



# The strengthening starts at home: Parent–child relationships, psychological capital, and academic performance – a longitudinal mediation analysis

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## Abstract

This longitudinal study examines how academic psychological capital mediates between parent–child relationships and academic performance in a group of high school students. The sample consisted of 402 students (217 girls and 187 boys) aged between 12 and 17 years. Using a three–wave design, as hypothesized, a significant indirect effect was found between (good) parent–child relationships (assessed at time 1) and academic performance (assessed at time 3) via academic PsyCap (assessed at time 2). Students who perceived high–quality relationships with their parents reported high levels of academic psychological capital and obtained better objective academic performance over time. Theoretical and practical implications of the results are discussed, as well as strengths and weaknesses and future research directions.

**Keywords** Parent–child relationships · Psychological capital · Academic performance · High school students

## Introduction

In the context of positive education –education for both traditional skills and happiness (Seligman et al. 2009) – the psychological capital (PsyCap) construct has received increasing attention in the educational research agenda (Luthans et al. 2012). However, previous studies have often focused on the prediction of academic (self–reported) outcomes, rather than their possible antecedents (e.g., Datu et al. 2016; Siu et al. 2014). Hence, to date, no studies

have examined how family factors can lead to the development of PsyCap and its later role in producing objective academic outcomes (i.e., Grade Point Average, GPA). However, it is well–established that: (1) academic functioning does not depend exclusively on the student’s characteristics or academic environment (DeBernard et al. 2004; Richardson et al. 2012); and (2) family factors play a relevant role in the student’s academic functioning (Bergin and Bergin 2009; Martin et al. 2007). Therefore, the aim of the present study is to fill this gap by examining how academic PsyCap mediates between parent–child relationships and academic performance over time. Providing empirical evidence about the relationships among these variables can help to expand our knowledge about possible ways to improve academic PsyCap through evidence–based interventions, with family members as a relevant actor in this process.

## Parent–Child Relationships

Getting along with significant others is an important social predictor of students’ desirable academic outcomes (Furrer and Skinner 2003 ; Roorda et al. 2011). This is supported by different theories that acknowledge the relevance of high–quality relationships in young people’s lives (for a theoretical review, see Martin and Dowson 2009). For example, self–determination theory (Ryan and Deci 2000) describes how the satisfaction of the need for relatedness (and

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other basic needs) influences students' motivation (e.g., Sulea et al. 2015). Likewise, attachment theory (Bowlby 1969) emphasizes that a history of secure attachment enhances adequate functioning in different life domains, including the school setting (e.g., Cutrona et al. 1994). Additionally, social cognitive theory (Bandura 1986) describes how significant others – via problem-solving modelling and supportive communication – play an important role in building students' self-efficacy (Bandura 1997). Together, these theories suggest that if a child experiences an emotional connection with his/her social environment, believes that s/he is cared for and loved, and feels special to his/her key social partners, it is likely that s/he will function properly in the academic context and perform accordingly.

Parents are significant others who represent young people's most important social relationships (Furrer and Skinner 2003). In accordance with the theories described above, previous studies found that the better the relationship between parents and their children, the better the children perform (Bergin and Bergin 2009; Elmore and Huebner 2010; Fan 2001). More specifically, a good relationship between parents and children – in terms of secure attachment, social support, and/or caring relationships – is related to academic engagement (Furrer and Skinner 2003), self-esteem (Martin et al. 2007), academic motivation (Guay et al. 2008), positive emotions (Ahmed et al. 2010), school satisfaction (Elmore and Huebner 2010), subjective well-being (King 2015), passion and perseverance (Datu 2017), school adjustment and readiness (Anderson 2018; Huang et al. 2018), learning motivation (Cheng et al. 2018), and academic achievement (Toor 2018). The explanation for this is that parents – through a good relationship with their children – (can) satisfy basic needs for acceptance, belonging, thus providing their children with emotional security that allows them to explore their environment and deal with their academic demands (Martin and Dowson 2009). Finally, we also expect that positive parent relationships will foster better feelings of positive psychological resources to children such as feeling more hopeful, efficacious, resilient, and optimistic in their school environment.

### Academic PsyCap

According to Hobfoll's (2002) notion of resource caravans – psychological resources that may “travel together” and interact synergistically to produce differentiated manifestations over time and across different contexts – PsyCap defined as an individual's positive psychological state of development, characterized by hope, efficacy, resilience, and optimism (Luthans et al. 2015). Although it was initially proposed as a work-related construct, more recently the notion of academic PsyCap has been used in a growing number of studies (e.g. Datu et al. 2016; Luthans et al. 2012; Siu et al. 2014). The reasoning is that, psychologically speaking, the activities

students perform can also be considered “work”, defined as goal-directed and structured activities that are compulsory in nature (Schaufeli et al. 2002). More specifically, academic PsyCap describes students who persevere in the fulfilment of their objectives and have the ability to reorient their previous strategies in order to achieve their proposed goals (i.e., have hope); rely on their own abilities and strive to obtain favorable results (i.e., are efficacious); overcome problematic situations and are able to recover from adversity in order to achieve success in their activities (i.e., are resilient); and make positive attributions about their experiences and are optimistic about their future (i.e., feel optimism).

Initial research with undergraduate university students found positive relationships between academic PsyCap on the one hand, and engagement, motivation, and achievement on the other (Luthans et al. 2012; Siu et al. 2014; Vanno et al. 2014). More recently, similar evidence was found among high school students, showing significant associations between academic PsyCap and wellbeing, flourishing, and positive affect (Datu and Valdez 2016), learning empowerment (You 2016), competence (Liao and Liu 2016), coping and satisfaction (Ortega-Maldonado and Salanova 2018), academic adjustment (Liran and Miller 2017), academic performance (Carmona-Halty et al. 2019a), and school belongingness (Datu and Valdez 2019). The explanation is that the academic PsyCap components share a common mechanism of “positive appraisal of circumstances and probability for success based on motivated effort and perseverance” (Luthans et al. 2007, p. 550), resulting in a sense of control, intentionality, and agentic goal pursuit (Luthans and Youssef-Morgan 2017).

### Parent–Child Relationships, Academic PsyCap, and Academic Performance

Previous research has shown mixed evidence, with significant and non-significant effects, regarding the relationship between family factors and academic performance (Alnabhan et al. 2001; Román et al. 2008). Some authors suggest that mediator variables might explain the association between these two variables (Cheng et al. 2012). Following this lead, we propose that academic PsyCap mediates between parent–child relationships – as an indicator that students perceive help, support, care, and interest from their parents– and academic performance (assessed as GPA scores). This expectation is supported, on the one hand, by research that has demonstrated parents' relevance in the prediction of different academic outcomes (Datu 2017; Guay et al. 2008; Martin et al. 2007) and, on the other hand, by research that identifies academic PsyCap as a predictor of academic performance (Carmona-Halty et al. 2019a; 2019b; Datu et al. 2016; Ortega-Maldonado and Salanova 2018). More specifically, when parents have high-quality relationships with their children – based on Cutrona et al. (1994) – they are (also) providing a *safety net* that allows them to

actively explore their environment. This safety net puts them in a better position to persevere in pursuing their achieving academic goals (i.e., hope), make the necessary effort to complete their academic tasks (i.e., efficacy), successfully overcome adversity and problems that arise (i.e., resilience), and make positive attributions about succeeding (i.e., optimism). In addition, based on COR theory, the accumulation of personal resources in the form of academic PsyCap will help children to achieve better academic performance. In other words, parents who support their children are laying the foundation for accumulating PsyCap in their children and hence to perform adequately at school.

Based on the reasoning above, we specified and tested a structural equation model that assumes that academic PsyCap mediates between the quality of parent–child relationships and academic performance (i.e., parent–child relationships → academic PsyCap → academic performance).

## Methods

### Participants and Procedure

The final sample consisted of 402 Chilean high school students – from an original sample size of 414 – with 3% missing data. The students came from two different schools (each of them hosted approximately 500 students). They ranged from 12 to 17 years old ( $M = 13.91$ ,  $SD = 1.36$ ), and 54% of the sample were female. Of the 402 students, 22% were 12 years old, 17% were 13 years old, 22% were 14 years old, 26% were 15 years old, 11% were 16 years old, and 1% were 17 years old at the time of data collection. The number of participants in both schools was equal in gender and age, without significant differences between groups.

This study was part of a project designed to examine antecedents and consequences of academic wellbeing, and it received approval from the Research Ethics Committee of the host university. The school principals, students, and students' parents granted their written informed consent. Participants voluntarily completed a questionnaire twice: once at the end of the regular academic semester (Time 1) and once 9 weeks later (Time 2). In addition, academic performance was obtained from the teachers' class records at the end of the following academic semester, 9 weeks later (Time 3). Participants were encouraged to respond as truthfully as possible, and they were assured that their responses would be anonymous. It took about 20 min to fill out the questionnaire using an electronic procedure.

### Instruments

At time 1, parent–child relationships were measured using a Spanish adaptation of the Interpersonal Relationships Scale (Martin et al. 2007). This scale includes four items (e.g.,

“*My parents give me the help and support I need*”) rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Responses across the four items are averaged to produce a composite score. At time 2, Academic PsyCap was measured using the Academic Psychological Capital Questionnaire (APCQ; Martínez et al. 2019). This questionnaire is a validated Spanish language adaptation of the Psychological Capital Questionnaire (PCQ; Avey et al. 2011). The APCQ includes 12 items (e.g. “*Right now I see myself as pretty successful in my studies*”) that evaluate the four PsyCap components (hope–four items; efficacy–three items; resilience–three items; and optimism–two items), rated on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Responses across the 12 items are averaged to produce a composite score. The validation process for both instruments followed the International Test Commission Guidelines for test translation and adaptation (Muñiz et al. 2013). Finally, at time 3, academic performance (AP) was assessed using the GPA provided by the educational institutions at the end of the semester before the data collection for three mandatory subjects in the Chilean education curriculum: math, language/communication, and history/geography. According to the Chilean grading system, GPAs range from 1 (*poor*) to 7 (*excellent*).

### Data Analysis

All data analyses were conducted using JASP 0.9.01 and SPSS AMOS 23. For preliminary analysis, we examined means, standard deviations, and Pearson's correlation coefficients. For reliability analysis, Cronbach's alpha and McDonald's omega indexes were calculated. For confirmatory factor analysis (CFA) and structural equation modelling (SEM), we used maximum likelihood estimation methods, and the goodness-of-fit of the hypothesized model was evaluated using absolute and relative indexes, that is, chi-square ( $\chi^2$ ) and normed  $\chi^2$ , Incremental Fit Index (IFI), Comparative Fit Index (CFI), Root-Mean-Squared Error of Approximation (RMSEA) with a confidence interval (90%), and Standardized Root Mean Residual (SRMR). To determine the fit of the models, we followed the European Journal of Psychological Assessment (Schweizer 2010) and previous recommendations (Schreiber et al. 2006). That is, we consider an acceptable fit model if the normed  $\chi^2$  is below 3.00; IFI and CFI values are in the range of 0.90–0.95; RMSEA values less than 0.08; and the SRMR value is below 0.10. We examine gender invariance through multi-group CFA and three levels of equivalence (i.e. configural invariance, metric invariance, and scalar invariance) were assessed using changes in CFI ( $\Delta CFI < .010$ ) as criteria for determining whether measurement invariance was established or not (Cheung and Rensvold 2002; Chen 2007). Finally, to examine direct and indirect

effects in the mediation model, we implemented the bootstrapping procedure.

### Results

Table 1 shows means, standard deviations, Cronbach’s alpha ( $\alpha$ ) and McDonald’s omega ( $\Omega$ ) reliability coefficients, and Pearson’s PM–correlations among the variables. The internal consistencies obtained for the scales were good (i.e.,  $\alpha$  and  $\Omega \geq .70$ ), and the pattern of correlations revealed significant relationships (i.e.,  $p < .001$ ) for all the measures in our sample, except between parent–child relationships and academic performance.

### CFA and SEM Analyses

Table 2 shows the fit indexes for each measurement model and the hypothesized model. More specifically, parent–child relationships was composed of one factor with four indicators; academic PsyCap was composed of one higher–order factor and four lower–order factors, which, in turn, were formed by 12 indicators; and three indicators made up the latent academic performance factor. Considering the acceptable fit of the measurement models (for details see M1, M2, and M3 in Table 2), a SEM analysis was conducted to test the proposed mediation model after controlling for gender and age. That is, we proposed a direct effect from parent–child relationships to academic PsyCap, from academic PsyCap to academic performance, and from parent–child relationships to academic performance. Results showed that this model exceeded the recommended standards and provided a good representation of the sample relations (M4 in Table 2), explaining 18.2% of the academic PsyCap variance and 19.1% of the academic performance variance. In addition, as Fig. 1 shows, the factor loadings were all moderate to high and statistically significant, and

they considerably exceeded the factor–loading criterion of .35 (Byrne 2010).

### Measurement Invariance Across Gender

To provide evidence about the applicability of the hypothesized model among boys and girls, we performed a multi–group CFA to examine gender invariance (results in Table 3). The base line model showed an acceptable fit, with support for configural invariance (i.e., same structure across group). In the next step, equality constrains were imposed on all factor loadings to examine metric invariance (i.e., same factor loadings across groups). The resulting model also achieved an acceptable fit. The absolute difference in CFI was less than 0.001. Thus. We concluded that metric invariance across gender is supported. Next, equality constraints were imposed on all intercepts to test scalar invariance (i.e., same intercepts across groups). Following the same reasoning described above, we concluded that scalar invariance across gender is supported. Taken together, we conclude that our proposed mediational model (i.e., parent–child relationships  $\rightarrow$  academic PsyCap  $\rightarrow$  performance) has the same meaning in our boys’ and girls’ sample.

### Directs and Indirect Effects

To examine direct and indirect effects in our model, we implemented a bootstrapping procedure, following Hayes (2009), with 5000 new samples taken from our sample. The indirect effect was considered statistically significant if the estimates of the 95% confidence interval (CI) did not contain zero. The results led us to conclude that: (1) parent–children relationships is significantly related to academic PsyCap ( $a = .361$ ,  $SE = .052$ ,  $BCa$  95% CI [.262, .467],  $p < .001$ ); (2) academic PsyCap is significantly related to academic performance after controlling for parent–children relationships

**Table 1** Means, Standard Deviation (SD), Cronbach’s Alpha and McDonald’s Omega indexes, and Pearson correlations for the study variables

	Mean (SD)	$\alpha$	$\Omega$	Age	2	3	4	5	6	7	8
1. Age	13.91 (1.36)	–	–	–							
2. Parent–child relationships (T1)	6.07 (1.25)	.909	.909	–.145**	–						
3. Academic PsyCap (T2)	3.93 (0.98)	.913	.914	–.133**	.345**	–					
4. Hope	3.87 (1.13)	.860	.862	–.135**	.349**	.915**	–				
5. Efficacy	4.03 (1.13)	.798	.798	–.076 ns	.274**	.829**	.693**	–			
6. Resilience	3.82 (1.12)	.707	.729	–.118**	.243**	.816**	.627**	.551**	–		
7. Optimism	4.07 (1.29)	.756	.756	–.118**	.292**	.815**	.703**	.540**	.601**	–	
8. Academic performance (T3)	5.55 (0.67)	.825	.827	.112**	.034 ns	.266**	.297**	.262**	.182**	.117**	–

\* $p < .005$

\*\* $p < .001$

T1 assessed at time 1, T2 assessed at time 2, T3 assessed at time 3

**Table 2** Results from CFA and SEM analysis

	$\chi^2$	<i>df</i>	$\chi^2/df$	IFI	TLI	CFI	RMSEA	90% CI	SRMR
M1. Parent–child relationships (PCR)	7.176**	2	3.588	.995	.985	.995	.080	[.023, .147]	.0125
M2. Academic PsyCap (APC)	151.148**	49	3.085	.959	.945	.959	.072	[.059, .085]	.0440
M3. Academic performance (AP) <sup>1</sup>	–	–	–	1.000	1.000	1.000	0	–	–
M4. PCR → APC → AP <sup>2</sup>	537.696**	161	3.340	.910	.909	.910	.076	[.069, .084]	.0581

\*\**p* < .001

$\chi^2$  Chi-square, *df* degree of freedom, *IFI* Incremental Fit Index, *TLI* Tucker Lewis Index, *CFI* Comparative Fit Index, *RMSEA* Root Mean Square Error of approximation, *90% CI* Confidence Interval, *SRMR* Standardized Root Mean Square Residual, <sup>1</sup> saturated model, <sup>2</sup> mediation model after controlling for age and gender

(*b* = .433, *SE* = .061, *BCa* 95% *CI* [.311, .549], *p* < .001); and (3) the indirect effect between parent–children relationships and academic performance – via academic PsyCap – is statistically significant (*ab* = .156, *SE* = .035, *BCa* 95% *CI* [.099, .236], *p* < .001). In addition, parent–children relationships is *not* significantly related to academic performance (*c* = .079, *SE* = .063, *BCa* 95% *CI* [–.200, .049], *p* = .213). Hence, we can conclude that academic PsyCap fully mediates the relationship between parent–children relationships and academic performance.

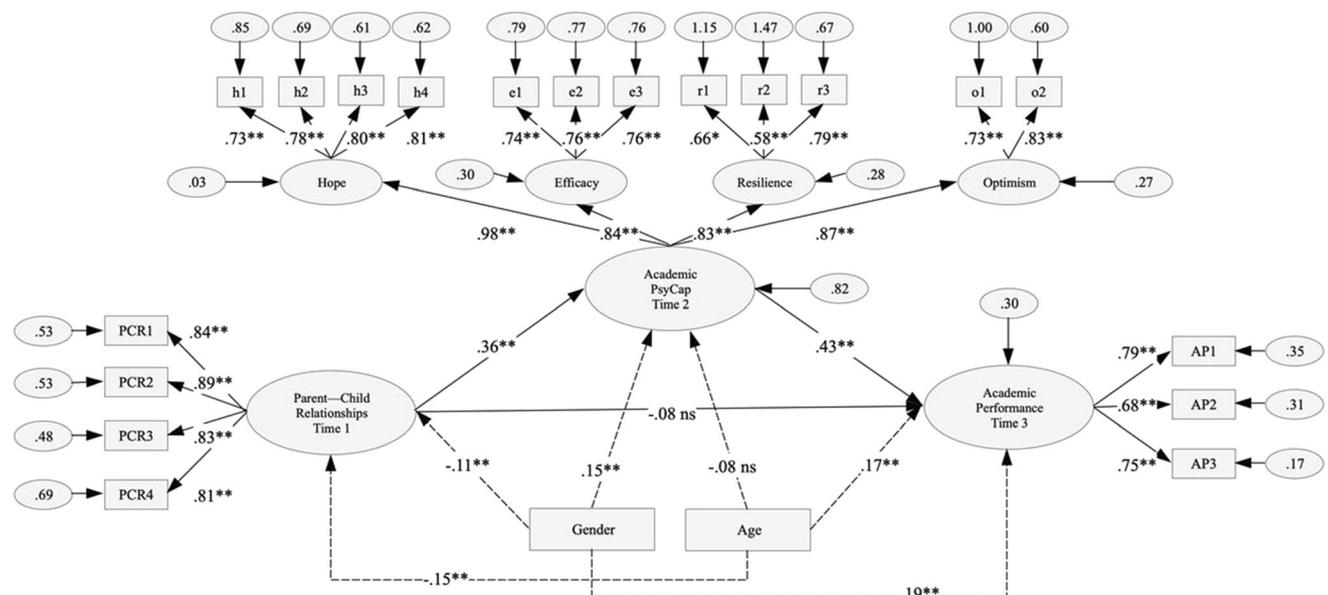
**Discussion**

The present study contributes to the scarce evidence about the antecedents of academic PsyCap and, more specifically, the role of parents in its prediction. The study’s theoretical contribution emphasizes the role of parents in academic PsyCap, whereas its practical contributions focus on possible ways to

increase academic PsyCap through evidence–based programs. We describe them below, and we also discuss strengths and weaknesses of the present study and suggestions for future research.

**Theoretical Contribution**

First, we found that parent–child relationships is directly associated with academic PsyCap. This result suggests that children who perceive high-quality relationships with their parents are more likely to report high levels of academic PsyCap, which is coherent with previous research that shows the relevance of significant others in children’s academic outcomes (Datu 2017; Furrer and Skinner 2003; Guay et al. 2008). That is, we confirm that a high-quality parent–child relationships can be considered a relevant antecedent of academic PsyCap. This is an important contribution that expands the future academic PsyCap agenda because it identifies parents as relevant actors in building their children’s personal academic



**Fig. 1** Single mediation model shows the effect of parent–child relationships on academic performance through academic psychological capital. Standardized coefficients are presented. \*\* = *p* < .001; *ns* non significant effects

**Table 3** Test of gender invariance on the hypothesized mediation model

	$\chi^2$	<i>df</i>	$\chi^2/df$	IFI	TLI	RMSEA	90% CI	SRMR	CFI	$\Delta$ CFI
Configural invariance	619.014**	290	2.135	.919	.904	.053	[.047, .059]	.0571	.918	–
Metric invariance	633.699**	303	2.091	.919	.907	.052	[.047, .058]	.0591	.918	0.000
Scalar invariance	687.025**	320	2.14	.909	.903	.054	[.048, .059]	.0600	.909	0.009

\*\* $p < .001$

$\chi^2$  Chi-square, *df* degree of freedom, *IFI* Incremental Fit Index, *TLI* Tucker Lewis Index, *RMSEA* Root Mean Square Error of approximation, *90% CI* Confidence Interval, *SRMR* Standardized Root Mean Square Residual, *CFI* Comparative Fit Index

resources. In this line, due the family is (one of) the most important and immediate context that influence how vulnerable or resilient are the adolescents, an optimal relationships with parents can promote PsyCap (and other personal resources) because they experience a safety net that leads his grow and develop (Carmona-Halty et al. 2019a; Liu et al. 2019; Rey et al. 2020).

Second, we found that academic PsyCap is directly associated with academic performance, GPA. This result suggests that children who report high levels of academic PsyCap are more likely to obtain better performance over time. That is, we confirm that academic performance is higher when children simultaneously may draw upon four personal resources that make up the academic PsyCap construct (i.e., hope, efficacy, resilience, and optimism). This is an important contribution because – to date – there is scarce evidence about the applicability of the PsyCap construct in high school settings and its subsequent impact on objective academic performance (e.g., Carmona-Halty et al. 2019b; Datu et al. 2016). In addition, our findings are coherent with previous research that shows the predictive role of academic PsyCap for several academic outcomes, including academic performance (Carmona-Halty et al. 2019a; Datu et al. 2016; Ortega-Maldonado and Salanova 2018).

Third, we found that parent–child relationships is indirectly associated with academic performance over time through a direct relationship with academic PsyCap what mediates this association. In addition, although boys and girls could differ in the study variables levels, we provide gender invariance evidence that confirmed the mediating role of academic PsyCap in both samples. This result suggests that students who perceive high–quality relationships with their parents are more likely to obtain better performance through the deployment of their academic PsyCap resources, irrespective of their gender. This mediation can be explained by integrating both self–determination theory (Ryan and Deci 2000) and conservation of resources theory (Hobfoll 2002). Namely, when children feel that their parents satisfy their need for relatedness (through close relationships with them), they will be able focus on envision goals and challenges and open their mind to productive ways of thinking and problem–solving (i.e.,

accumulating personal resources), which, in turn, give enable them to effectively deal with their academic environment and obtain an adequate level of academic performance.

### Practical Implications

The first practical implication of our study is related to the relevance of promoting positive relationships between parents and children in family settings. Our findings lead us to conclude that adequate parent–child relationships will – through academic PsyCap – translate into better academic performance. In order to materialize this assumption, the strength–based parenting (SBP) conceptualization – a style of parenting that seeks to deliberately identify and cultivate positive states, positive processes, and positive qualities in one’s children– can be used as a reference framework for future interventions (see Waters 2015a, b). For instance, a recent study illustrates that an SBP intervention increased parents’ self–efficacy – greater confidence and perceived ability to successfully raise their children – and fostered positive emotions when thinking about their children (Waters and Sun 2017). Thus, the SBP can be useful in providing adequate conditions and timely guidance to parents who do not have or have not yet acquired the necessary skills to foster their children’s development.

The second practical implication of our study is related to the relevance of promoting high levels of academic PsyCap. Our findings allow us to conclude that high levels of academic PsyCap are likely to translate into better academic performance. Previous studies demonstrated the possibility of improving each individual PsyCap resource through a structured PsyCap intervention (PCI; see Luthans et al. 2008, 2010). However, it is important to note that – to date – the benefits of PCIs have not been examined in high school contexts. Therefore, it would be interesting to adapt and verify their effectiveness in this academic context. This may provide an opportunity to integrate additional aspects, which are not considered in traditional PCI, thereby promoting the PsyCap components and relevant antecedents such as experiencing positive study–related emotions (Carmona-Halty et al. 2019c), as well as our results showing the relevance of parent–child relationships.

## Strengths, Weakness, and Suggestions for Future Research

The present study has several strengths. First, we use a longitudinal approach that is not only scarce in previous academic PsyCap research (e.g., Datu et al. 2016), but more generally in testing mediation effects. Second, instead of self-reports, we include an objective measure of academic performance (i.e., GPA). Third, we successfully integrate family factors as an antecedent of academic PsyCap, an aspect not previously studied empirically. However, the study has some weaknesses that must be acknowledged. First, the correlational nature of this study precludes us from drawing causal conclusions. Second, we use self-reports for both psychological measures (i.e., parent-child relationships and academic PsyCap). It would be interesting to include parent's reports about their perceptions of their relationships with their children. Third, only unidirectional effects were examined (i.e., parent-child relationships → academic PsyCap → academic performance). It would be interesting to use a cross-lagged model to examine (possible) bi-directional effects. Fourth, our proposed model only covers short-term effects instead of capturing long-term effects. Fifth, only a high school sample was used. It would be interesting to include undergraduate university students to examine (possible) differences in the study variables between academic levels.

Finally, some avenues for future research can be mentioned. First, based on the role that significant others play in young people (Furrer and Skinner 2003; Martin and Dowson 2009), other significant relationships could be included as well in order to establish their unique contribution to academic PsyCap (e.g., with other family members, friends, teachers, and peers). Second, additional aspects of parent-child relationships, such as economic or instrumental support, could be included in a comprehensive model that examines which aspects of family support are more relevant in the prediction of academic PsyCap and academic performance. Third, based on previous research that reports a significant association between SBP and wellbeing in children and adolescents (Jach et al. 2017; Waters 2015a), it could be interesting to examine the relationships between SBP and academic PsyCap and performance.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflicts of interest.

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