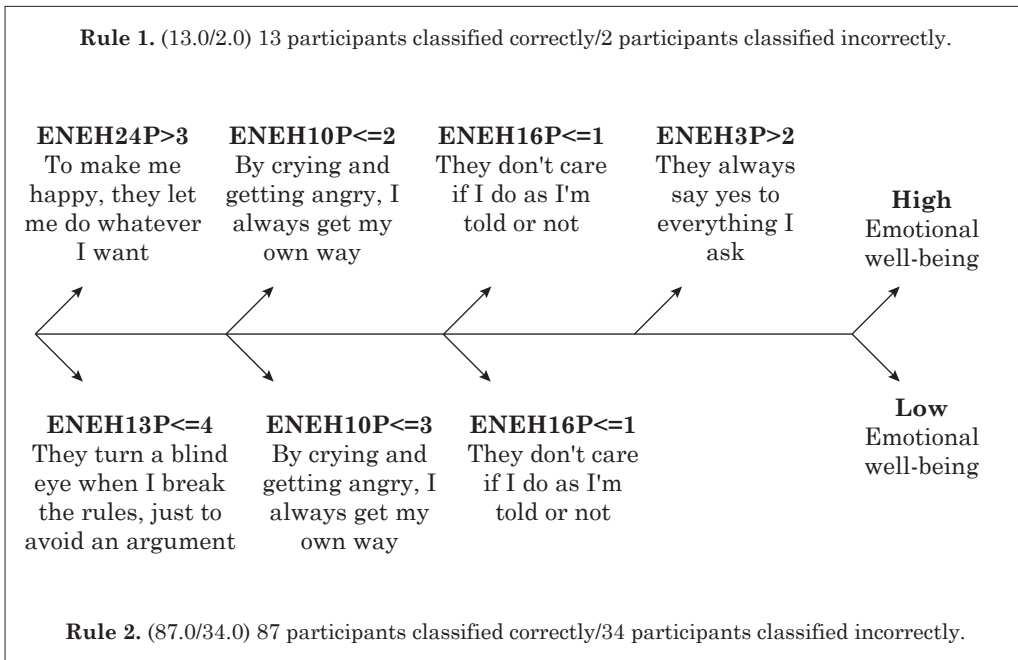
Source: Own elaboration.

GRAPH 2. Classification rule: daughter-indulgent father/physical functioning.



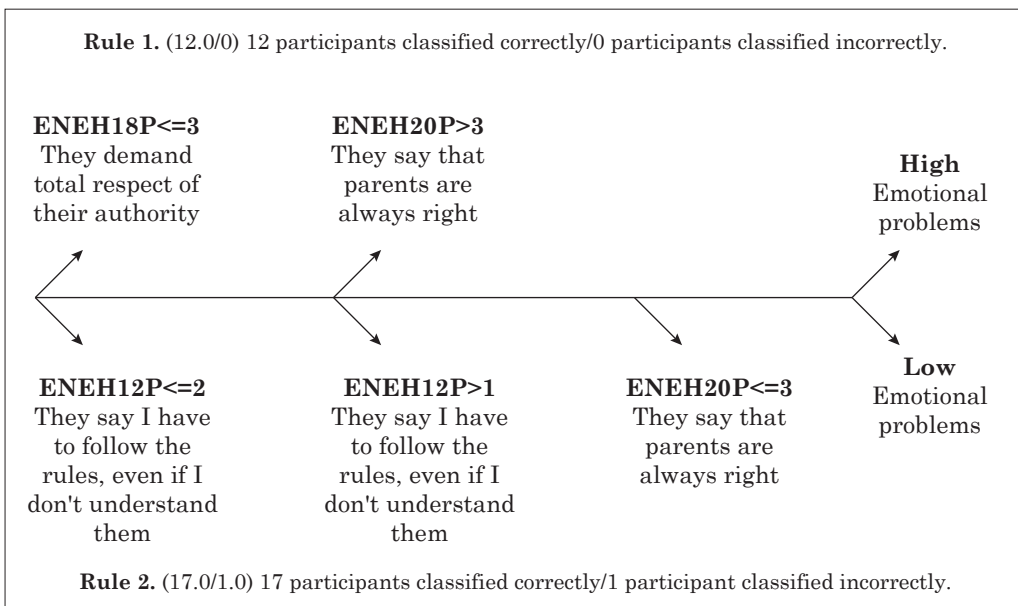
Source: Own elaboration.

GRAPH 3. Classification rule: daughter-indulgent father/emotional well-being.



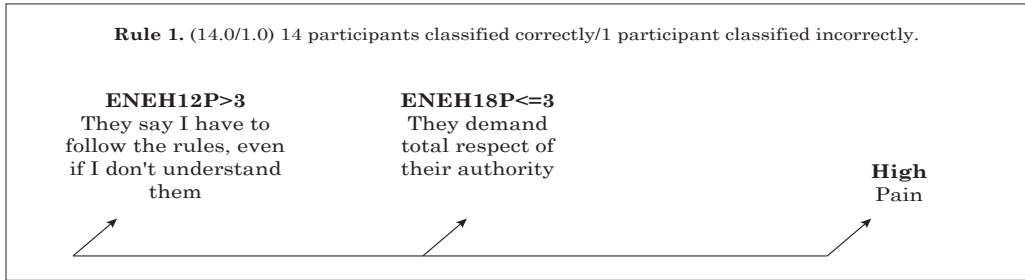
Source: Own elaboration.

GRAPH 4. Classification rule: daughter-strict father/emotional problems.



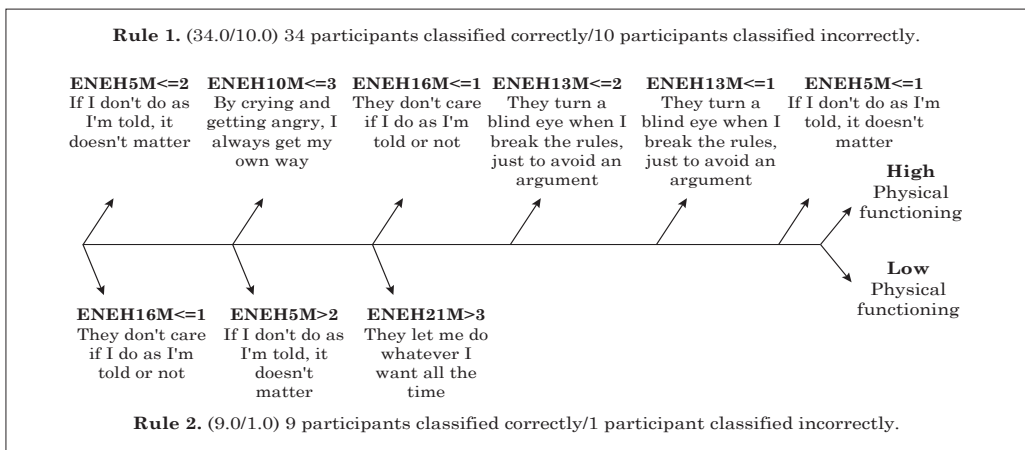
Source: Own elaboration.

GRAPH 5. Classification rule: daughter-strict father/pain.



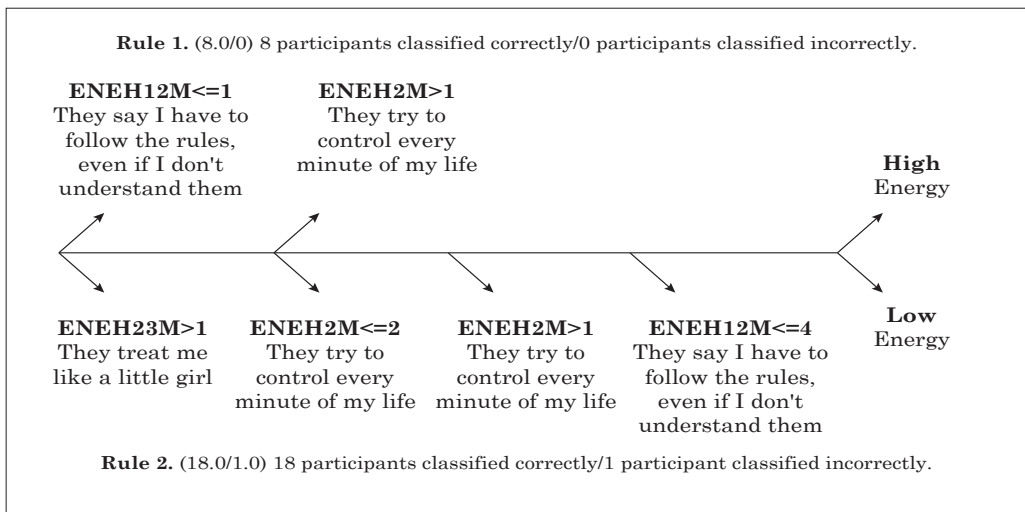
Source: Own elaboration.

GRAPH 6. Classification rule: daughter-indulgent mother/physical functioning.



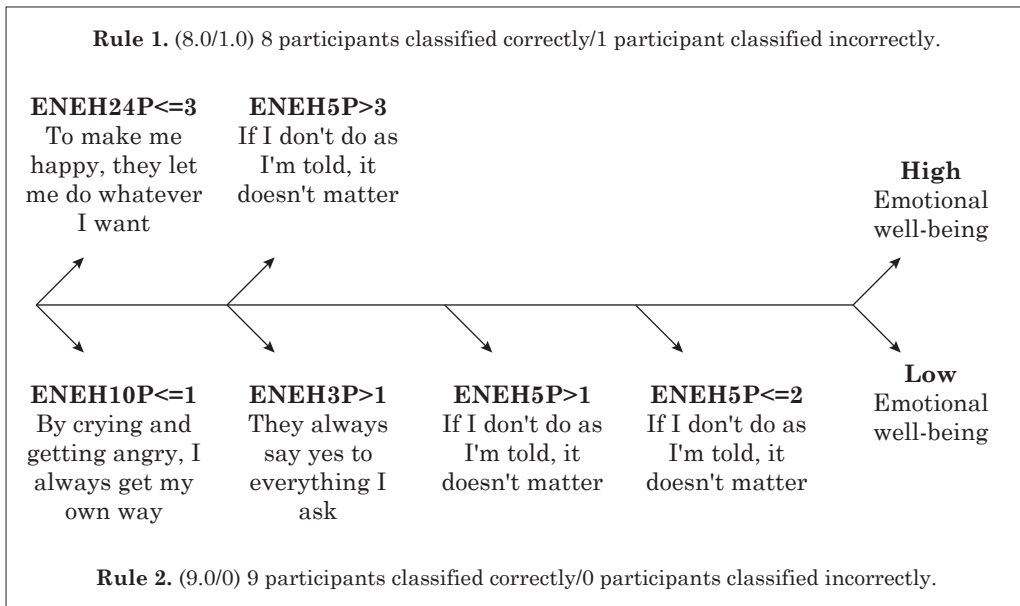
Source: Own elaboration.

GRAPH 7. Classification rule: daughter-strict mother/energy.



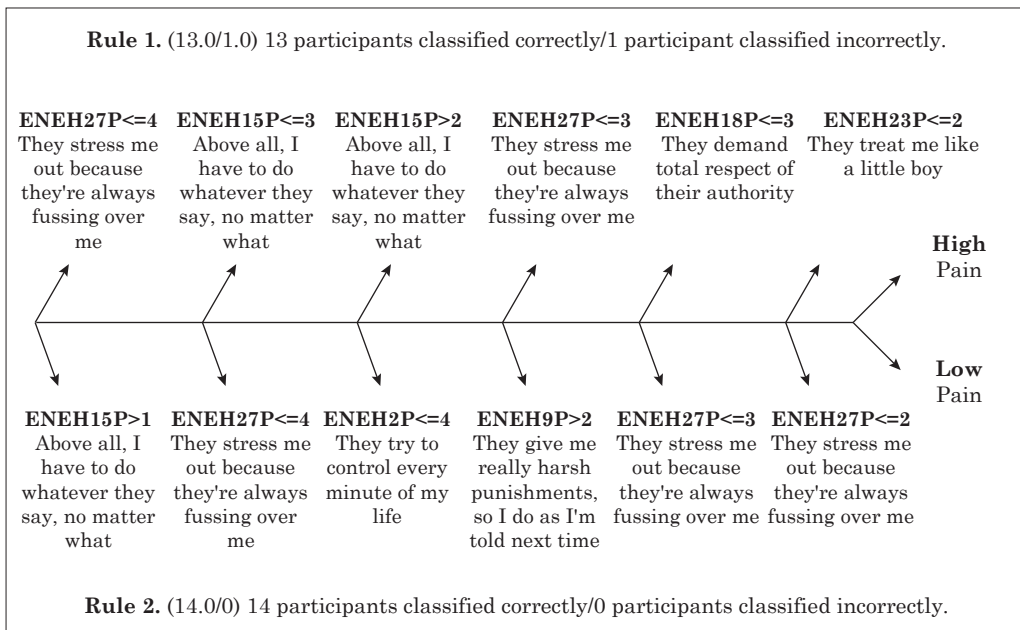
Source: Own elaboration.

GRAPH 8. Classification rule: son-indulgent father/emotional well-being.



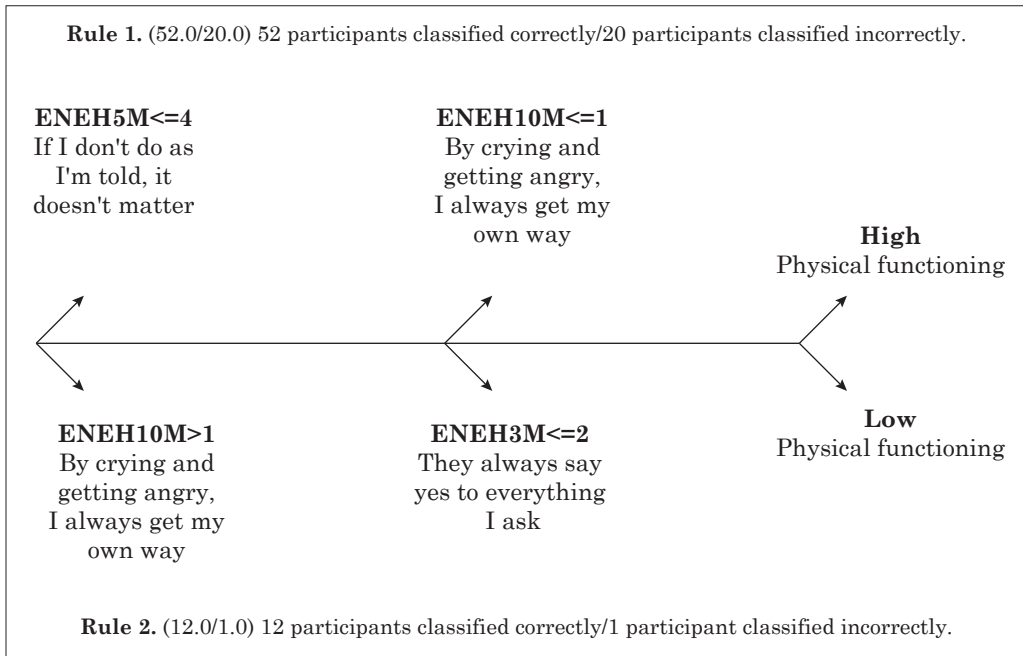
Source: Own elaboration.

GRAPH 9. Classification rule: son-strict father/pain.



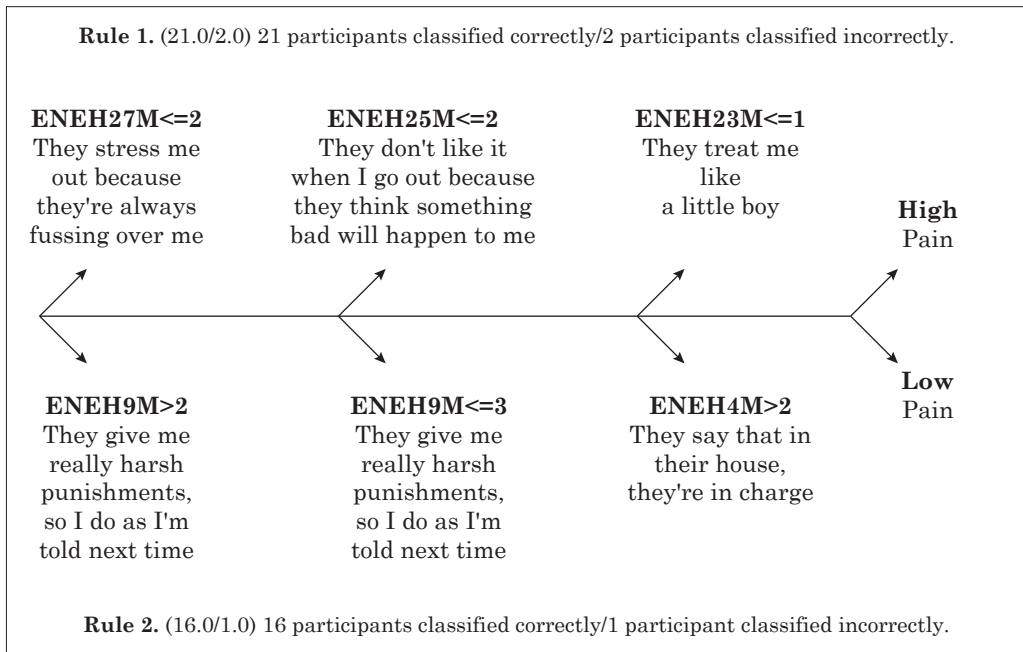
Source: Own elaboration.

GRAPH 10. Classification rule: son-indulgent mother/physical functioning.



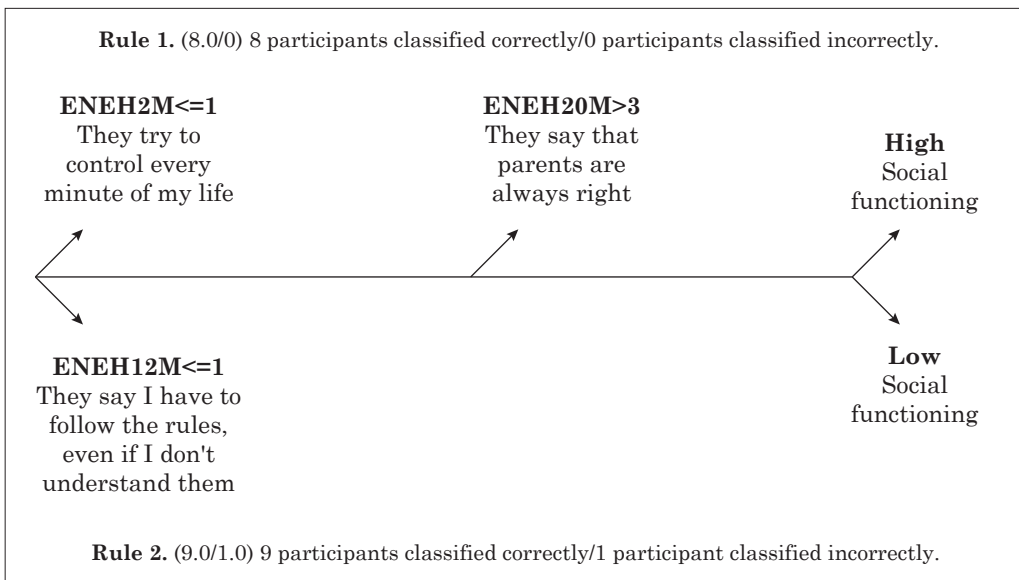
Source: Own elaboration.

GRAPH 11. Classification rule: son-strict mother/pain.



Source: Own elaboration.

GRAPH 12. Classification rule: son-strict mother/social functioning.



Source: Own elaboration.

In the different classification rules, we can see how the specific combination of certain items with a specific score on the scale of parenting styles can result in higher or lower levels of different dimensions of HRQL.

4. Discussion

4.1. Relationship between educational styles and quality of life

With regard to H1, we found a link between the strict parenting style and emotional well-being, thereby partially confirming this hypothesis. However, the relationship was more complex in that the association between strict parenting style and levels of emotional well-being was ambiguous, as it was only specific items that were associated with levels of well-being. The participants

felt that it was important to lay down rules but that these rules should be applied with greater flexibility than those set under the strict educational style. In contrast, the findings of Gorostiaga et al. (2019) showed that psychological control and strict parental control were positively related to anxiety, depression and suicidal tendencies and thoughts in adolescents. León-del-Barco et al. (2019) also showed that strict control and psychological control were linked to more internalising symptoms in children and adolescents, while behavioural control has been linked to fewer internalising symptoms (Pinquart, 2017). These findings could explain why we found a link between strict parenting style and emotional well-being in this study, as we can distinguish between psychological and behavioural control. This is linked to the findings of Gorostiaga et al. (2019),

which suggested that parental warmth, behavioural control and the granting of autonomy were inversely related to internalising problems, especially depression, in adolescents. In contrast, psychological control and strict parental control have been positively related to adolescents in the variables of anxiety, depression and suicidal thoughts (Leung & Shek, 2020). Achieving emotional stability in adolescence is essential in the development of coping strategies and for its buffering effect in the face of adverse experiences (Cabecinha-Alati et al., 2020; Cohrdes & Mauz, 2020). In essence, the family is a pivotal element in the comprehensive development of children (Delvecchio et al., 2020; Li et al., 2020; Moreno et al., 2020).

4.2. Gender differences in parenting styles and quality of life

With regard to H2, we found gender differences in terms of perceived parenting styles and HRQL in adolescents, in line with previous studies (Jahng, 2019; Xu et al., 2017). Specifically, Feeney et al. (2016) found that HRQL was positively related to the warmth of parents and the general health in children and negatively related to maternal depression. Other authors have also found gender differences in parenting styles (García, 2020; Zvara et al., 2020). In this study, we found a negative relationship between physical health and a strict parenting style in mothers, whereby with strict rules and limited communication, physical health can be low. We also found a negative relationship between energy/fatigue and a strict

parenting style in fathers, whereby the stricter the father, the less energy the child will have. In terms of emotional well-being, we found a negative relationship with a strict parenting style in fathers; while, in contrast, an inductive educational style in mothers resulted in higher emotional well-being. We also found that when mothers adopt a strict style, this is associated with lower scores for social functioning and higher scores for pain. Lastly, general health was linked to the inductive style in fathers and proved to have a negative relationship with the strict style in mothers. Therefore, the scores for health will be high when fathers set suitable rules and boundaries and low when mothers adopt a strict educational style with limited communication.

In the group of boys, the strict educational style seemed to be associated with pain both when we differentiated between the educational style in fathers and mothers individually and fathers and mothers when analysed together. This suggests that when the rules are not too strict and a certain degree of independence is allowed, the levels of pain are lower. In the group of girls, we found a link between the indulgent educational style and physical functioning. The adolescents who scored highest in physical functioning were those where both the father and the mother favoured bidirectional communication, set rules and allowed a certain degree of independence. In contrast, when families do not set boundaries, daughters showed

higher levels of emotional problems. Educational styles have proven to be directly linked to health habits and quality of life (Diggs et al., 2017). In addition, there is a greater transfer of habits in people of the same gender (Gottfredson et al., 2017).

In turn, daughters expressed emotional problems and high levels of pain in relation to the strict educational style of their fathers. The last significant link that was found refers to the strict educational style in mothers and energy in the group of girls. In this respect, the daughters felt that their mothers' approach to setting rules should have been relaxed and consensual. In relation to this, previous studies have highlighted the importance of the maternal role in the acquisition of perceptions (Jahng, 2019; Xu et al., 2017).

4.3. Implications

One of the contributions of this study is that it shows the views of adolescents on the highly important topic of their perception of health and parenting styles. In addition, this study has contributed new data about how an adolescent's perception of their parents' educational style can influence such an important aspect as their health-related quality of life. This could provide a reference point for comparative studies with other groups on a national or even international level. Lastly, the intelligent data analysis methods that were used in this study highlight a commitment to exploring innovative forms of analysis, thereby contributing to the

development of knowledge within the fledging field of artificial intelligence (AI) (Chen et al., 2020). The information obtained in this study could be used to design training plans for future teachers in line with Hawkins et al. (2020) and even to develop schools for parents. As such, these data serve both a scientific and a practical purpose, and they can be useful in the management of resources based on policies that consider the perception of quality of life and parenting styles in adolescence.

4.4. Limitations and future research

This study is not without limitations such as the difficulty of generalising the findings as they focus on a group of adolescents from a specific region and who are also in a unique developmental stage (adolescence), although this does span from the age of 11 to 18. However, during the study, homogeneity was assumed in the sociocultural and economic status of the families, insofar as the schools were homogeneous in this respect due to their location and characteristics, which could affect the perception of HRQL in some adolescents (Kim et al, 2021), and even the perception of teaching staff who could also be mediating between the family and the adolescent (Guevara et al., 2021). Lastly, the study did not consider the presence of cultural variables that could have affected the findings.

In terms of future research, it would be interesting to increase the number of participants, increase the age and include other socio-demographic variables such

as the parents' age (Zondervan-Zwijnenburg et al., 2020). It would also be interesting to consider monitoring over a longer period of time (Willroth et al., 2021).

5. Conclusions

The results show a link between the strict parenting style and emotional well-being in adolescents. Certain parental educational styles allow children to develop high levels of emotional well-being, maintain psychological balance and facilitate social functioning. The information derived from this study could be used to design programmes that are a better fit for the characteristics of different parenting styles and the perception of health in adolescents, and it could even be of use in health promotion.

Ethical statement

This study has been reviewed and approved by the ethics committee. During the study, confidentiality, anonymity and the voluntary nature of participation were upheld at all times, following the guidelines of the Helsinki Declaration.

Conflict of interests

None.

5.1. Funding statement

This study has received no funding from any organisations, neither from the commercial nor the not-for-profit sector.

Author contribution

All authors contributed in a significant manner to the reported study, in terms of drafting the introduction and the data analysis and discussion of the results, they also approved the presented manuscript and agree to its presentation. Lastly, all authors contributed to forming the main conclusions of the study.

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