



# The mediating role of positive youth development in the relationship between school connectedness and academic outcomes in secondary education students

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## Abstract

School connectedness has been shown to support adolescents' academic adjustment by fostering academic performance. However, the specific association between school connectedness and attentional difficulties in class has not been previously examined, nor have the potential mediating factors underlying the broader relationship between school connectedness and academic adjustment. Positive Youth Development (PYD) has also been identified as a predictor of academic adjustment in youth. This study aimed to examine the mediating role of PYD in the relationship between school connectedness and two indicators of academic adjustment, perceived academic performance and difficulty paying attention, in a sample of Spanish students enrolled in compulsory secondary education ( $n = 1,036$ ; 50.3% boys;  $M_{\text{age}} = 14.17$ ;  $SD_{\text{age}} = 1.34$ ). A cross-sectional study was carried out using an anonymous questionnaire. School connectedness was associated with higher perceived academic performance and fewer difficulties paying attention in class. Three dimensions of PYD (i.e., character, confidence and competence, but not connection and caring) partially accounted for the relationship between school connectedness and the indicators of academic adjustment. These findings have implications for interventions aimed at enhancing students' academic adjustment, highlighting the importance of integrating the promotion of PYD and school connectedness to achieve more effective outcomes.

**Keywords** School connectedness · Positive Youth Development · Academic adjustment · Mediation model · Compulsory secondary education

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## Introduction

School connectedness plays a crucial role in the well-being of children and youth. It is particularly important to adolescents, as they become gradually more reliant on the significant relationships they build outside the family, with peers, teachers and other adults (e.g., school counselors, sports coaches). The conceptualisation of school connectedness has been explored by several literature reviews, which have shown a lack of consensus on the definition of the construct (Kim et al., 2022). One scoping review identified 24 established definitions of school connectedness (García-Moya et al., 2018).

School connectedness is often confused with related constructs, such as school climate or school engagement. According to the National School Climate Council (2007) school climate can be defined as the quality and character of a school. It is based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures. Therefore, school climate can be understood as the collective and shared experiences of all members of the school community. In contrast, school connectedness refers to the individual student's experience within the school context, focusing more specifically on interpersonal relationships and feelings of belonging.

The concept of school engagement has generated a wide range of definitions, with no clear consensus among scholars. Nevertheless, a synthesis of existing conceptualizations by Appleton and colleagues (2008) suggests that school engagement can be described as the degree to which students invest their behavioral, emotional, and cognitive resources in school-related activities. These scholars also state that it is commonly viewed as a multidimensional construct comprising: (1) behavioral engagement — students' participation, effort, and persistence; (2) emotional engagement — students' feelings of interest, belonging, and connection to school; and (3) cognitive engagement — students' psychological investment, self-regulation, and use of learning strategies. While affective and behavioural features present some overlap with school connectedness, cognitive aspects speak more towards engagement in learning than feelings of connectedness (Allen & Kern, 2017).

In addition, school connectedness is frequently used interchangeably with similar constructs such as school belonging, school attachment, school membership, school bonding or school relatedness (Allen & Kern, 2017; Korpershoek et al., 2019). Allen and Kern (2017) provide a comprehensive synthesis of these commonly used terms, highlighting both their areas of overlap and the subtle conceptual distinctions that differentiate them.

Despite the ambiguity among researchers on the meaning of school connectedness, it is often described as a multifactorial construct encompassing cognitive, affective, and behavioral components of students' experiences within the educational context. This includes students' cognitive appraisals, such as their perceptions of the quality of relationships with teachers and peers, and perceived levels of support. It also comprises students' emotional responses related to acceptance, inclusion, belonging, and the extent to which they value and enjoy schooling, as well as observable behaviors, such as participation in school activities and engagement with learning tasks (Raniti et al., 2022).

At its core, school connectedness is the emotional bond that students form with their school. In our view, the concept of school connectedness refers to the bond a student may feel with the human, natural, and physical elements of the school environment,

as well as with the educational project that the school implements through its daily routines and special activities.

Adolescents with a strong sense of school connectedness are more likely to thrive personally and academically, as supported by extensive scientific evidence (Marraccini & Brier, 2017; Raniti et al., 2022; Rose et al., 2022; Yuen & Wu, 2024). When students feel accepted, respected, included, and supported at school, they show higher socio-emotional well-being. Specifically, they have higher self-esteem, less depressive and anxious feelings, and fewer externalising behaviors (Lester et al., 2013; Pikulski et al., 2020; Shochet et al., 2006; Stracuzzi & Mills, 2010). In addition, they tend to engage in fewer health risk behaviors (e.g., unprotected sex, marijuana use, prescription drugs misuse) and violent behaviors (e.g., perpetration of physical violence, bullying, sexual violence, date violence). They also tend to have fewer negative life experiences, such as suffering poor mental health and falling victim to violence (Rose et al., 2022; Wilkins et al., 2023).

It seems reasonable to expect that school connectedness also relates to more general aspects of adolescents' connections with relevant people in their environment (their parents, friends or certain adults in the community where they live), as assessed by the connection subscale of the Positive Youth Development–Short Form (Geldhof et al., 2014). Feeling connected to classmates and supported by teachers, as well as feeling proud to belong to one's school, may facilitate the use of developmental opportunities within the school context and, with this, improve communication skills and acquire knowledge that allows for progressive integration into adult society. Likewise, feeling like an important member of one's own family or community, as well as feeling supported by friends, may also contribute to the development of personal skills and feelings of personal competence that can further strengthen school connectedness.

Students who feel strongly connected at school also show better academic adjustment. School connectedness is a predictor of emotional and behavioral academic engagement (Gillen-O'Neel, 2021; McKellar & Wang, 2023; Xia et al., 2025). Students who feel safe in the school environment and perceive that they are liked by their peers can more easily concentrate on learning. These students are more motivated in school (Bond et al., 2007; Gillen-O'Neel & Fuligni, 2013; Sánchez et al., 2005) and perform better academically, obtaining higher school grades (Korpershoek et al., 2019; Niehaus et al., 2012; OECD, 2019). This aligns with self-determination theory, which proposes that when teachers support students' basic psychological needs—including the need for relatedness, i.e., a sense of belonging and connection—they foster more autonomous forms of motivation, which then promotes stronger engagement, deeper learning, and improved performance (Ryan & Deci, 2020).

By contrast, experiencing a disconnection from the school environment, feeling out of place or not being able to connect with peers can adversely impact students' academic achievement, especially among those who experience a very weak sense of belonging (OECD, 2017).

Although the impact of school connectedness on academic adjustment is well established, research in this area has rarely examined attentional patterns in the classroom as a specific outcome. Attention is a foundational cognitive process that supports learning, regulates classroom behaviour, enables students to benefit from instructional activities, and fosters reflective thinking. Importantly, individual differences in attention are predictive of key determinants of academic success. Recent findings show that attentional capacity is associated with more effective study habits (Gordón et al., 2025) and directly predicts academic skills such as reading and mathematics performance in school-age populations (Gallen et al., 2023; Resett, 2021). Emerging evidence also underscores the need to examine

attentional patterns within contemporary educational contexts. Environmental factors—particularly high levels of screen exposure, media multitasking, and digital stimulation—have been linked to reduced sustained attention and greater distractibility in children and adolescents (Leonhardt et al., 2025). In light of these findings, it is increasingly important to examine whether school connectedness may buffer against attentional difficulties in the classroom.

## Trends in school connectedness across the world

Most secondary education students feel fairly connected to their school, according to the findings of the PISA studies conducted between 2003 and 2018 (OECD, 2004, 2013, 2017, 2019). On average, across 30 OECD countries in 2018, 84% of students did not agree with the statement “I feel lonely at school” and 80% disagreed with the statement “I feel like an outsider at school”, whereas 75% reported that they could make friends easily at school, and 71% reported feeling that they belonged at school (OECD, 2019). However, sense of belonging at school has followed a negative trend across OECD countries between 2015 and 2018. For instance, fewer students agreed with the statements “I make friends easily at school” and “I feel like I belong at school”. Similarly, fewer students disagreed when presented with the negative statement “I feel like an outsider at school” (OECD, 2019). This seems to be part of a gradual decline in sense of belonging over a 15-year period (OECD, 2017).

According to time trends observed in the HBSC study—a sequential cross-sectional study conducted by the World Health Organization—in Spain, where the present study took place, data on adolescents’ perceptions of relational aspects of the school environment revealed a seven-percentage-point decline in the proportion of students who reported a high level of peer support between 2014 and 2022. Similarly, the proportion of students perceiving strong support from their teachers decreased by six percentage points over the same period. Additionally, there was a notable drop in the percentage of adolescents who expressed high satisfaction with their peer relationships, from 48.5% in 2018 to 37.3% in 2022 (Moreno et al., 2025).

The downward trend in school connectedness among adolescents is worrying, due to the foreseeable negative impact on their academic adjustment, socio-emotional well-being and engagement in health risk behaviors. Addressing this challenge requires an urgent, multidimensional and cross-national response. Such an approach is particularly important in light of the global decline in academic performance among adolescent students—particularly in reading and science—reported over the past decade (Mullis et al., 2023; OECD, 2023b). Given this generalised downward trend in academic performance among 15-year-old students identified in successive PISA studies, maintaining the quality of the education system and the level of academic achievement attained by adolescent students in previous decades is a global challenge. To this end, we must begin by analysing the factors that are currently hindering a good level of academic achievement among large sectors of the adolescent student population. These factors can be varied and each of them may have a different weight depending on the country in question. However, as the PISA study itself has detected a global trend of decreasing school connectedness, as already indicated, it is a particular priority to determine the extent to which school connectedness is associated with academic performance and to explore whether PYD plays a mediating role in this relationship.

The downturn in academic performance is likely driven by multiple, intersecting factors, including reduced instructional support during the COVID-19 pandemic and increased distractions stemming from personal and peer digital device use (OECD, 2023b). Moreover, using Information and Communication Technology daily or almost daily for academic activities at school has been associated with significantly lower mathematics performance across 22 OECD countries (Gorjón & Osés, 2022). Given the documented protective role of school connectedness in supporting academic performance, intentional efforts to strengthen students' sense of belonging and social connectedness within the school community may help mitigate the adverse effects of these challenges on learning outcomes.

### **School connectedness, positive youth development and academic adjustment**

In the present study, we used the Positive Youth Development (PYD) framework to delve into the interplay between school connectedness and adolescents' development. The PYD framework is a strengths-based approach to adolescent and youth development. There are several different theoretical models within the wider PYD framework, each of which focus on slightly different attributes of healthy development in youth. However, the PYD approach across models is embedded in the Relational Developmental Systems Theory (RDST). The core premise of RDST is that human development is shaped by the mutually influential relationships between the developing individual and the multiple levels of their changing context (Overton, 2010; Overton & Müller, 2012). These relationships shape the course of development (i.e., its pace, direction, and outcomes). When the strengths of youth are aligned with positive and supportive resources in their developmental contexts (i.e., family, school, community), they are likely to thrive. Thriving youth are engaged in improving their contexts by contributing to their families and friends, their community and civil society at large, as well as to themselves. They are also less likely to engage in risky or problematic behaviors.

Lerner and colleagues (2005) developed the 5Cs model of PYD, which has since received ample empirical support (Lerner et al., 2011). The model outlines five interconnected competencies that foster psychological well-being: confidence (a strong sense of self-worth), connection (healthy relationships with others), character (the positive internalization of societal norms and values), competence (a positive sense of self-efficacy across various life domains) and caring (empathy and compassion towards others).

Research shows positive associations between students' feelings of belonging and attachment to their class and school and several aspects of positive adolescent development. Specifically, it was found that feeling strongly related to other students in the class, as well as identifying with the school as a whole, are linked to self-esteem and self-efficacy, assertiveness, empathy and positive affect. Both self-esteem and self-efficacy are variables included in the 5 Cs model, specifically in *confidence*, whereas assertiveness is included in the 5 Cs as *competence*, and empathy as *caring* (Bizumic et al., 2009; Paricio et al., 2020).

Additionally, Kozina et al. (2019) found that different dimensions of PYD are positively associated with academic adjustment in adolescents and emerging adults. Moreover, a longitudinal study found that PYD predicted academic performance (Shek & Wu, 2016). A meta-analysis of randomised controlled trials evaluating the effects of PYD-promoting programmes found that these programmes had a small yet significant effect on academic achievement (Ciocanel et al., 2017).

Recently, scholars have begun distinguishing between efficacy-related Cs (confidence and competence) and socio-emotional Cs (caring, character, and connection). The former reflect self-focused qualities: one's skills, self-efficacy, and self-worth, whereas the latter involve other-focused, interpersonal or moral/social dimensions: relationships, empathy, moral integrity, compassion and social bonds (Buenconsejo et al., 2025b; Wong et al., 2022). This distinction is useful because different outcomes may relate stronger to one set than the other. For instance, Buenconsejo and colleagues (2025a) found that efficacy-related Cs were associated with behavioral school engagement, whereas two of the socio-emotional Cs—character and connection—were linked to cognitive and emotional engagement, respectively. Because academic achievement is reliably associated with self-efficacy (Honicke & Broadbent, 2016), it is reasonable to expect that the indirect relationship between school connectedness and perceived academic performance would be mediated more strongly by the efficacy-related Cs. Nevertheless, character may also play a meaningful role in this process. Adolescents who score high on character tend to act responsibly and in accordance with their personal values, which may increase their willingness to invest sustained effort toward academic goals.

A similar rationale applies to attentional difficulties in class. Students who feel confident in their capability to understand the lessons may find it easier to maintain focus, whereas those who value adhering to social and moral norms may be more inclined to show respect for the teacher by paying attention during lessons. Therefore, it is plausible to anticipate that the efficacy-related Cs—confidence and competence—together with character, jointly mediate the associations between school connectedness, perceived academic performance, and difficulty paying attention.

Although the 5 Cs of PYD as conceptualized by Lerner and colleagues (2005) have not been previously considered as mediators in the relationship between school connectedness and academic performance, subjective well-being and other indicators of thriving adolescents, such as sense of purpose, mediate the effect of school climate and school social well-being on academic engagement and achievement (Chukworji et al., 2024; Lopez et al., 2017). Building on this evidence, and given that the 5 Cs of PYD—competence, confidence, connection, character, and caring—are empirically linked to both school connectedness and academic outcomes, it is plausible to propose PYD as a mediating mechanism in this relationship.

The RDST model offers a theoretical framework for understanding how school connectedness relates to academic adjustment through the mediating role of the 5 Cs of PYD. From this perspective, students' subjective experience of school connectedness arises from positive features of the school environment—such as supportive relationships, accessible resources, and meaningful opportunities—that promote positive development by aligning with their individual strengths, needs, and goals (Benson, 2007). When students participate in caring and supportive relationships that resonate with their personal characteristics and aspirations, they are more likely to develop into confident, competent, and compassionate individuals. These youths tend to demonstrate integrity, responsibility, and strong connections with both peers and adults. Moreover, their confidence in their overall ability to succeed—combined with positive perceptions of their specific skills—makes them more likely to approach academic challenges proactively, persist through difficulties, stay engaged during instruction, and ultimately achieve stronger academic outcomes. Furthermore, youth with strong character are more inclined to act responsibly, regulate their behavior, and adhere to internalised values, which can foster consistent effort in schoolwork and reinforce respectful, attentive behavior in the classroom, thereby contributing both to higher achievement and fewer difficulties paying attention.

## Hypotheses of the study

To our knowledge —based on an extensive review of the literature— the mechanisms mediating the relationship between school connectedness and the two outcomes related to academic adjustment, namely perceived academic performance and difficulty paying attention, remain unexplored. Additionally, the specific relationship between school connectedness and difficulty paying attention in class has not been previously examined.

Based on the RDST model outlined in the previous section, the present study presents the following hypotheses to address these gaps in the scientific literature: 1. School connectedness is positively associated with perceived academic performance; 2. School connectedness is negatively related to difficulty paying attention in class; 3. The association between school connectedness and perceived academic performance is partially mediated by the efficacy-related Cs of PYD, confidence and competence, as well as by one of the socio-emotional Cs, character; and 4. The relationship between school connectedness and difficulty paying attention in class is also partially mediated by confidence, competence and character.

## Materials and methods

### Participants and procedure

A cross-sectional study was carried out with a random stratified sample of students enrolled in compulsory secondary education in the city of Huelva, in southern Spain. To obtain a representative sample of local secondary school students, a probabilistic stratified multi-stage sampling procedure was used. Firstly, the schools were divided into strata considering location (city districts) and type of school (public schools or publicly subsidised private schools). In each stratum a number of schools was randomly selected. That number was proportional to the school population in that stratum. School management teams of the selected schools were informed about the characteristics of the study and invited to take part. When a school declined to participate in the study, the proposal was made to another school in the same sampling stratum. Subsequently, in every participating school, one classroom was randomly selected in each of the four years of mandatory secondary education.

The sample consisted of 1,036 adolescents (50.3% boys, mean age = 14.17, SD = 1.34, age range = 11–18). Participants were enrolled in 14 high schools in Huelva, of which seven were public and seven were publicly subsidised private schools. The four years of compulsory secondary education were represented (first year: 25.5%, second year: 25.9%, third year: 26.3%, and fourth year: 22.4%). Regarding country of birth, 96.2% of the participating adolescents were born in Spain.

Data were collected in the autumn of 2020. Most participants (96.3%) completed the anonymous survey at their school, in their classrooms, during regular school hours, using either the printed version of the questionnaire (65.7%) or the online version (30.6%). While the students filled out the questionnaire, a member of the research team or a teacher was present in the classroom. The remaining participants (3.7%) completed the questionnaire at home, using the online format, following a procedure that ensured anonymity. In all instances, the questionnaire was completed anonymously and individually. The proportion of missing values was generally very low (around 1% for items related to school life).

## Instrument

Self-reported data were gathered using an anonymous questionnaire. The following groups of variables were explored:

*Positive Youth Development.* To assess this dimension, the Positive Youth Development-Short Form (Geldhof et al., 2014) was included in the questionnaire. The instrument gauges self-perceptions of young people in relation to the five components of PYD or “5 Cs”: character, competence, confidence, caring, and connection. The 34 items were evaluated using a five-point Likert-type scale, with varying response options for each group of items: 1 = *strongly disagree* and 5 = *strongly agree*, 1 = *not important* and 5 = *very important*, 1 = *not at all like me* and 5 = *very much like me*, or 1 = *never or hardly ever* and 5 = *always*. After determining the scores of each of the 5 Cs by averaging the scores obtained on the items pertaining to each dimension, the overall PYD score was composed of the sum of those scores. Both this overall score and the scores on the 5 Cs were used for the analyses in this study. The scale had excellent internal consistency reliability, with  $\alpha = 0.90$ . Confirmatory factor analysis showed good factorial validity,  $\chi^2 = 1.72$ ,  $p = .189$ , CFI = .999, RMSEA = .027, 90% CI RMSEA = .01, .09.

*School connectedness.* This dimension was assessed through six items: “The classmates generally get along well with each other”, “I can tell my classmates personal things”, “The teachers treat us fairly”, and “I can turn to my teachers for help when I have a problem” were created ad hoc for this questionnaire, whereas “My classmates worry when I’m absent” was taken from the Simple School Belonging Scale (Whiting et al., 2018) and “I’m proud of my school” was adapted from the Sense of Belonging to School Scale (Akar-Vural et al., 2013). All six items were evaluated through a Likert-type scale with four response options, ranging from 1 = *strongly disagree* to 4 = *strongly agree*. The school connectedness factor had acceptable internal consistency reliability ( $\alpha = 0.72$ ). Confirmatory factor analysis revealed good factorial validity,  $\chi^2 = 8.01$ ,  $p = .091$ , CFI = .997, RMSEA = .032, 90% CI RMSEA = .01, .06.

*Difficulty paying attention in class.* This variable was evaluated with the ad-hoc item “Is it difficult for you to pay attention to the teachers’ explanations?”, assessed through a Likert-type scale with five response options ranging from 1 = *never* to 5 = *always*.

*Perceived academic performance.* This variable was evaluated through an item adapted from the HBSC questionnaire (Currie et al., 2004): “In your opinion, how do you think you perform at school compared to your classmates?”, evaluated on a Likert-type scale with four response options, ranging from 1 = *below average* to 4 = *very good*. Importantly, this item assesses the self-perception of the students regarding their academic performance; therefore, it may not be fully aligned with their objective performance in all cases.

## Data analysis

First, descriptive statistics were computed for the overall PYD score and the 5 Cs, as well as for school connectedness, difficulty paying attention and perceived academic performance. Second, bivariate Pearson correlations were conducted among the study variables. These analyses were carried out with SPSS 23 software. Next, using JASP 0.19.1.0, a

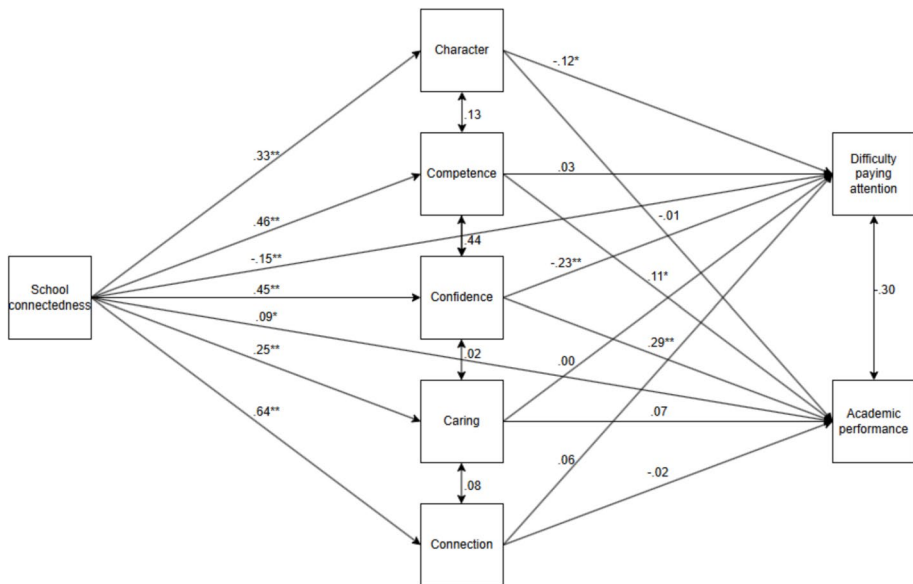
mediation analysis was tested to examine the mediation of PYD dimensions in the relationship between school connectedness and each outcome of academic adjustment (see Fig. 1). Indirect effects were examined, as well as total and direct effects. Finally, a structural equation model was tested to examine the relationships between school connectedness, PYD and the academic outcomes (see Fig. 2). Overall fit indexes (i.e.,  $\chi^2$ , CFI, RMSEA, and 90% CI RMSEA) and standardized coefficients were examined.  $R^2$  scores were calculated for both perceived academic performance and difficulty paying attention in class. This model was developed using EQS 6.1.

## Results

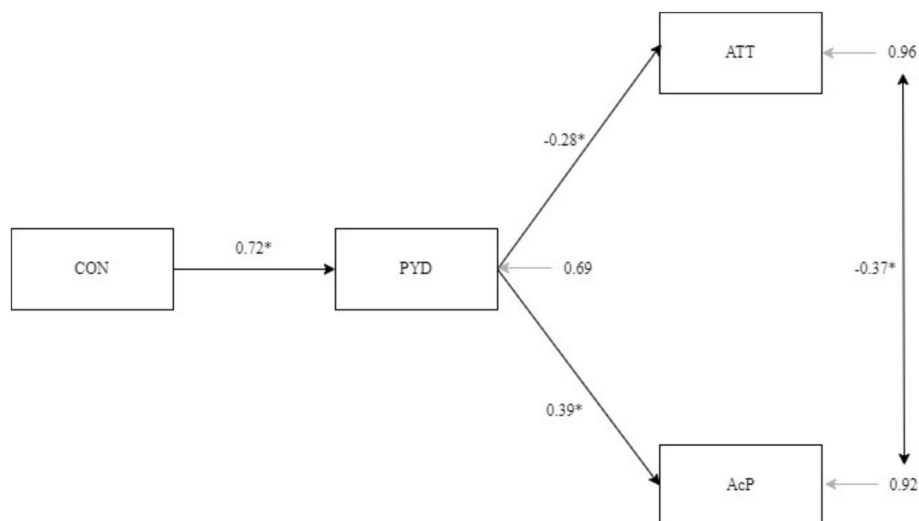
School connectedness was positively associated with perceived academic performance and negatively associated with difficulty paying attention in class. It was both directly and indirectly — through the mediating effects of confidence and competence— related to perceived academic performance. School connectedness was also related to difficulty paying attention both directly and through the mediating role of confidence and character. However, the remaining Cs, caring and connection, did not significantly mediate either relationship.

### Descriptive statistics and correlations between study variables

As shown in Table 1, school connectedness had a moderate to high mean score of 2.84 on a scale from 1 to 4. Moderate to high average scores were found in the five dimensions



**Fig. 1** Mediation model testing the 5 Cs of positive youth development as mediators between school connectedness and two indicators of academic adjustment. Note. \*\* $P < .001$ , \* $P < .05$



**Fig. 2** Structural equation model of the interrelation between school connectedness, Positive Youth Development and two indicators of academic adjustment. *Note.* CON = School connectedness, PYD = Overall positive youth development, ATT = Difficulty paying attention, AcP = Perceived academic performance. \*  $p < .05$

of Positive Youth Development ( $M_{\text{Character}} = 3.78$ ,  $M_{\text{Competence}} = 3.26$ ,  $M_{\text{Confidence}} = 3.58$ ,  $M_{\text{Caring}} = 3.92$ ,  $M_{\text{Connection}} = 3.76$ , on a scale from 1 to 5). The average score in difficulty paying attention in class was moderate ( $M = 2.67$ , on a scale from 1 to 5), whereas perceived academic performance had a moderate to high mean score ( $M = 2.79$ , on a scale from 1 to 4).

Table 2 presents the frequency distribution of the six variables that compose the school connectedness factor. Results show that 86% of the students reported that the classmates generally got along well, whereas only about half of them (52.8%) reported that they could talk about personal issues with their classmates. More than two-thirds of the participating adolescents (67.5%) reported that they could turn to their teachers for help if they had a problem, with the number of students considering that teachers treated them fairly being even higher (75.2%). Furthermore, roughly two-thirds of the participants (63.7%) reported that their classmates would worry if they missed class. Lastly, 78.4% of the adolescents stated they were proud of their school.

With regard to the correlations between study variables, school connectedness was positively correlated with all 5 Cs as well as with perceived academic performance, and negatively correlated with difficulty paying attention (see Table 1). The same applies to the six individual items that compose the school connectedness factor. These items were also positively correlated with each other. In addition, all 5 Cs were positively correlated with one another, except for competence and caring, which showed no significant correlation. Difficulty paying attention in class was negatively correlated with all 5 dimensions of PYD and perceived academic performance. Lastly, perceived academic performance was positively correlated with all 5 Cs.

**Table 1** Descriptive statistics and bivariate correlations between the study variables

|                                          | Mean | SD   | Min | Max | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14 |
|------------------------------------------|------|------|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
| 1. School connectedness                  | 2.84 | 0.55 | 1   | 4   | 1      |        |        |        |        |        |        |        |        |        |        |        |        |    |
| 2. Relationship between peers            | 3.13 | 0.72 | 1   | 4   | .61**  | 1      |        |        |        |        |        |        |        |        |        |        |        |    |
| 3. Ability to confide in peers           | 2.50 | 0.91 | 1   | 4   | .66**  | .44**  | 1      |        |        |        |        |        |        |        |        |        |        |    |
| 4. Fair treatment from the teachers      | 2.93 | 0.82 | 1   | 4   | .63**  | .20**  | .14**  | 1      |        |        |        |        |        |        |        |        |        |    |
| 5. Ability to turn to teachers for help  | 2.78 | 0.94 | 1   | 4   | .69**  | .19**  | .22**  | .57**  | 1      |        |        |        |        |        |        |        |        |    |
| 6. Peers' concern when student is absent | 2.67 | 0.87 | 1   | 4   | .63**  | .36**  | .53**  | .14**  | .21**  | 1      |        |        |        |        |        |        |        |    |
| 7. School pride                          | 3.01 | 0.84 | 1   | 4   | .68**  | .27**  | .28**  | .38**  | .40**  | .30**  | 1      |        |        |        |        |        |        |    |
| 8. Character                             | 3.78 | 0.58 | 1   | 5   | .33**  | .16**  | .12**  | .28**  | .26**  | .20**  | .24**  | 1      |        |        |        |        |        |    |
| 9. Competence                            | 3.26 | 0.77 | 1   | 5   | .46**  | .32**  | .38**  | .16**  | .22**  | .41**  | .27**  | .26**  | 1      |        |        |        |        |    |
| 10. Confidence                           | 3.58 | 0.85 | 1   | 5   | .45**  | .29**  | .29**  | .25**  | .31**  | .32**  | .29**  | .45**  | .65**  | 1      |        |        |        |    |
| 11. Caring                               | 3.92 | 0.85 | 1   | 5   | .25**  | .11*   | .11**  | .17**  | .21**  | .15**  | .18**  | .52**  | .05    | .12**  | 1      |        |        |    |
| 12. Connection                           | 3.76 | 0.70 | 1   | 5   | .64**  | .37**  | .38**  | .38**  | .45**  | .44**  | .42**  | .42**  | .58**  | .60**  | .24**  | 1      |        |    |
| 13. Difficulty paying attention          | 2.67 | 1.08 | 1   | 5   | -.24** | -.14** | -.12** | -.18** | -.20** | -.12** | -.18** | -.24** | -.19** | -.31** | -.11** | -.21** | 1      |    |
| 14. Perceived academic performance       | 2.79 | 0.87 | 1   | 4   | .28**  | .17**  | .14**  | .19**  | .21**  | .18**  | .19**  | .22**  | .33**  | .40**  | .12**  | .29**  | -.42** | 1  |

\*  $p < .01$ , \*\*  $p < .001$ , SD Standard deviation

**Table 2** Frequency distribution of the variables that compose the school connectedness factor (in percentages)

|                                                          | Totally disagree | Disagree | Agree | Totally agree |
|----------------------------------------------------------|------------------|----------|-------|---------------|
| The classmates generally get along well with each other  | 3.0              | 11.0     | 55.6  | 30.4          |
| I can tell my classmates personal things                 | 16               | 31.2     | 39.6  | 13.2          |
| The teachers treat us fairly                             | 6.2              | 18.5     | 51.3  | 23.9          |
| I can turn to my teachers for help when I have a problem | 12.6             | 19.8     | 44.2  | 23.3          |
| My classmates worry when I'm absent                      | 11.8             | 24.6     | 48.9  | 14.8          |
| I'm proud of my school                                   | 6.6              | 15.0     | 49.4  | 29.0          |

### Mediation analyses

A mediation model was tested in which the five PYD dimensions mediated the relationship between school connectedness and the selected academic outcomes: difficulty paying attention in class and academic performance (see Fig. 1).

Table 3 presents the results of the mediation analysis which included the 5 Cs of PYD as mediators in the relationship between school connectedness and two outcomes related to academic adjustment: difficulty paying attention in class and perceived academic performance. Results showed that the negative relationship between school connectedness and difficulty paying attention in class was partially mediated by the confidence and character dimensions of PYD. Specifically, a higher score in school connectedness was associated with less difficulty paying attention in class directly and through a positive relationship between school connectedness and confidence and character which, in turn, were negatively related to difficulty paying attention. The total effect of school connectedness on difficulty paying attention was reduced after including the mediators. The model explained 11.3% of the variance of difficulty paying attention in class.

Similarly, results indicated that the positive association between school connectedness and perceived academic performance was partially mediated by two of the PYD dimensions, namely confidence and competence. A higher score in school connectedness was associated with a higher perceived academic performance both directly and indirectly, through a positive relationship between school connectedness and confidence and competence, which were then positively associated with perceived academic performance. The total effect of school connectedness on perceived academic performance was reduced after including the mediators. The model explained 17.7% of the variance of perceived academic performance.

### Structural equation model

Figure 2 represents the structural equation model of the relationships between school connectedness, PYD and the two academic outcomes. All standardized coefficients were significant at  $p < .05$ . The model showed a strong positive effect of school connectedness on overall PYD, which in turn had a moderate negative effect on difficulty paying attention and a positive effect on perceived academic performance. Additionally, difficulty paying attention and perceived academic performance were negatively interrelated.

**Table 3** Multiple mediation model

|                               | EST                    | SE    | Z       | p     | LLCI   | ULCI   |
|-------------------------------|------------------------|-------|---------|-------|--------|--------|
| <b>Direct effects</b>         |                        |       |         |       |        |        |
| CON→ ATT                      | -.153                  | .043  | -3.59   | <.001 | -.237  | -.070  |
| CON→ AcP                      | .092                   | .041  | 2.265   | .024  | .012   | .172   |
| <b>Indirect effects</b>       |                        |       |         |       |        |        |
| CON→ Ch→ ATT                  | -.038                  | .015  | -2.612  | .009  | -.067  | -.010  |
| CON→ Cp→ ATT                  | .014                   | .020  | .695    | .487  | -.026  | .054   |
| CON→ Cf→ ATT                  | -.101                  | .023  | -4.439  | <.001 | -.146  | -.057  |
| CON→ Ca→ ATT                  | $1.018 \times 10^{-4}$ | .010  | .010    | .992  | -.019  | .019   |
| CON→ Co→ ATT                  | .037                   | .031  | 1.172   | .241  | -.025  | .098   |
| CON→ Ch→ AcP                  | -.002                  | .013  | -.145   | .885  | -.028  | .024   |
| CON→ Cp→ AcP                  | .049                   | .019  | 2.608   | .009  | .012   | .086   |
| CON→ Cf→ AcP                  | .132                   | .023  | 5.676   | <.001 | .086   | .177   |
| CON→ Ca→ AcP                  | .017                   | .009  | 1.802   | .072  | -.001  | .035   |
| CON→ Co→ AcP                  | -.014                  | .031  | -.438   | .662  | -.074  | .047   |
| <b>Total effects</b>          |                        |       |         |       |        |        |
| CON→ ATT                      | -.242                  | .034  | -7.050  | <.001 | -.310  | -.175  |
| CON→ AcP                      | .274                   | .033  | 8.425   | <.001 | .211   | .338   |
| <b>Total indirect effects</b> |                        |       |         |       |        |        |
| CON→ ATT                      | -0.089                 | 0.029 | -3.028  | .002  | -0.146 | -0.031 |
| CON→ AcP                      | 0.182                  | 0.029 | 6.301   | <.001 | 0.126  | 0.239  |
| <b>Residual covariances</b>   |                        |       |         |       |        |        |
| Ch→ Cp                        | .127                   | .029  | 4.323   | <.001 | .069   | .184   |
| Ch→ Cf                        | .312                   | .030  | 10.533  | <.001 | .254   | .370   |
| Cp→ Cf                        | .443                   | .031  | 14.101  | <.001 | .382   | .505   |
| Ch→ Ca                        | .435                   | .038  | 11.443  | <.001 | .360   | .509   |
| Cp→ Ca                        | -.046                  | .027  | -1.690  | .091  | -.099  | .007   |
| Cf→ Ca                        | .019                   | .029  | .655    | .512  | -.037  | .075   |
| Ch→ Co                        | .202                   | .026  | 7.667   | <.001 | .150   | .254   |
| Cp→ Co                        | .295                   | .026  | 11.252  | <.001 | .243   | .346   |
| Cf→ Co                        | .324                   | .028  | 11.727  | <.001 | .270   | .379   |
| Ca→ Co                        | .081                   | .026  | 3.084   | .002  | .030   | .133   |
| ATT→ AcP                      | -.295                  | .029  | -10.309 | <.001 | -.351  | -.239  |
| <b>Path coefficients</b>      |                        |       |         |       |        |        |
| Ch→ ATT                       | -.118                  | .044  | -2.669  | .008  | -.205  | -.031  |
| Cp→ ATT                       | .031                   | .044  | .694    | .488  | -.056  | .117   |
| Cf→ ATT                       | -.225                  | .048  | -4.704  | <.001 | -.318  | -.131  |
| Ca→ ATT                       | $4.056 \times 10^{-4}$ | .039  | .010    | .992  | -.076  | .077   |
| Co→ ATT                       | .058                   | .049  | 1.171   | .242  | -.039  | .154   |
| CON→ ATT                      | -.153                  | .043  | -3.587  | <.001 | -.237  | -.070  |
| Ch→ AcP                       | -.006                  | .040  | -.145   | .885  | -.085  | .073   |
| Cp→ AcP                       | .106                   | .040  | 2.647   | .008  | .028   | .185   |
| Cf→ AcP                       | .292                   | .047  | 6.216   | <.001 | .200   | .385   |
| Ca→ AcP                       | .067                   | .036  | 1.874   | .061  | -.003  | .138   |
| Co→ AcP                       | -.021                  | .049  | -.438   | .662  | -.117  | .074   |

**Table 3** (continued)

|          | EST  | SE   | Z      | p     | LLCI | ULCI |
|----------|------|------|--------|-------|------|------|
| CON→ AcP | .092 | .041 | 2.265  | .024  | .012 | .172 |
| CON→ Ch  | .325 | .035 | 9.303  | <.001 | .257 | .394 |
| CON→ Cp  | .461 | .030 | 15.525 | <.001 | .403 | .519 |
| CON→ Cf  | .451 | .030 | 15.114 | <.001 | .392 | .509 |
| CON→ Ca  | .251 | .035 | 7.118  | <.001 | .182 | .320 |
| CON→ Co  | .636 | .027 | 23.498 | <.001 | .583 | .689 |

CON School connectedness, ATT Difficulty paying attention, AcP Perceived academic performance, Ch Character, Cp Competence, Cf Confidence, Ca Caring, Co Connection.  $R^2$  ATT=0.113;  $R^2$  AcP=0.177;  $R^2$  Ch=0.106;  $R^2$  Cp=0.213;  $R^2$  Cf=0.203;  $R^2$  Ca=0.063;  $R^2$  Co=0.404

The model showed good overall data fit,  $\chi^2=1.84$ ,  $p=.399$ , CFI=.999, RMSEA=.01, 90% CI RMSEA=.01,.06. The model reached greater explained variance for perceived academic performance ( $R^2=.15$ ) compared to attentional difficulties ( $R^2=.08$ ). A substantial amount of explained variance was observed for PYD ( $R^2=.53$ ).

## Discussion

The objectives of the present study were to explore the relationship between school connectedness and two outcomes of school adjustment (i.e., difficulty paying attention in class and perceived academic performance) and to analyse the mediating role of the 5 Cs of PYD in this relationship.

Regarding our first two hypotheses, we found that school connectedness was indeed related to both school adjustment outcomes in this sample of adolescents from the south of Spain. Students who reported a higher sense of school connectedness –measured through the quality of the relationships with their peers and their teachers, as well as through their school pride– perceived their academic performance to be higher. These results corroborate the outcomes of several studies conducted in other countries (Gillen-O’Neel, 2021; Korpershoek et al., 2019; McKellar & Wang, 2023; Somers et al., 2020).

It is possible that school connectedness is more strongly linked to academic performance in countries with a more collectivistic orientation, such as Spain, than in more individualistic societies. This interpretation aligns with Chan and Lam’s (2023) results, which show that students who endorse collectivistic values are more influenced by their perceptions of school climate. These perceptions are also more strongly connected to their sense of school belonging, which ultimately supports higher academic engagement.

Additionally, adolescents who reported higher levels of school connectedness also reported fewer difficulties paying attention. This finding is a novel contribution of the study as, to our knowledge, this specific relationship has been scarcely examined (Korpershoek et al., 2019). The emotional well-being that arises from feeling a sense of belonging, support and respect in the classroom may help students to focus more effectively during lessons, and may also increase their motivation to contribute actively, which requires sustained attention.

The hypotheses proposing that competence, confidence, and character—*but not connection or caring*—would mediate the associations between school connectedness and two indicators of academic adjustment (difficulty paying attention and perceived academic performance) were partially supported. The association between school connectedness and perceived academic performance was mediated by students' reported confidence and competence; however, character did not emerge as a significant mediator in this pathway. In contrast, the negative relationship between school connectedness and difficulty paying attention was partially explained by confidence and character, whereas competence did not contribute to this association.

Regarding perceived academic performance, this study's findings that the dimensions of confidence and competence partially account for the positive interplay with school connectedness are consistent with previous research indicating that school connectedness strengthens students' academic self-efficacy (Datu & Yuen, 2020; Sadeghi et al., 2024). Moreover, self-efficacy is an important predictor of school performance among high school students (Liu et al., 2024; Nunes et al., 2022). One of the factors that could explain this association is that students who possess confidence in their ability to overcome challenges, maintain a sense of purpose, exhibit an internal locus of control, and consider themselves competent in specific domains (including academic skills) are more likely to perform well in school.

Contrary to our expectations, character did not emerge as a significant mediator in this relationship. We had anticipated, in alignment with the work of Vecchione & Schwartz (2022), that conformity to rules—one of the behavioral tendencies commonly observed among adolescents with high levels of character—would translate into greater investment of time and effort in academic tasks such as completing homework and studying for exams, ultimately supporting higher academic achievement. However, this pattern was not reflected in our data. One possible explanation is that, in the PYD framework, character reflects youths' internal moral values and sense of responsibility toward others rather than mere compliance with external expectations. Because it captures ethical conduct more than task-oriented rule-following (Baber & Rainer, 2011) character may be less directly linked to academic engagement, which could explain the absence of its mediating role in our model.

Concerning the findings of the present study that character mediates the negative relationship between school connectedness and difficulty paying attention, these results are consistent with evidence showing that supportive school environments promote key components of character, such as integrity and cultural respect (Ward-Seidel et al., 2025). When students feel connected to their school, they are more likely to adopt the ethical norms and expectations valued within that environment (e.g., responsibility, honesty, fairness). Moreover, secondary school students who score higher on measures of character typically possess a strong internal moral compass, which provides them with a clear sense of right and wrong, integrity, respect for social and cultural norms, and personal values that guide their behavior (Buenconsejo & Datu 2022; Mercier et al., 2025). Because such students tend to act in alignment with their internalized values and demonstrate greater impulse control, it follows that they would experience fewer difficulties maintaining attention during classroom instruction.

According to the findings of this study, confidence is a core construct, mediating the link between school connectedness and both academic outcomes (i.e., difficulty paying attention in class and school performance). It refers to a young person's internal sense of overall positive self-worth and self-efficacy. It is about believing in one's ability to succeed and feeling good about oneself (Lerner et al., 2005; Mercier et al., 2025). Students who possess this trait to a high degree may have less difficulty paying

attention during lessons because they are confident in their ability to understand the subject matter and perform well in the subject. They also tend to experience less internal stress, which enables them to focus better on schoolwork. In addition, confidence encompasses a sense of purpose, autonomy and optimism about one's future. It also includes the belief that one's actions have an impact on outcomes, which may contribute to explain why students with greater confidence tend to pay more attention in class: they may believe they can achieve their goals and view themselves as active agents in their education capable of interacting with teachers and peers to fully benefit from the learning opportunities offered by the school environment. Conversely, students with low confidence often exhibit reduced self-efficacy and may believe that their efforts in class (i.e., paying attention to the lesson) will not make a difference to their performance. There is limited evidence that academic self-efficacy predicts attention in class (Sánchez-Rosas & Esquivel, 2016). More longitudinal research is needed to examine this particular relationship.

As hypothesised, the efficacy-related Cs of PYD—confidence and competence—exerted greater influence on academic adjustment than the socio-emotional Cs. This pattern aligns with previous research showing that confidence mediated the association between effort perseverance and academic performance (Gomez-Baya et al., 2025b), and that both competence and confidence partially explained the relationship between creative self-efficacy and academic performance (Gomez-Baya et al., 2025a). Furthermore, confidence was positively associated to math achievement in a sample of Slovenian secondary education students (Kozina et al., 2019).

The socio-emotional dimensions of caring and connection did not mediate the relationships between school connectedness and either difficulty paying attention in class or perceived academic performance. As shown in the path analysis, the absence of mediation stems from the lack of significant associations between these two Cs and the outcome variables, even though both caring and connection were positively related to school connectedness. With respect to caring, it is reasonable to assume that feeling empathy or compassion toward others does not directly influence a student's motivation to learn, engagement in academic tasks, or subsequent academic achievement.

The absence of a significant role for connection, however, is more intriguing, given that the present study's results suggest that students' sense of connection to peers and significant adults within the school community, as well as their feeling of belonging to school, are directly associated with fewer attentional difficulties and, to a lesser extent, with enhanced perceived academic performance. A possible explanation is that connections and identification specifically within the school context enhance students' motivation and commitment to learning, whereas connections outside the school community—such as bonds with parents, other relatives, or the broader community captured in the PYD connection subscale—may not have the same direct impact. This interpretation is consistent with self-determination theory, which posits that caring, supportive relationships with teachers and peers within the school context, along with a sense of belonging, satisfy students' basic psychological needs for autonomy and relatedness, thereby increasing autonomous motivation and, ultimately, academic outcomes (Ryan & Deci, 2020; Xia et al., 2025). Future research should further explore the complex interplay between the sense of connection originating from different developmental contexts and students' academic adjustment.

## Practical implications

There is empirical evidence supporting the importance of school connectedness for improving the social and emotional well-being of adolescents (Raniti et al., 2022; Yuen & Wu, 2024), their academic adjustment (Korpershoek et al., 2019; Niehaus et al., 2012), and its capacity to serve as a protective factor against health risk behaviors (Rose et al., 2022; Wilkins et al., 2023). Consequently, school administrators and local, regional, and national policymakers may need to incorporate a focus on school connectedness in school-based interventions. The relationship found in this study between school connectedness and having fewer difficulties to stay focused in class indicates that school-based interventions aimed at enhancing students' sense of belonging and connectedness may ultimately reduce their difficulty paying attention to school lessons. This is a timely contribution, as recent studies have found that "digital distractors" (e.g., the off-task use of technological devices and applications) are hindering students' focus on academic tasks, thereby affecting their learning and achievement (OECD, 2023a; Pérez-Juárez et al., 2023).

By targeting the various determinants of school connectedness, interventions and programmes can enhance students' sense of belonging and connectedness, ultimately promoting their well-being, academic success, and overall health. Some of these determinants are relational—for example, fostering supportive and caring relationships with peers and teachers (Gowing, 2019). Others are participatory in nature, such as encouraging student involvement in school-related or extracurricular activities or offering opportunities to contribute meaningfully to school policies and practices (Whitlock, 2006).

An effective approach to fostering school connectedness is implementing interventions that promote meaningful student participation, empowering learners to adopt an active role in decision-making in the school context. Research shows that involvement in school councils and other organisational structures can significantly strengthen students' sense of connectedness to school (Rowe et al., 2007). Moreover, democratic practices, such as including students in school decision-making processes, contribute to the development of a sense of community at the individual, classroom, and whole-school levels (Vieno et al., 2005). Educators and staff can support this by engaging students in the planning of school activities that foster a sense of community and help integrate new members into the school environment.

Regarding the relational dimension, a promising strategy for increasing school connectedness involves professional development interventions that aim to improve teachers' skills to build supportive, caring relationships with students and foster a positive classroom climate. The quality of student–teacher relationships plays a crucial role in shaping students' academic performance, emotional well-being, and sense of belonging (Anderman, 2003; Hattie, 2008; OECD, 2017; Stracuzzi & Mills, 2010). When teachers show they care about their students and offer meaningful support, students are more likely to feel secure, capable, engaged, and connected in the school environment (Ninković et al., 2022; Ricard & Pelletier, 2016; Skinner et al., 2008). This supportive approach often leads to better academic performance (Furrer & Skinner, 2003). In contrast, relationships marked by distrust, perceived unfairness, or disrespect can lead to disengagement, oppositional behavior, and may culminate in poor academic outcomes (Hamre & Pianta, 2006; OECD, 2017). However, there is a scarcity of evidence-based teacher professional development programmes that effectively enhance student outcomes in secondary education settings (Allen et al., 2015).

This study showed that part of the relationship between school connectedness and academic adjustment of students is mediated by several dimensions of Positive Youth Development: character, competence and confidence. Hence, targeting these mediators in interventions aimed at improving students' classroom attention and academic achievement is a promising avenue for exploration. In the Spanish educational context, there is a general scarcity of programs that target adolescents' personal strengths to promote Positive Youth Development and there are currently no interventions specifically focused on fostering aspects such as character, competence and confidence. The *Happy Classrooms Program* (Bisquerra & Hernández-Paniello, 2017) is among the few interventions implemented in Spanish secondary schools aimed at promoting students' personal and social development. Centered on fostering mindfulness and 24 personal strengths (Peterson & Seligman, 2004), preliminary results are promising, showing positive effects on classroom environment—affiliation between students and teacher support—and several indicators of adolescent thriving, including self-esteem, life satisfaction, relatedness, competence, and empathy. However, the program's acceptability among students and teachers remains a challenge (Lombas et al., 2019), suggesting that engagement and implementation strategies may need refinement to maximize its effectiveness.

The findings of the present study indicate that confidence, in particular, serves as a strong link between students' sense of school belonging and connectedness and their ability to stay focused in class and perform well academically. This aligns with the 2018 PISA study, which found that, on average, increases in self-confidence were associated with better reading performance (OECD, 2019). Consequently, incorporating measures specifically designed to strengthen adolescents' self-efficacy and self-esteem—fostering their belief in their ability to succeed in school and their confidence in overcoming academic challenges—is likely to lead to improved academic outcomes.

The decline in school connectedness among young people calls for an intersectoral approach targeting the entire youth population. The fact that secondary education students have, on average, become less connected to their schools over a 15-year period—paired with a decades-long decline in reading, mathematics, and science as indicated by PISA results (OECD, 2017)—highlights the critical need to promote school connectedness among secondary education students.

In this global context, promoting school connectedness should be a major priority for educational systems and a focus of intersectoral policies. These efforts should aim to strengthen society's perception of schools as essential to social development and cohesion, and to ensure that participation in school life becomes a source of enjoyment and personal growth for all students as they transition into active adult roles. Policymakers in the fields of sports, arts, culture, urban planning, nature, and social support should cooperate with schools to jointly create opportunities for children's personal development both within and beyond the school environment. The program *Transformem els patis* (*Let's transform the school yards*) currently being implemented by the Barcelona City Council in an increasing number of schools is a practical example of how to involve all sectors of the school community. With the cooperation of architects, local education authorities, and local policymakers in the health sector, this initiative aims to transform schoolyards into spaces where a variety of games, physical activities, contact with nature, and opportunities for free personal interaction are easily accessible to all students (Periáñez et al., 2024).

## Strengths, limitations and future research directions

The present study has several notable strengths. First, the use of a probabilistic stratified multi-stage sampling procedure ensured that the sample was representative of secondary education students in the city of Huelva, Spain. In addition, a very high response rate was achieved, and the proportion of missing values was generally low (around 1% for those items related to school life). Finally, the data collection procedure, which ensured anonymity, likely encouraged honesty in the responses of the students.

The study also has several limitations. The cross-sectional study design does not allow for the establishment of causal relationships between the study variables. As a result, longitudinal research is needed to deepen the examination of the relationships between school connectedness and the indicators of academic adjustment, as mediated by the PYD dimensions of character, confidence, and competence.

Second, the reliance on self-report measures introduces potential biases. The way in which adolescents perceive themselves influences their behavior and emotions, and self-assessments offer valuable insights into their beliefs and perceptions. However, exclusive reliance on these instruments may lead to biases such as social desirability effects and subjective distortions. To enhance validity, future research should consider incorporating objective indicators of academic performance and gathering information from multiple sources, such as teachers, parents, or academic records. Additionally, mixed-method approaches –combining qualitative interviews and focus groups with quantitative measures such as scales– are useful as they provide deeper insight into the mechanisms underlying the relationships between the study variables.

Third, the scale used to measure school connectedness demonstrated only an acceptable level of reliability. This may weaken the strength of the study's conclusions due to potential measurement imprecision.

Finally, as noted in the introduction, the concept of school connectedness encompasses multiple dimensions of students' experiences within the school context. While the school connectedness scale used in this study captures some of the most relevant aspects of the construct, it does not provide an exhaustive measure of school connectedness.

## Conclusions

This study provides evidence that school connectedness among secondary education students is negatively associated with difficulty paying attention in class and positively associated with perceived academic performance. The former association is partially mediated by the PYD dimensions of character and confidence, whereas the latter is partially mediated by competence and confidence. These results highlight the importance of addressing the global decline in students' school connectedness as a means to strengthen their academic functioning. This need is especially pressing given the documented downturn in reading and science achievement across countries. Accordingly, policy makers across governance levels should allocate resources toward the development and widespread adoption of evidence-based and intersectoral interventions that bolster adolescents' well-being and academic adjustment by directly targeting school connectedness. Moreover, given that confidence, competence, and character appear to play a central role in the link between school connectedness and academic outcomes, programs aimed at enhancing school connectedness could be complemented with interventions that foster adolescents' confidence

in their overall ability to succeed academically, strengthen their specific academic skills, and promote values related to integrity and responsibility.

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**Authors contribution** AJG participated in the design of the study, contributed to the statistical analysis and interpretation of the data and drafted the manuscript; RMB conceived the study, participated in its design, coordinated its development, contributed to drafting the manuscript, and critically reviewed the draft of the manuscript; DGB conceived the study, participated in its design, performed statistical analysis and interpretation of the data and critically reviewed the draft of the manuscript. All authors read and approved the final manuscript.

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**Data availability** The data that support the findings of this study are available from the corresponding author upon reasonable request.

## Declarations

**Ethics approval and consent to participate** The study followed a research protocol approved by the Research Ethics Committee of the Andalusian Department of Health and Families (code 1839-N-19; date of approval: 2019.10.29). Informed consent was obtained from the schools, the parents/legal guardians, and the students participating in the study.

**Consent for publication** All authors have read and approved the manuscript and consent to its submission to the European Journal of Psychology of Education. The manuscript has not been published previously and is not under consideration elsewhere.

**Competing interests** The authors declare that they have no conflict of interests.

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## References

- Akar-Vural, R., Yilmaz-Özelçi, S., Çengel, M., & Gömleksiz, M. (2013). The development of the “Sense of belonging to school” scale. *Eğitim Araştırmaları-Eurasian Journal of Educational Research*, 53, 215–230.
- Allen, J. P., Hafen, C. A., Gregory, A., Mikami, A. Y., & Pianta, R. C. (2015). Enhancing secondary school instruction and student achievement: Replication and extension of the My Teaching Partner-Secondary

- Intervention. *Journal of Research on Educational Effectiveness*, 8(4), 475–489. <https://doi.org/10.1080/19345747.2015.1017680>
- Allen, K.-A., & Kern, M. L. (2017). School Belonging. In *School Belonging in Adolescents*. SpringerBriefs in Psychology (pp. 13–21). Springer. [https://doi.org/10.1007/978-981-10-5996-4\\_3](https://doi.org/10.1007/978-981-10-5996-4_3)
- Anderman, L. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education*, 72, 5–22. <https://doi.org/10.1080/00220970309600877>
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, 45, 369–386. <https://doi.org/10.1002/pits.20303>
- Baber, K. M., & Rainer, A. (2011). Shortridge Academy: Positive youth development in action within a therapeutic community. In R. M. Lerner, J. V. Lerner, & J. B. Benson (Eds.), *Advances in child development and behavior* (Vol. 41, pp. 309–348). Academic Press. <https://doi.org/10.1016/B978-0-12-386492-5.00012-9>
- Benson, P. L. (2007). Developmental assets: An overview of theory, research, and practice. In R. K. Silbereisen & R. M. Lerner (Eds.), *Approaches to positive youth development* (pp. 33–58). SAGE Publications Ltd.
- Bisquerra-Alzina, R., & Hernández-Paniello, S. (2017). Positive psychology, emotional education and the happy classrooms program. *Papeles Del Psicólogo / Psychologist Papers*, 38(1), 58–65. <https://doi.org/10.23923/pap.psicol2017.2822>
- Bizumic, B., Reynolds, K. J., Turner, J. C., Bromhead, D., & Subasic, E. (2009). The role of the group in individual functioning: School identification and the psychological well-being of staff and students. *Applied Psychology*, 58, 171–192. <https://doi.org/10.1111/j.1464-0597.2008.00387.x>
- Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., & Patton, G. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *Journal of Adolescent Health*, 40(4), 257e.9–357e.18. <https://doi.org/10.1016/j.jadohealth.2006.10.013>
- Buenconsejo, J. U., & Datu, J. A. D. (2022). Toward an integrative paradigm of positive youth development: Implications for research, practice, and policy. *Human Development*, 66(6), 381–396. <https://doi.org/10.1159/000527122>
- Buenconsejo, J. U., Datu, J. A. D., & Liu, D. P. (2025a). Grit, positive youth development, and school engagement among Filipino adolescents. *European Journal of Psychology of Education*, 40, Article Article 135. <https://doi.org/10.1007/s10212-025-01038-1>
- Buenconsejo, J. U., Ferrer-Wreder, L., Dimitrova, R., Pavlova, I., Bosnar, K., Bartoluci, S., Katović, D., Prot, F., Sultana, M. S., Islam, M. S., Michałek-Kwiecień, J., Skrzypińska, K., Kazmierczak, M., Lewandowska-Walter, A., Borchet, J., Buze, C., Stefenel, D., Page, D. T., Luden, M., ... Altansukh, S. (2025b). Global profiles of positive youth development: A person-oriented analysis among emerging adults living in 21 countries. *Journal of Youth and Adolescence*, 54(8), 2094–2119. <https://doi.org/10.1007/s10964-025-02174-z>
- Chan, R. C. H., & Lam, M. S. (2023). The relationship between perceived school climate, academic engagement, and emotional competence among Chinese students: The moderating role of collectivism. *Learning and Individual Differences*, 106, Article 102337. <https://doi.org/10.1016/j.lindif.2023.102337>
- Chukwuorji, J. C., Agbo, A. A., Ajaero, C. K., & Ifeagwazi, C. M. (2024). Presence of meaning in life and subjective well-being as mediators of association between sense of community and academic engagement. *Revista Colombiana De Psicología*, 32(2), 85–101. <https://doi.org/10.15446/rcp.v32n2.99606>
- Ciocanel, O., Power, K., Eriksen, A. J., & Gillings, K. (2017). Effectiveness of positive youth development interventions: A meta-analysis of randomized controlled trials. *Journal of Youth and Adolescence*, 46(3), 483–504. <https://doi.org/10.1007/S10964-016-0555-6>
- Currie, C., Roberts, C., Morgan, A., Smith, R., Settertobulte, W., Samdal, O., & Barnekow Rasmussen, V. (eds.). (2004). *Young People's Health in Context: international report from the HBSC 2001/02 survey, (Health Policy for Children and Adolescents, No.4)*. WHO Regional Office for Europe. [https://www.drugsandalcohol.ie/5892/1/WHO\\_Young\\_people%E2%80%99s\\_health\\_in\\_context.pdf](https://www.drugsandalcohol.ie/5892/1/WHO_Young_people%E2%80%99s_health_in_context.pdf). Accessed 3 May 2026
- Datu, J. A. D., & Yuen, M. (2020). Students' connectedness is linked to higher gratitude and self-efficacy outcomes. *Children and Youth Services Review*, 116, Article 105210. <https://doi.org/10.1016/j.childyouth.2020.105210>
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148–162. <https://doi.org/10.1037/0022-0663.95.1.148>
- Gallen, C., Schaerlaeken, S., Younger, J., Younger, J., Anguera, J., & Gazzaley, A. (2023). Contribution of sustained attention abilities to real-world academic skills in children. *Scientific Reports*, 13, Article 2673. <https://doi.org/10.1038/s41598-023-29427-w>

- García-Moya, I., Bunn, F., Jiménez-Iglesias, A., Paniagua, C., & Brooks, F. M. (2018). The conceptualisation of school and teacher connectedness in adolescent research: A scoping review of literature. *Educational Review*, 71(4), 423–444. <https://doi.org/10.1080/00131911.2018.1424117>
- Geldhof, G. J., Bowers, E. P., Boyd, M. J., Mueller, M. K., Napolitano, C. M., Schmid, K. L., et al. (2014). Creation of short and very short measures of the five Cs of positive youth development. *Journal of Research on Adolescence*, 24(1), 163–176.
- Gillen-O'Neel, C. (2021). Sense of belonging and student engagement: A daily study of first- and continuing-generation college students. *Research in Higher Education*, 62, 45–71. <https://doi.org/10.1007/s11162-019-09570-y>
- Gillen-O'Neel, C., & Fuligni, A. (2013). A longitudinal study of school belonging and academic motivation across high school. *Child Development*, 84(2), 678–692. <https://doi.org/10.1111/j.1467-8624.2012.01862.x>
- Gomez-Baya, D., Garcia-Moro, F. J., Tomé, G., & Gaspar de Matos, M. (2025a). Creative self-efficacy, academic performance and the 5Cs of positive youth development in Spanish undergraduates. *Journal of Intelligence*, 13(9), Article 120. <https://doi.org/10.3390/jintelligence13090120>
- Gomez-Baya, D., Kozina, A., Buenconsejo, J. U., & Muñoz-Velázquez, J. A. (2025b). The mediating role of the 5Cs of PYD in the relationship between grit and academic adjustment in Spanish undergraduates. *Frontiers in Education*. <https://doi.org/10.3389/educ.2025.1504176>
- Gordón, P., Chango, J., & Marcillo, J. (2025). Relationship between selective attention and study habits in high school students at José Ignacio Ordoñez Educational Unit. *Salud, Ciencia Y Tecnología*, 5, Article 1623. <https://doi.org/10.56294/saludcyt20251623>
- Gorjón, L., & Osés, A. (2022). The negative impact of information and communication technologies overuse on student performance: Evidence from OECD countries. *Journal of Educational Computing Research*, 61(4), 723–765. <https://doi.org/10.1177/07356331221133408>
- Gowing, A. (2019). Peer-peer relationships: A key factor in enhancing school connectedness and belonging. *Educational and Child Psychology*, 36, 64–77. <https://doi.org/10.53841/bpsecp.2019.36.2.64>
- Hamre, B. K., & Pianta, R. C. (2006). Student-teacher relationships. In G. G. Bear & K. M. Minke (Eds.), *Children's needs III: Development, prevention, and intervention* (pp. 59–72). National Association of School Psychologists.
- Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, 17, 63–84. <https://doi.org/10.1016/j.edurev.2015.11.002>
- Kim, H., Carney, J. V., & Hazler, R. J. (2022). Promoting school connectedness: A critical review of definitions and theoretical models for school-based interventions. *Preventing School Failure: Alternative Education for Children and Youth*, 67(4), 256–264. <https://doi.org/10.1080/1045988X.2022.2119359>
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2019). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: A meta-analytic review. *Research Papers in Education*, 35(6), 641–680. <https://doi.org/10.1080/02671522.2019.1615116>
- Kozina, A., Wium, N., Gonzalez, J.-M., & Dimitrova, R. (2019). Positive youth development and academic achievement in Slovenia. *Child & Youth Care Forum*, 48, 223–240. <https://doi.org/10.1007/s10566-018-9457-y>
- Leonhardt, C., Danielsen, D., & Andersen, S. (2025). Associations between screen use, learning and concentration among children and young people in western countries: A scoping review. *Children and Youth Services Review*, 177, 1–12. <https://doi.org/10.1016/j.childyouth.2025.108508>
- Lerner, R. M., Lerner, J. V., Almerigi, J. B., Theokas, C., Phelps, E., Gestsdottir, S., Naudeau, S., Jelicic, H., Alberts, A., Ma, L., Smith, L. M., Bobek, D. L., Richman-Raphael, D., Simpson, I., DiDenti Christian, E., & von Eye, A. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents: Findings from the first wave of the 4-H study of positive youth development. *Journal of Early Adolescence*, 25(1), 17–71. <https://doi.org/10.1177/0272431604272461>
- Lerner, R. M., Lerner, J. V., Lewin-Bizan, S., Bowers, E. P., Boyd, M. J., Kiely Mueller, M., Schmid, K. L., & Napolitano, C. M. (2011). Positive youth development: Processes, programs, and problematics. *Journal of Youth Development*, 6(3), Article 110603FA003.
- Lester, L., Waters, S., & Cross, D. (2013). The relationship between school connectedness and mental health during the transition to secondary school: A path analysis. *Australian Journal of Guidance and Counselling*, 23(2), 157–171. <https://doi.org/10.1017/jgc.2013.20>
- Liu, R., Jong, C., & Fan, M. (2024). Reciprocal relationship between self-efficacy and achievement in mathematics among high school students. *Large-Scale Assessments in Education*, 12, Article 14. <https://doi.org/10.1186/s40536-024-00201-2>

- Lombas, A. S., Jiménez, T. I., Arguís-Rey, R., Hernández-Paniello, S., Valdivia-Salas, S., & Martín-Albo, J. (2019). Impact of the Happy Classrooms Programme on psychological well-being, school aggression, and classroom climate. *Mindfulness*, 10, 1642–1660. <https://doi.org/10.1007/s12671-019-01132-8>
- López, V., Oyanedel, J. C., Bilbao, M., Torres, J., Oyarzún, D., Morales, M., Ascorra, P., & Carrasco, C. (2017). School Achievement and Performance in Chilean High Schools: The Mediating Role of Subjective Wellbeing in School-Related Evaluations. *Frontiers in Psychology*, 8. <https://doi.org/10.3389/fpsyg.2017.01189>
- Marraccini, M. E., & Brier, Z. M. F. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly*, 32(1), 5–21. <https://doi.org/10.1037/spq0000192>
- McKellar, S. E., & Wang, M.-T. (2023). Adolescents' daily sense of school connectedness and academic engagement: Intensive longitudinal mediation study of student differences by remote, hybrid, and in-person learning modality. *Learning and Instruction*, 83, Article 101659. <https://doi.org/10.1016/j.learninstruc.2022.101659>
- Mercier, J., Sanders, J., & Munford, R. (2025). Culturally and Contextually Relevant Definitions of the Five Cs. *Journal of Adolescent Research*, 0(0). <https://doi.org/10.1177/07435584251322701>
- Moreno, C., Rivera, F., Sánchez-Queija, I., Ramos, P., Jiménez-Iglesias, A., García-Moya, I., Moreno-Maldonado, C., Paniagua, C., Villafuerte-Díaz, A., Ciria-Barreiro, E., Leal-López, E., Salado, V., Luna, S., Velo, S., & Morgan, A. (2025). *Informe comparativo de las ediciones 2002–2006–2010–2014–2018–2022 del estudio HBSC en España* [Comparative report of the 2002–2006–2010–2014–2018–2022 editions of the HBSC study in Spain]. Ministerio de Sanidad. [https://www.sanidad.gob.es/areas/promocionPrevenccion/entornosSaludables/escuela/estudioHBSC/edicionesAnteriores/estudiosComparativos/docs/Comparativo2002a2022/HBSC2022\\_Comparativo2002\\_2022.pdf](https://www.sanidad.gob.es/areas/promocionPrevenccion/entornosSaludables/escuela/estudioHBSC/edicionesAnteriores/estudiosComparativos/docs/Comparativo2002a2022/HBSC2022_Comparativo2002_2022.pdf). Accessed 3 May 2026
- Mullis, I. V. S., von Davier, M., Foy, P., Fishbein, B., Reynolds, K. A., & Wry, E. (2023). PIRLS 2021 International Results in Reading. *Boston College, TIMSS & PIRLS International Study Center*. <https://doi.org/10.6017/lse.tpisc.tr2103.kb5342>
- National School Climate Council (2007). The School Climate Challenge: Narrowing the gap between school climate research and school climate policy, practice guidelines and teacher education policy. Retrieved on 2nd May 2026 from <https://schoolclimate.org/school-climate/>
- Niehaus, K., Rudasill, K. M., & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology*, 50(4), 443–460. <https://doi.org/10.1016/j.jsp.2012.03.002>
- Ninković, S., Knežević-Florić, O., & Đorđić, D. (2022). Teachers' support and students' perceptions of school connectedness: A multilevel study. *Zbornik Instituta Za Pedagogika Istrazivanja*, 54(1), 41–59. <https://doi.org/10.2298/zipi2201041n>
- Nunes, C., Oliveira, T., Santini, F. O., Castelli, M., & Cruz-Jesus, F. (2022). Meta-analysis on the academic achievement of high school students. *Education Sciences*, 12, Article 287. <https://doi.org/10.3390/educsci12050287>
- OECD. (2004). *Learning for Tomorrow's World: First Results From PISA 2003*. OECD Publishing.
- OECD. (2013). *PISA 2012 Results: Ready to Learn: Students' Engagement*. OECD Publishing. <https://doi.org/10.1787/9789264201170-en>
- OECD. (2017). *PISA 2015 Results (Volume III): Students' Well-Being*. OECD Publishing. <https://doi.org/10.1787/9789264273856-en>
- OECD. (2019). *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*. OECD Publishing. <https://doi.org/10.1787/9789264273856-en>
- OECD. (2023a). *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*. OECD Publishing. <https://doi.org/10.1787/9789264273856-en>
- OECD. (2023b). *PISA 2022 Results (Volume II): Learning During – and From – Disruption*. OECD Publishing. <https://doi.org/10.1787/9789264273856-en>
- Overton, W. F. (2010). Life-span development: Concepts and issues. In R.M. Lerner & W.F. Overton (Eds.), *The handbook of life-span development: Vol. 1. Cognition, biology, and methods* (pp. 1–29). Wiley.
- Overton, W. F., & Müller, U. (2012). Meta-theories, theories, and concepts in the study of development. In R. M. Lerner, M. A. Easterbrooks, & J. Mistry (Eds.), *Comprehensive handbook of psychology: Developmental psychology* (Vol. 6, pp. 19–58). Wiley.
- Paricio, D., Herrera, M., Rodrigo, M. F., & Viguer, P. (2020). Association between group identification at school and positive youth development: Moderating role of rural and urban contexts. *Frontiers in Psychology*, 11, Article 1971. <https://doi.org/10.3389/fpsyg.2020.01971>

- Pérez-Juárez, M. Á., González-Ortega, D., & Aguiar-Pérez, J. M. (2023). Digital distractions from the point of view of higher education students. *Sustainability (Basel, Switzerland)*, 15(7), Article 6044. <https://doi.org/10.3390/su15076044>
- Periañez, J., Continente, X., Sanz-Mas, M., Drou-Roget, G., Espelt, A., Cortés, E., & López, M. J. (2024). Evaluación piloto del programa “Transformem els patis” en escuelas de primaria de Barcelona [Pilot evaluation of the “Transformem els patis” program in elementary schools in Barcelona]. *Gaceta Sanitaria*, 38, Article 102429. <https://doi.org/10.1016/j.gaceta.2024.102429>
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford University Press.
- Pikulski, P. J., Pella, J. E., Casline, E. P., Hale, A. E., Drake, K. L., & Ginsburg, G. S. (2020). *School Connectedness and Child Anxiety*, 30(1), 13–24. <https://doi.org/10.1017/JGC.2020.3>
- Raniti, M., Rakesh, D., Patton, G. C., & Sawyer, S. M. (2022). The role of school connectedness in the prevention of youth depression and anxiety: A systematic review with youth consultation. *BMC Public Health*, 22(1), Article 2152. <https://doi.org/10.1186/s12889-022-14364-6>
- Resett, S. (2021). Relación entre la atención y el rendimiento escolar en niños y adolescentes. *Revista Costarricense De Psicología*, 40(1), 3–22. <https://doi.org/10.22544/rcps.v40i01.01>
- Ricard, N. C., & Pelletier, L. G. (2016). Dropping out of high school: The role of parent and teacher self-determination support, reciprocal friendships and academic motivation. *Contemporary Educational Psychology*, 44, 32–40. <https://doi.org/10.1016/j.cedpsych.2015.12.003>
- Rose, I. D., Lesesne, C. A., Sun, J., Johns, M. M., Zhang, X., & Hertz, M. (2022). The relationship of school connectedness to adolescents’ engagement in co-occurring health risks: A meta-analytic review. *The Journal of School Nursing*, 40(1), 58–73. <https://doi.org/10.1177/10598405221096802>
- Rowe, F., Stewart, D., & Patterson, C. (2007). Promoting school connectedness through whole school approaches. *Health Education*, 107(6), 524–542. <https://doi.org/10.1108/09654280710827920>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Sadeghi, P., Marashian, F. S., & Heidari, A. R. (2024). The correlation between school connectedness and psychological safety with propensity for destructive behaviors in students: The mediating role of meaning of education and academic self-efficacy. *International Journal of School Health*, 11(3), 188–199.
- Sánchez-Rosas, J., & Esquivel, S. (2016). Instructional teaching quality, task value, self-efficacy, and boredom: A model of attention in class. *Revista de psicología (Santiago)*, 25(2), 1–20. Retrieved on 2nd May 2026, from [http://www.scielo.cl/scielo.php?script=sci\\_arttext&pid=S0719-05812016000200011&lng=es&tlng=](http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0719-05812016000200011&lng=es&tlng=)
- Sánchez, B., Colón, Y., & Esparza, P. (2005). The role of sense of school belonging and gender in the academic adjustment of Latino adolescents. *Journal of Youth and Adolescence*, 34(6), 619–628.
- Shek, D. T. L., & Wu, F. K. Y. (2016). The influence of positive youth development and family functioning on adolescent academic adjustment in families with parental divorce or separation. *International Journal on Disability and Human Development*, 15(4), 443–453. <https://doi.org/10.1515/IJDHD-2017-5011>
- Shochet, I., Dadds, M., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology*, 35, 170–179. [https://doi.org/10.1207/s15374424jccp3502\\_1](https://doi.org/10.1207/s15374424jccp3502_1)
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100(4), 765–781. <https://doi.org/10.1037/a0012840>
- Somers, C. L., Goutman, R. L., Day, A., Enright, O., Crosby, S., & Taussig, H. (2020). Academic achievement among a sample of youth in foster care: The role of school connectedness. *Psychology in the Schools*, 57, 1845–1863. <https://doi.org/10.1002/pits.22433>
- Stracuzzi, N. F., & Mills, M. L. (2010). *Teachers Matter: Feelings of School Connectedness and Positive Youth Development among Coos County Youth*. New England Issue Brief No. 23. <https://files.eric.edu/gov/fulltext/ED535958.pdf>. Accessed 3 May 2026
- Vecchione, M., & Schwartz, S. S. H. (2022). Personal values and academic achievement. *British Journal of Psychology*, 113(3), 630–652. <https://doi.org/10.1111/bjop.12555>
- Vieno, A., Perkins, D. D., Smith, T. M., & Santinello, M. (2005). Democratic school climate and sense of community in school: A multilevel analysis. *American Journal of Community Psychology*, 36, 327–341. <https://doi.org/10.1007/s10464-005-8629-8>
- Ward-Seidel, A. R., Rimm-Kaufman, S. E., Bell, B. A., & Sandilos, L. E. (2025). Belonging contributes to compassion: A longitudinal study of middle school students’ prosocial competencies. *Journal of Applied Developmental Psychology*, 99, Article 101834. <https://doi.org/10.1016/j.appdev.2025.101834>

- Whiting, E. F., Everson, K., & Feinauer, E. (2018). The simple school belonging scale: Working towards a unidimensional measure of student belonging. *Measurement and Evaluation in Counseling and Development*, 51(3), 163–178. <https://doi.org/10.1080/07481756.2017.1358057>
- Whitlock, J. L. (2006). Youth perceptions of life at school: Contextual correlates of school connectedness in adolescence. *Applied Developmental Science*, 10(1), 13–29. [https://doi.org/10.1207/s1532480xads1001\\_2](https://doi.org/10.1207/s1532480xads1001_2)
- Wilkins, N., Krause, K. H., Verlenden, J. V., Szucs, L. E., Ussery, E. N., Allen, C. T., Stinson, J., Michael, S. L., & Ethier, K. A. (2023). School connectedness and risk behaviors and experiences among high school students — Youth Risk Behavior Survey, United States, 2021. *MMWR Supplements*, 72(1), 13–21. <https://doi.org/10.15585/mmwr.su7201a2>
- Wong, P. W. C., Kwok, K. W., & Chow, S. L. (2022). Validation of Positive Youth Development Scale and Implications for Adolescent in Hong Kong Community. *Child Youth Care Forum*, 51, 901–919. <https://doi.org/10.1007/s10566-021-09658-6>
- Xia, Y., Ren, M., Luo, X., Wu, M., Jiang, N., Han, X., & Zhao, R. (2025). Longitudinal effects of school connectedness on adolescents' academic engagement: Mediating role of basic psychological needs satisfaction and the examination of gender differences in the mediation model. *Children and Youth Services Review*, 172, Article 108245. <https://doi.org/10.1016/j.childyouth.2025.108245>
- Yuen, M., & Wu, L. (2024). Relationship between school connectedness and psychological well-being in adolescents: A meta-analysis. *Current Psychology*, 43, 10590–10605. <https://doi.org/10.1007/s12144-023-05164-1>

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**Anna Jean Grasmeyer.**, *Current themes of research: and Most relevant publications in the field of Psychology of Education.*

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- Lorence, B., Hidalgo, V., Grasmeyer, A. J., & Jiménez, L. (2025). Parental competencies for positive parenting and their measurement: A systematic review. *Professional Psychology: Research and Practice*, 56(3), 222–231. <https://doi.org/10.1037/pro0000608>.
- Mendoza-Berjano, R., Gómez-Baya, D., Grasmeyer, A. J., Lorenzo-Fernández, M., López-Bermúdez, E., & Rubio-González, A. (2024). Truancy in secondary education students: prevalence and profiles of students including characteristics of family environment and links with school. *Educación XX1*, 27(2), 141–166. <https://doi.org/10.5944/educxx1.38573>.

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- Mendoza Berjano, R., Batista Foguet, J. M., Rubio González, A., Gómez Baya, D., & Cruz, C. (2014). La lectura voluntaria de libros en el alumnado español de 10 a 18 años: Diferencias territoriales, de género y características asociadas. *Erebea: Revista de Humanidades y Ciencias Sociales*, 4, 391–416. <https://ariasmontano.uhu.es/rest/api/core/bitstreams/50e1edfb-a357-4b4d-9c88b9e78c30e205/content>.
- Mendoza, R. (2004). La escritura reflexiva como práctica cotidiana de los pre adolescentes y adolescentes españoles: Situación actual y características asociadas. *Revista de Educación*, 335, 467–496. <https://www.educacionfpydeportes.gob.es/revista-de-educacion/numeros-revistaeducacion/numeros-anteriores/2004/re335/re335-28.html>.

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*Main publications in educational psychology:*

- Frade Santos, M., Gomez-Baya, D., Simoes, C., Grazzani, I., & Lebre, P. (2025). Do School and Family Well-being Mediate the relationship between Social and Emotional Learning and Subjective Happiness? *Child Indicators Research*. <https://doi.org/10.1007/s12187-025-10277-z>.
- Gomez-Baya, D., Kozina, A., Buenconsejo, J. U., & Muñoz-Velázquez, J. A. (2025). The mediating role of the 5Cs of PYD in the relationship between grit and academic adjustment in Spanish undergraduates. *Frontiers in Education*, 10, 1504176. <https://doi.org/10.3389/educ.2025.1504176>.
- Gomez-Baya, D., Garcia-Moro, F. J., Nicoletti, J. A., & Lago-Urbano, R. (2022). A Cross-National Analysis of the Effects by Bullying and School Exclusion on Subjective Happiness in 10-Year-Old Children. *Children*, 9(2), 287–299. <https://doi.org/10.3390/children9020287>.
- Gomez-Baya, D., & Gillham, J. (2019). Positive education. Promoting well-being at school. In J. A. Muñoz & C. M. Pulido (Eds.), *The Routledge Handbook of Positive Communication* (pp. 327–337). Routledge.