



# Parental Support, Peer Support and School Connectedness as Foundations for Student Engagement and Academic Achievement in Australian Youth

Graham L. Bradley, Samantha Ferguson, and Melanie J. Zimmer-Gembeck

## Abstract

Positive youth development perspectives emphasize the importance of adolescents' relationships with others. Consistent with this, we argue that support from parents and peers promotes psychological connections to school, which is indirectly related to academic achievement via elevated levels of student engagement in learning. We tested these linkages in a sample of 754 Australian secondary school students (55% males,  $M_{age} = 13.5$  years) who reported on the support they gain from parents and peers, and their psychological connection to school. Extending past research, both adolescents and teachers provided student engagement data, while academic achievement was measured using student grades obtained from school records. Structural equation modeling confirmed the hypothesized model, although, contrary to expectations, peer support had additional direct effects, being associated negatively with student engagement and positively with academic achievement. The findings provide

evidence of the positive impact, across developmental domains, of social connectedness, and confirm the importance of relationships with others, especially with peers, during adolescence.

## Keywords

Positive youth development · Parental support · Peer support · School connectedness · Student engagement · Academic achievement · Australia

The academic achievement of adolescents is shaped by many factors including ability, motivation, strategy, opportunity, instructional, and other school and contextual factors (Winne & Nesbit, 2010). Positive Youth Development (PYD) (Burkhard, Robinson, Murray, & Lerner, 2019; Geldhof et al., 2015), social emotional learning (SEL) (Taylor, Oberle, Durlak, & Weissberg, 2017; van de Sande et al., 2019), and motivational theories (Skinner, Zimmer-Gembeck, & Connell, 1998) suggest that the quality of the relationships that students establish and maintain with others is another factor affecting academic achievement. For example, one of the Cs in Lerner et al.'s (2005) Five Cs of PYD is "connection", which is defined in terms of posi-

G. L. Bradley (✉) · S. Ferguson ·  
M. J. Zimmer-Gembeck  
School of Applied Psychology, Griffith University,  
Gold Coast, QLD, Australia  
e-mail: [g.bradley@griffith.edu.au](mailto:g.bradley@griffith.edu.au)

tive reciprocal bonds with people and institutions including peers, family, school, and community. These connections, together with the other four Cs (competence, confidence, character and caring), provide the foundations for a positive life trajectory that includes success in school (for an expanded 7Cs model see Abdul Kadir, Mohd, & Dimitrova, [this volume](#); Dimitrova et al., [this volume](#); Manrique-Millones, Pineda Marin, Millones-Rivalles, & Dimitrova, [this volume](#)). Similarly, the developmental assets model emphasizes the importance of positive relationships, opportunities, competencies, and values (Roehlkepartain & Blyth, 2020; Scales, Roehlkepartain, & Shramko, 2017). One external asset is the availability of support from close others (Kosic, Wiium, & Dimitrova, [this volume](#)). Common to these theories is the notion that young people who are supported and affirmed across a range of social settings are likely to thrive personally and academically (Fernandes, Fetvadjev, Wiium, & Dimitrova, [this volume](#); Kozina, Wiium, Gonzalez, & Dimitrova, 2019; Uka et al., [this volume](#)).

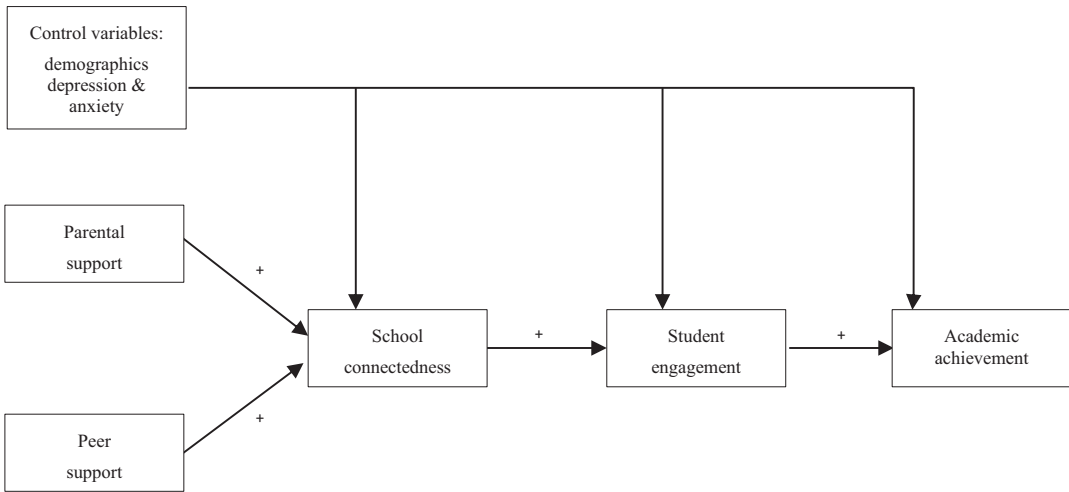
In this chapter, we review background literature and summarize new evidence on the effects of social relatedness, support, and connection on academic outcomes in an Australian context. We propose and test a model of academic achievement that illustrates the importance of being supported by parents and peers and connected to schools. Specifically, we propose and present new evidence for a three-step model in which (1) adolescents who feel supported by their parents and peers experience greater psychological connection to their school; (2) this connection to school facilitates students' behavioral and emotional engagement in learning and (3) such engagement, in turn, provides a foundation for students' academic achievement. While all bivariate relations that we propose have been supported in past studies, we build on these findings by testing a full three-step model. We draw on data collected from both students and teachers, and use latent variable Structural Equation Modeling (SEM), to test the links from parental and peer support to psychological connection with school, then to student engagement in learning, and finally to academic achievement (Fig. 1).

## Social Connections and Academic Achievement in the Australian Context

This chapter presents a study conducted in Australia, a Western liberal democratic nation that, since colonization in the late eighteenth century, has had strong cultural and institutional links with Great Britain. In 2017, Australia had a population of 24.8 million people, 12% of whom were aged 10–19 years, 2.8% were indigenous Australians, and 33% were born outside of Australia (Australian Bureau of Statistics, 2018). Major sources of migration in recent decades include Great Britain, New Zealand, Vietnam, China, and India. Australia is a relatively secular society, with approximately 30% of the population self-reporting having no religion (Australian Bureau of Statistics, 2016). In terms of various social, economic, health, and educational indices, Australia compares favorably with most nations, ranking equal sixth on the United Nations Human Development Index (United Nations Development Program, 2019).

Education is compulsory for all Australian children aged 5–15 years, and is provided mainly in medium-sized, mixed-sex schools. Australian students transition from primary to secondary school around 11–12 years of age, that is, about the time of puberty for many young people. In 2017, 85% of all students completed a full secondary education (Australian Bureau of Statistics, 2017). Most of these secondary students (59%) attend government-funded (non-fee-paying) schools, with smaller percentages attending non-government (fee-paying) schools.

PYD perspectives do not feature prominently in the Australian national curriculum, although positive psychology policies, goals, and approaches are present to varying degrees across the states and in the schools of Australia (e.g., Norrish & Vella-Brodrick, 2009; Waters, 2011). In 2015, 79% of Australian students reported feeling a sense of belonging to their school compared to the OECD average of 78% (De Bortoli, 2018). In terms of Arnett's (1995) distinction between broad (liberal) and narrow (restrictive) patterns of adolescent socialization, Australian



**Fig. 1** Conceptual overview of the hypothesized model

youth experience broad socialization practices in which, compared with many non-Western nations, restrictions are relatively few, supervision is relatively loose, and peer groups and youth culture have pervasive influences. The setting for this chapter thus stands in contrast to settings in which education is less universally provided and completed, and obedience and social order are more unconditionally expected of young people.

Australian adolescents, like those living in other liberal societies, spend large portions of their time interacting in three social contexts: their family, their peer group, and their school. As elaborated below, connection to others in each of these social ecologies has been shown to facilitate student academic achievement. In this section, we review evidence for links between academic achievement and each of psychological connection to school, support from parents, and support from peers. Moreover, we advance the proposition that the effects of parental and peer support on academic achievement occur indirectly via psychological connection to school.

### Psychological Connection to School

Many U.S. based scholars (e.g., Eccles & Roeser, 2011; Steinberg, 2017) have highlighted the importance of schools as a developmental context during adolescence, and this view resonates with youth and families in Australia. Consistent with PYD principles, Australian schools have the resources to provide the supports that promote students’ engagement and productive learning. However, for adolescents to commit to schooling, they need a personal sense of connection to their school (Osterman, 2000). This connection to school (also referred to as school bonding, involvement, belonging, commitment, affiliation, and identification) implies that students feel a part of the school, share its goals, and value its activities. Research has also demonstrated positive associations between psychological connection to school, or school connectedness (the two terms are hereinafter used interchangeably), academic achievement and school engagement (Abubakar & Dimitrova, 2016; Dimitrova, Sam, & Ferrer-Wreder, 2021; Juvonen, 2006).

## Support from Parents

Parents play many roles in the development of their children, including the provision of material, emotional, and informational support that is vital for adolescents' social and educational development (Perkins et al., 2016; Steinberg, 2017). To varying degrees, parents model and encourage scholastic effort, contribute to their adolescent children's educational decision-making, help them to set and achieve educational goals, supervise and assist with their (home) work, and participate in school affairs. These indices of support from parents help to establish and maintain schools and schooling as central aspects of the lives of their adolescent children, and this provides the foundation for their children's psychological connection to school and subsequent academic achievement (Allen, Vella-Brodick, & Waters, 2016; Perkins et al., 2016). We thus expected positive relations between parental support, school connectedness, and academic achievement.

## Support from Peers

Although parents remain important influence during adolescence, this is a time of increased involvement with peers (Brown & Larson, 2009). For many Australian young people, peer group acceptance takes precedence over other goals (Duffy, Penn, Nesdale, & Zimmer-Gembeck, 2017), with peers becoming an increasingly vital source of support and self-belief. To the extent that students have rewarding and supportive relationships with their peers, they are likely to enjoy their time at school, regard it as a pleasant place to be, and thereby develop a sense of psychological connection to their school (Osterman, 2000).

During adolescence, evidence especially from developed Western nations shows that peers are also important influences on academic outcomes (Li, Lynch, Kalvin, Liu, & Lerner, 2016). In ideal circumstances, peers act as positive role models, assist with understanding and task completion (e.g., answering each other's questions, clarifying teacher expectations and explanations), pro-

vide emotional support, and reward academic outcomes. Particularly when teaching-learning processes involve collaborative, cooperative, and small group activities, students who are well accepted by their peers are likely to perform better than their more isolated classmates (Winne & Nesbit, 2010). The notion that close relations with peers facilitates academic achievement is generally supported by research conducted primarily in the USA (for a review see Furrer, Skinner, & Pitzer, 2014).

That said, studies also suggest that peers can have negative effects on academic achievement. To appreciate why this might be so, a distinction can be drawn between two kinds of peer variables: the first pertains to the strength of the adolescent's peer support, and the second relates to the nature of the group to which adolescents draw their support. Although their close bonding to school and to peers generally assists with academic achievement (Kindermann, 2016), these effects may be attenuated or even reversed, if students affiliate with a peer group that promotes anti-academic values and norms, and repudiates academic goals (Tetzner, Becker, & Maaz, 2017; Whitlock, 2006). Thus, the effects of peer relations on academic achievement are likely to be context-specific, usually affirming, but possibly undermining, academic endeavors.

One possible response to these countervailing forces and mixed research findings is to propose that the net effect of peer support may be unknown or neutral, neither facilitating nor harming academic achievement. However, as elaborated below, our resolution of this issue involves contrasting two different ways in which students relate to their school, namely, their sense of psychological connection to school and their behavioral and emotional engagement in learning. We expect that peer support would help promote a sense of school connectedness. Yet, we expect that peer support may not be simply or directly associated with engagement in learning, given that this association depends on their peers' attitudes to school and engagement in learning.

In summary, each of school connectedness, parental support, and peer support are expected to contribute to Australian adolescents' academic

achievement. The effects of parental and peer support on academic achievement would be expected to be indirect, via school connectedness, with the mechanism underlying these indirect effects likely to differ between the two types of support. In the case of parents, support is in the form of encouragement, example, assistance, and supervision that together provide structure for their children establishing connections with school and heighten their children's expectations of school connectedness. In the case of peers, support makes school an enjoyable and rewarding place, and thereby provides the motivation for close ties and growing identification with school (Allen et al., 2016).

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### **Links from Support, and School Connectedness, to Student Engagement in Learning**

Recognizing that a sense of psychological connection to school predicts academic achievement, we propose that this relation is also indirect, in this case working through the extent to which students are engaged in learning activities in and out of the classroom. The construct of student engagement encompasses a range of emotional, cognitive, motivational, and, most of all, behavioral, indices of participation in school. It is evidenced in students' orientation and commitment to school (work); the effort and persistence they display; their responses to rules and instructions; their patterns of attendance versus absenteeism, punctuality versus tardiness, on- versus off-task behaviors, pro- versus antisocial classroom conduct; completion of homework; participation in extracurricular activities, and so on (Furrer et al., 2014; Skinner et al., 1998). In the remainder of this chapter, we focus particularly on behavioral and emotional engagement in learning activities (rather than extra-curricular and non-academic pursuits), and we use the term *student engagement* to refer to involvement in these learning activities.

The distinction between psychological connection with school and student engagement in learning is important. As herein operationalized,

the former is a more internalized, "psychological" state, whereas student engagement is a more externalized, "behavioral" phenomenon. The Organization for Economic Co-operation and Development (OECD, 2003) labels these two constructs *belonging* and *participation*, respectively. Within a PYD framework, both are developmental assets. However, psychological connection to school can be viewed as logically preceding students' engagement in learning. Without a strong sense of school connectedness, engagement in classroom learning activities is difficult to sustain, and students may struggle to deal with the complex demands of school life (Larson & Tran, 2014). Supporting this logic, Lee (2014) found in a sample of over 3000 U.S. adolescents that the effect of school belonging on reading performance was mediated by student behavioral engagement.

Research also shows that relations with parents and peers are positively associated with student engagement (Furrer & Skinner, 2003; Osterman, 2000). What is lacking, however, is evidence pertaining to the proposed role of students' psychological connection to school in mediating the effects of parental and peer support on student engagement. In the current chapter, we argue that these associations will unfold and we present evidence to support this view from a large study of Australian secondary school students.

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### **Links from Support, and School Connectedness, to Academic Achievement, via Students' Engagement in Learning**

Just as a greater psychological connection to school leads to increased student engagement in learning, numerous studies have shown that student engagement has a strong, proximate, and direct influence on academic achievement, an effect that has been shown both in Australia (Hood, Bradley, & Ferguson, 2017; Tomaszewski, Xiang, & Western, 2020; Zimmer-Gembeck, Chipeur, Hanisch, Creed, & McGregor, 2006), and in the USA (Benner, Graham, & Mistry, 2008; Li, Lerner, & Lerner, 2010). These effects have been

**Table 1** Sample characteristics

Variable	Value	School A ( <i>n</i> = 441) %	School B ( <i>n</i> = 313) %	Full sample ( <i>N</i> = 754) %
Gender	Male	51.5	60.4	55.2
	Female	48.5	39.6	44.8
Year level	7	28.3	21.4	25.5
	8	35.1	30.4	33.2
	9	23.1	24.0	23.5
	10	13.4	24.3	17.9
Country of birth	Australia	79.3	55.1	69.3
	Other country	20.6	44.9	30.7
First/Main Language	English	92.4	85.9	89.7
	Other	7.6	14.1	10.3
Family structure	Both biological parents	59.5	49.5	55.3
	Mother only	16.1	17.9	16.9
	Step Family	13.6	14.4	14.0
	Other	10.7	18.3	13.8
Father's education	School only	30.8	41.8	35.2
	Post-school	30.5	19.1	28.8
	Unknown	38.7	39.1	38.8
Mother's education	School only	31.5	42.0	35.9
	Post-school	39.7	28.6	35.0
	Unknown	28.8	29.5	29.1
School grades (self-reported)	Mostly As	7.5	3.9	6.0
	Mix of As and Bs	21.4	16.9	19.6
	Mostly Bs	18.0	15.6	17.0
	Mix of Bs and Cs	26.9	34.9	30.2
	Mostly Cs	14.1	15.0	14.5
	Mix of Cs and Ds	8.7	12.1	10.1
	Ds or lower	3.4	1.6	2.7

found longitudinally for various indices of student engagement including classroom conduct (Moore et al., 2016) and completion of homework (Moore et al., 2016; Winne & Nesbit, 2010).

Research has also supported the proposed role of student engagement in mediating the effects of parent or peer relational variables on academic achievement. For example, in a cross-sectional study of Australian adolescents, Zimmer-Gembeck et al. (2006) showed that students' level of engagement mediated the effect of peer relationships on achievement, whereas Buhs (2005), in a longitudinal study of German fifth-graders, found that classroom participation mediated the effects of peer relations on subsequent achievement test performance. In both these studies, the direct paths from peer relations to

achievement were not significant. Both cross-sectional (Zimmer-Gembeck et al., 2006) and longitudinal (Benner et al., 2008; Furrer & Skinner, 2003) research also shows that supportive relations with parents predict achievement indirectly by school and classroom engagement.

### **A Study of Australian Student Connectedness, Engagement, and Achievement**

PYD and related theory and research lead to the conceptualization of a pathway model of the social-relational antecedents of academic achievement. We tested this model in a study that had several distinctive features. First, consistent

with conceptualizations of student engagement in learning as a multifaceted phenomenon, we operationalized this variable using five indices: behavioral engagement, emotional engagement, homework completed, classroom effort, and classroom behavior. Second, we obtained data from multiple sources, with student self-reports complemented by ratings of each student by several (between 6 and 8) teachers. Third, to protect against the possibility that low levels of parental and peer support, or connection to school, are spuriously related to poor academic outcomes by dint of their associations with emotional disturbance (Gaete, Rojas-Barahona, Olivares, & Araya, 2016), a unique feature of our research was the consideration and statistical control of the effects of students' anxiety and depressive symptoms. Fourth, we also controlled for gender, age, and other demographic variables, because past research (e.g., Chase, Hilliard, Geldhof, Warren, & Lerner, 2014; Eccles & Roeser, 2011; Whitlock, 2006) has found that academic outcomes vary with these demographic characteristics. Finally, we tested several alternative and reversed-order models. In particular, drawing on the proposition, based on attachment theory (Bowlby, 1969; Kobak & Madsen, 2011), that relationships with parents are foundational and highly influential in shaping subsequent extra-familial relationships, we proposed and tested an alternative model in which support from parents precedes and predicts, peer support.

For the purposes of this chapter, data from 754 Australian students enrolled in two government secondary schools were used. School A was larger and located in a predominantly middle-class urban area, whereas School B had mostly low SES students from a neighboring coastal city. Students' ages ranged from 11 to 16 years ( $M_{\text{age}} = 13.53$ ,  $SD = 1.11$ ). The sample comprised all students in the target grades at the two schools (a) whose parents provided passive consent, (b) who were present on the days of questionnaire administration, and (c) who gave verbal assent. The majority of participants (69%) were born in Australia, with 18% born in New Zealand, 2% in the United Kingdom, 2% in the Philippines, and the remaining 62 students born in 29 other coun-

tries around the world. Full details of the sample, by school, are given in Table 1. As shown, the sample drawn from School B was more diverse on most socio-demographic characteristics.

After ethics approval was obtained from relevant school and university bodies, information regarding the study was sent to parents, who were invited to opt out if desired. Following this, questionnaires were completed by the students in regular classes under the supervision of teachers and/or the researchers. Students recorded on their questionnaires a unique ID code that enabled matching of self-report data to teachers' data on student engagement and academic achievement, while ensuring students were anonymous to the researchers. The questionnaire contained items assessing all demographic variables reported in Table 1, plus the seven multi-item scales described below. All scales were scored by averaging responses, with high scores indicating high levels of the measured construct.

*Parental and peer support* were reported by adolescents completing the 10-item Parental Support, and the 10-item Classmate Support subscales of The Child and Adolescent Social Support Scale (Malecki & Demaray, 2002). Malecki and Demaray (2002) reported reliability coefficient of  $\alpha = .89$  and  $\alpha = .94$  for the parental and classmate scales, respectively. Sample items from the parental support scale referred to parents listening to and helping the adolescent making decisions. Sample items from the peer support scale referred to joining peer activities and peer respect. Response options for both scales ranged from 1 (*never*) to 6 (*almost always*).

*Connection to school* was measured by a 12-item version of The Psychological Sense of School Membership Scale (Goodenow, 1993). Sample items referred to feeling like a real part of the school and feeling proud of belonging to the school. Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability coefficient values for the original 18-item scale range between  $\alpha = .78$  and  $\alpha = .95$ .

*Student engagement* was measured with five variables, three of which were reported by adolescents and two by teachers. The first of these variables was adolescent reports of the minutes

they spend per week doing homework, which was assessed by two closed-ended items. In addition, students reported their behavioral and emotional engagement using the 5-item student report versions of The Behavioral Engagement and Emotional Engagement subscales of The Engagement versus Disaffection with Learning Scale (Skinner, Kindermann, & Furrer, 2009). Sample items referred to working hard in class (behavioral engagement), and enjoying learning new things in class (emotional engagement). Response options ranged from 1 (*not at all true*) to 4 (*very true*). As evidence of validity, the authors of the scale reported positive correlations with teacher ratings and with *in vivo* researcher observations of student on-task and off-task behavior. Reliability coefficients have ranged from  $\alpha = .61$  to  $\alpha = .82$  (Skinner et al., 2009).

For the final two student engagement variables, all teachers rated the behavior and scholastic effort of all students in their classes. Each student's behavior and effort was thus rated by six to eight teachers, depending on the number of subjects taken. Ratings ranged from 1 (*unsatisfactory*) to 4 (*excellent*). The most recent semester's average of these teacher ratings was used to measure student classroom behavior and student classroom effort.

*Academic achievement* being the criterion variable was assessed using the students' grades across all 6–8 subjects in which they were enrolled in their most recent semester. Grades were rated on a 5-point scale ranging from 5 (*highest grade A*) to 1 (*lowest grade E*), and were averaged to provide a measure of academic achievement.

*Adolescents' symptoms of anxiety and depression* were measured as control variables using the 6-item Generalized Anxiety subscale from The Spence Children's Anxiety Scale ([SCAS]; Spence, 1988) and The Depression Subscale of the Depression, Anxiety and Stress Scale-21 ([DASS\_21]; Lovibond & Lovibond, 1995). For the SCAS, adolescents indicated the frequency with which they experience each symptom on a scale from 0 (*never*) to 3 (*always*). Spence (1988) reported high internal reliability for this scale and demonstrated con-

current validity with other measures of anxiety. For the DASS\_21, responses were given on a 4-point scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much or most of the time*). Lovibond and Lovibond (1995) report evidence of scale validity in adolescent samples, and reliability coefficient in their normative sample of  $\alpha = .81$ .

## Model Testing

To test the proposed model, SEM was performed using maximum likelihood estimation procedures within LISREL 8.80. The model controlled for the effects of gender, age, school, family structure, anxiety, and depression. All these control variables were treated as observed variables. To partial out the effects of error in the measurement of the four core study variables (parental support, peer support, and school connectedness, and student engagement), these variables were treated as latent (Kline, 2005). Each of parental and peer support was represented by five manifest indicators, with each indicator comprising the mean of a pair of items from the relevant 10-item scale. Parceling decisions were based on Little, Cunningham, Shahar, and Widaman's (2002) approach which allocates items to parcels based on their sample-specific factor loadings, and thus seeks to ensure that the construct is equally represented in all parcels. Similar procedures were used to derive manifest indicators of school psychological connection, with each of the four indicators comprising the mean of three items from the 12-item scale. Finally, observed indicators for student engagement were the self-reported measures of time spent on homework, behavioral engagement and emotional engagement, plus teacher ratings of classroom behavior and effort.

The model fit was assessed using five fit indices: the Chi-square ( $\chi^2$ ; the value of which, ideally, should be non-significant), the change in Chi-square  $\Delta\chi^2$ , the Root Mean Square Error of Approximation (RMSEA; where values below .05 indicate a good fit and values



**Table 2** Descriptive statistics and correlations

Variable	Mean	SD	$\alpha$	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Gender	-	-	-												
2. Age (years)	13.53	1.11	-	.02											
3. Anxiety	2.15	0.64	.81	.32***	.02										
4. Depression	0.82	0.74	.90	.11**	.09*	.41***									
5. Parental support	4.33	1.17	.93	-.12**	-.12**	-.17***	-.31***								
6. Peer support	3.68	1.17	.94	-.01	-.07*	-.18***	-.42***	.34***							
7. School connectedness	3.54	0.64	.86	-.01	-.11**	-.16***	-.48***	.43***	.66***						
8. Homework <sup>a</sup>	84.5	90.6	-	.16***	-.07*	.12**	-.06	.13***	.07*	.18***					
9. Behavioral engagement	2.88	0.59	.82	.07*	-.15***	.06	-.20***	.34***	.29***	.41***	.37***				
10. Emotional engagement	2.45	0.62	.83	.04	-.15***	-.05	-.30***	.34***	.41***	.57***	.30***	.63***			
11. Classroom behavior	3.47	0.92	-	.33***	-.14***	.10**	-.06	.11**	.11**	.20***	.32***	.37***	.19***		
12. Effort in class	3.22	0.95	-	.28***	-.18***	.07*	-.12**	.20***	.22***	.29***	.34***	.43***	.27***	.84***	
13. Grade Point Average	3.49	0.70	-	.23***	-.04	.06	-.10**	.14***	.24***	.24***	.33***	.30***	.18***	.63***	.74***

Note.  $\alpha$  = Cronbach's alpha reliability coefficient. Gender coded as 0 = male; 1 = female

<sup>a</sup>Number of minutes per week spent doing homework

between .05 and .08 indicate a satisfactory fit), the Non-Normed Fit Index (NNFI; where values greater than .95 indicate a good fit), the Comparative Fit Index (CFI; where values greater than .95 indicate a good fit), and the Standardized Root Mean Square Residual (SRMR; where values below .08 indicate a good fit) (Hair, Black, Babin, & Anderson, 2010). Prior to SEM, descriptive statistics and correlations were examined, demographic characteristics were investigated to determine what should be accounted for in the SEM, and

the measurement portion of the SEM was confirmed.

### Support for the Model

Descriptive statistics and correlations are given in Table 2. To identify demographic variables that should be controlled in the main analyses, six hierarchical regression analyses were conducted—one with each of the five student engagement variables, and one with academic achievement,

**Table 3** Standardized parameter estimates in structural equation models

Model and predictors	Direct effect on school connectedness	Effects on student engagement			Effects on academic achievement		
		Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
<b>Hypothesized model</b>							
School	.14***	-.49***	.05***	-.44***	.16***	-.38***	-.22***
Gender	.06*	.33***	.02*	.35***	-.03	.31***	.28***
Age	-.04	-.17***	-.01	-.19***	.13***	-.16***	-.03
Family structure	-.05	-.14***	-.02	-.15***	.02	-.14***	-.15***
Anxiety	.03	.08*	.01	.09*	-.03	.08*	.04
Depression	-.16***	-.09*	-.05***	-.14***	.04	-.12***	-.08*
Parental support	.23***	–	.07***	.07***	–	.07***	.07***
Peer support	.55***	–	.18***	.18***	–	.16***	.16***
School connectedness	–	.33***	–	.33***	–	.29***	.29***
Student engagement	–	–	–	–	.88***	–	.88***
<b>Best-fitting model</b>							
School	.14***	-.50***	.06***	-.44***	.21***	-.43***	-.22***
Gender	.06*	.33***	.03*	.36***	-.05	.32***	.27***
Age	-.04	-.17***	-.02	-.19***	.14***	-.16***	.03
Family structure	-.05	-.14***	-.02	-.16***	-.01	-.14***	-.15***
Anxiety	.03	.07*	.01	.09*	-.03	.07*	.04
Depression	-.16***	-.09**	-.07***	-.16***	.05	-.12***	-.07
Parental support	.23***	–	.10***	.10***	–	.05**	.05**
Peer support	.55***	-.12**	.24***	.11**	.18***	.01	.19***
School connectedness	–	.43***	–	.43***	-.17***	.39***	.22***
Student engagement	–	–	–	–	.92***	–	.92***

*Note.* School coded as A (the higher SES school) = 0; B (the lower SES school, with a more diverse student population) = 1; Gender coded as 0 = male; 1 = female; Family structure coded as both biological parents = 0; other = 1  
\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

as the criterion variable. The results showed that gender, age, school, and family structure, but not country of birth, were associated with at least one of the academic variables, so the former four variables were controlled in the SEM.

Prior to testing the hypothesized model, a measurement model capturing the four latent variables (parental support, peer support, school connectedness, and student engagement) and the 19 observed indicators of these variables was evaluated. Each observed variable was specified as loading on its single intended construct. After freeing the error covariance between two of the observed indicators of student engagement, behavioral engagement and emotional engagement, the fit of this 4-factor model was satisfactory,  $\chi^2(145,754) = 799.1$ ,  $p < .001$ , RMSEA = .075, 90% CIs [.070, .081], NNFI = .97, CFI = .97, and SRMR = .12. Loadings for all 19 indicators were significant at  $p < .001$ . The fit of this model was then compared with all plausible 3-, 2-, and 1-factor alternative models. Chi-square difference tests revealed that the fit of these alternative models was inferior to that of the 4-factor model. This support for the 4-factor measurement model confirmed that we had quality indicators of our core constructs to use in evaluating the hypothesized structural model.

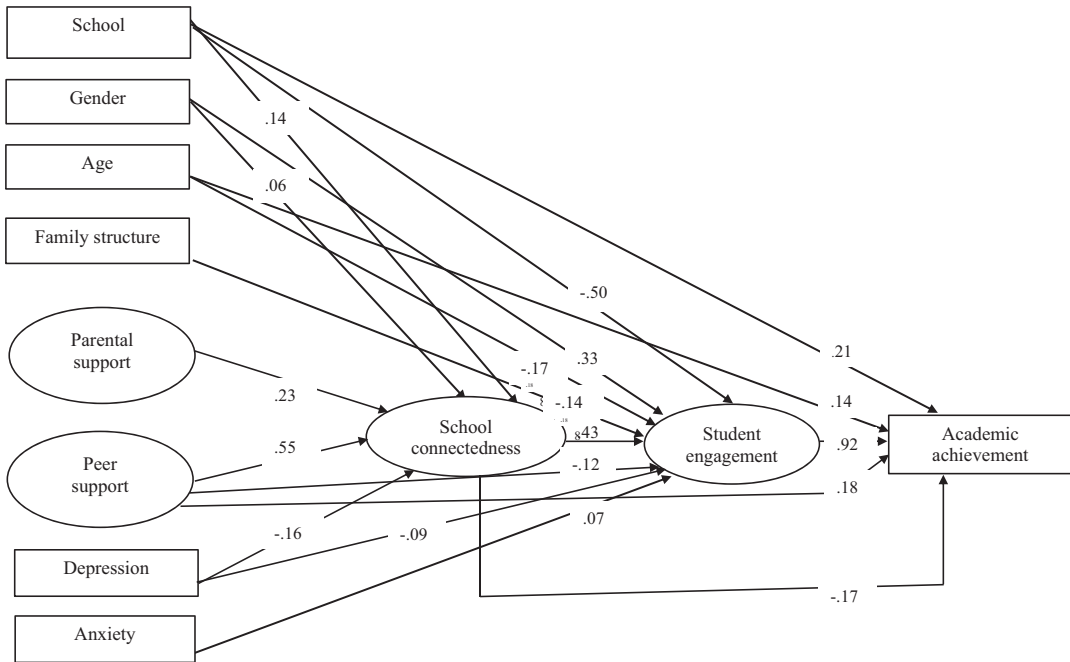
In testing the hypothesized model, to control for the effects of school, gender, age, family structure, anxiety, and depression on both the direct and indirect effects within the model, paths were specified from each of these exogenous variables to each of the three endogenous variables (i.e., school connectedness, student engagement, and academic achievement). Covariances between the exogenous variables were freely estimated. The data fitted this model reasonably well,  $\chi^2(255, 754) = 1376.3$ ,  $p < .001$ , RMSEA = .073, 90% CIs [.069, .077], CFI = .96, NNFI = .95, SRMR = .094. The upper portion of Table 3 presents the standardized parameter estimates. As shown, support from parents and peers had direct positive associations with school con-

nectedness, and school connectedness was positively related to student engagement. Importantly, controlling for the demographic and emotional adjustment variables, each of parental support and peer support was (indirectly) associated with greater student engagement. Finally, while student engagement was the strongest predictor of academic achievement, the total effects of each of parental support, peer support, and school connectedness on achievement were also significant.

Several alternatives to the hypothesized model were then evaluated. In the first of these alternative models, peer support was specified not as an exogenous variable, but as endogenous, as an outcome of parental support, and as the most proximate predictor of psychological connection to school. Examination of this model revealed a fit that was inferior to that of the hypothesized model,  $\chi^2(256, 754) = 1428.6$ ,  $p < .001$ ,  $\Delta\chi^2(1) = 52.3$ ,  $p < .001$ , RMSEA = .076, 90% CIs [.072, .080], CFI = .96, NNFI = .95, SRMR = .100.

A second alternative model reversed the order of psychological connection to school and student engagement. This model yielded a less than adequate fit,  $\chi^2(255) = 2051.5$  ( $p < .0005$ ), RMSEA = .094, 90% CIs [.090, .098], CFI = .94, NNFI = .92, SRMR = .13. In this model, each of parental support and peer support was uniquely associated with student engagement ( $ps < .001$ ). In a third model, the fit was not improved relative to the hypothesized model when the order of student engagement and academic achievement was reversed,  $\chi^2(255, 754) = 1419.1$ ,  $p < .001$ , RMSEA = .075, 90% CIs [.071, .079], CFI = .96, NNFI = .95, SRMR = .100, although, in this model, the indirect effect of school connectedness on student engagement via academic achievement was significant ( $p < .001$ ). In summary, these comparative SEM analyses provided support for the sequencing specified in the hypothesized model.

Additional analyses were conducted to determine whether the fit of the hypothesized model could be improved by freeing all direct



**Fig. 2** Significant standardized direct effects of the best-fitting model (*Note.* School coded as A = 0; B = 1; Gender coded as 0 = male; 1 = female; Family structure coded as both biological parents = 0; other = 1 All coefficients are significant at  $p < .001$ , except gender  $\rightarrow$  school connectedness, and anxiety  $\rightarrow$  student engagement (both  $p < .05$ ), and peer support  $\rightarrow$  student engagement, and depression  $\rightarrow$  student engagement (both  $p < .01$ ). Standardized factor

loadings associated with the observed indicators of the latent variables were as follows: the five item parcels for parental support loaded between .84 and .89; the five parcels for peer support loaded between .82 and .90; the four parcels for school connectedness loaded between .76 and .86. For the latent student engagement variable, the loadings were emotional engagement (.29), behavioral engagement (.45), homework (.45), classroom behavior (.87), and classroom effort (.96)

paths from each of the support and connectedness variables to the two academic variables. The fit was not improved by adding paths directly from parental support to either student engagement or academic achievement. However, gains in model fit were achieved in successive steps through the addition of a path from peer support to student engagement,  $\Delta\chi^2(1) = 4.34, p < .05$ , from peer support to academic achievement,  $\Delta\chi^2(1) = 7.46, p < .001$ , and from school connectedness to academic achievement,  $\Delta\chi^2(1) = 12.22, p < .001$ . Interestingly, the first and third of these direct effects were negative. The extended model with these three paths added provided a good fit,

$\chi^2(252, 754) = 1352.3, p < .001, RMSEA = .073, 90\% CIs [.069, .077], CFI = .96, NNFI = .95, SRMR = .094$ , and was accepted as the best-fitting model. Parameter estimates from this model are presented in the lower half of Table 3. All significant standardized direct effects are given in Fig. 2. As shown, the direct path from peer support to student engagement was negative, while the direct path of peer support on academic achievement was positive. Of particular note are the significant total effects of peer support and school connectedness on higher academic achievement, and the weaker, but still significant, indirect (and total) effect of parental support on higher academic achievement. In

contrast, neither anxiety nor symptoms of depression was significantly associated with academic achievement.

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### **Findings on the Links Between Social Connectedness and Academic Achievement**

In this chapter, we briefly described PYD theories that highlight the role of connections to parents, peers, and schools in adolescents' development and achievement. To test these effects in the academic domain, we drew on PYD theory, and related theories linking social connections (specifically, parental support, peer support, and school connectedness) to academic achievement in Australian youth, to propose a novel three-step model of the social-relational antecedents of student engagement and academic achievement. Rather than relying exclusively on self-reports, we tested this pathway model using data obtained from multiple sources, including 6–8 teachers per student. Latent variable structural equation modeling enabled measurement error in key variables to be modelled. Total effects were disaggregated into direct and indirect components, and a particularly rich set of observed variables captured the construct of student engagement. Further, other influences, including demographic factors and self-reported emotional adjustment, were controlled.

This chapter makes two major contributions to the PYD field with its focus on the importance of quality relationships and connections for promoting youth development. First, the findings directly underscore the importance of social “connection”, particularly peer support, in academic achievement. Second, a quite robust sequence was identified from parental and peer support, through a psychological connection to school and student engagement in learning, to academic achievement. As Larson and Tran (2014) have observed, the identification of such indirect pathways lies at the heart of PYD.

Although our findings regarding the positive effect of parental support on students' connection to school and academic achievement are note-

worthy, some of the most interesting findings pertain to peer support. The findings are particularly noteworthy given the Australian context in which adolescents are granted considerable autonomy and extended opportunities for in-person and online interaction with peers. Positive correlations were found between peer support and each of school connectedness, the five observed indices of student engagement, and academic achievement. However, the best-fitting model revealed that, while peer support had an overall favorable association with academic achievement and higher levels of school connectedness, it was associated with *lower levels* of student engagement. This apparent paradox can be understood by reference to the distinction drawn earlier between the strength of adolescents' peer support, and the nature of the peers from which they get support. In the study presented here, only the former was measured. The findings suggest that when peer support was high, students felt a greater sense of school connectedness, presumably in part because they enjoyed the opportunity to interact with their peers at school. However, the negative relation between peer support and student engagement suggests that, net of all other variables in the model, peer influences were not predominantly in a pro-academic direction. Thus, peer support may have acted as a “double-edged sword”, promoting higher psychological connection to school while detracting from students' engagement in learning.

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### **Covariates in the Connectedness-Engagement-Achievement Model**

Students' mental health has been described as interfering with learning and academic achievement, but support for this proposition has been intermittent once attention problems, delinquency, and behavior problems have been considered (e.g., McLeod, Uemura, & Rohrman, 2012). Generally consistent with this, in the current best-fitting model, neither depression nor anxiety was directly related to academic achievement, and these two emotional adjustment variables had relatively weak, and opposing, effects

on student engagement. Thus, as vital as school-based mental health services are (Becker & Luthar, 2002), the present findings suggest that interventions aimed at increasing support from others and psychological connection to school may have a greater positive impact on adolescents' academic achievement than focusing directly on mental health.

The effects of gender are also interesting. Consistent with most past research, girls had higher grades at school, on average, than did boys. However, in the best-fitting model, the direct effect of gender on academic achievement was non-significant, with most of the superiority of females over males carried through student engagement. These results demonstrate that girls' strong academic achievement can be attributed to the variables captured in our measure of student engagement, that is, compared to their male classmates, girls worked harder, behaved better, and invested more of their selves into school work.

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### Implications for Research, Policy, and Practice

The PYD approach to understanding academic achievement presented in this chapter warrants extension in future research. Identifying other mediating variables that operate to link adolescents' social and academic worlds should be a priority (Larson & Tran, 2014). For example, researchers could investigate the possible mediating effects on academic achievement of social connectedness variables such as classroom climate and teacher-student relationships (Furrer et al., 2014; Ginner Hau, Ferrer-Wreder, & Westling Allodi, [this volume](#)). These variables can then be targeted in future interventions, and such interventions can be the subject of systematic evaluation research.

As the current study was conducted in a liberal Western nation in which educational choice, standards, and rates of school attendance and completion are relatively high, replication of the study, especially in non-Western contexts, is to be encouraged. Perhaps in nations with fewer

educational options and completions, less liberal socialization practices, and less prominent adolescent peer group influences, some of the unexpected findings would not be observed. For example, whereas the best-fitting current model showed a *negative* direct effect of peer support on student engagement and a *negative* direct effect of school connectedness on academic achievement, in contrasting national contexts both peer support and school connectedness may have more straightforward and universally favorable effects on academic outcomes. Indeed, recent high levels of migration to Australia from diverse nations may serve to weaken the paradoxical effects observed in the current sample.

In this chapter, we argued for, and presented data suggesting that, support from others and a sense of school connectedness promote students' engagement in learning and academic achievement. Such a finding has seldom been demonstrated in the Australian context. Just as leading scholars (Furrer et al., 2014; Furrer & Skinner, 2003; Skinner et al., 1998) have argued, feeling connected (i.e., having a sense of relatedness to others) is not just a by-product of doing well in school; it is a source of motivation for student engagement and achievement. From a policy perspective, therefore, the study findings provide further broad support for youth policies that shift the balance from a "deficit" to a "strengths-based" approach to promoting academic achievement. Accordingly, and in line with PYD and stage-environment fit principles, rather than focusing on barriers to success in either the cognitive (e.g., literacy), emotional (e.g., anxiety and depression), or even social (e.g., bullying) domains, PYD theory and evidence presented here suggest that additional resources should be invested into building young people's resources and tailoring their contexts to meet their relational needs. In particular, policy support could be given to programs, such as My Teaching Partner –Secondary (Allen, Pianta, Gregory, Mikami, & Lun, 2011), which aim to build the kind of positive emotional classroom climate that meets adolescents' needs for autonomy, agency and relevance, and promotes their sense of belonging. While critics may view social con-

nectedness as peripheral or even irrelevant to academic achievement, the current chapter highlights the inter-relatedness of the social and academic domains (at least during the adolescence years), and the need to encourage connectedness, especially support from peers, given the likelihood that this will enhance school belonging and, ultimately, academic achievement.

In terms of practice, PYD theory and the evidence presented in this chapter point to the need for connection-building interventions at the individual, family, classroom, and/or school level. For example, individual students could be trained in skills for initiating and sustaining peer relations, parents could be encouraged to increase their involvement with their child and his/her school(ing), and schools could make greater use of cooperative learning tasks, peer tutoring, and activities that require students working together (Allen et al., 2016; Benner et al., 2008). Mentoring programs (Karcher, 2005), reading-writing exercises (Goyer et al., 2019), and adventure camps (Hattie, Marsh, Neill, & Richards, 1997) are additional strategies that can help build a sense of connectedness to peers and school. Both types of programs are popular in the Australian context.

Universal school-based social emotional learning interventions documented in meta-analyses have been shown to produce substantial long-term positive effects not only on social behavior but also on academic achievement (Taylor et al., 2017; van de Sande et al., 2019). The evidence reported in this chapter regarding parental and peer support as foundations of academic achievement suggest that adolescents with greater support do better in school because such support increases their psychological connection to school and, in turn, this school connectedness promotes student engagement in learning and more optimal achievement. Such evidence provides further justification for the implementation of SEL interventions in secondary school classrooms (Kozina, *this volume*).

In conclusion, this chapter proposed and generated support for a three-step model of the social-relational antecedents of academic achievement. In so doing, we have confirmed the

importance of one of the Five Cs of PYD, “connection” (Lerner et al., 2005), and suggested that education and other authorities should be encouraged to invest resources in initiatives that build connections between young people and their schools, families, and communities. Further research is needed, however, to test our model in diverse cultural settings, and particularly examine whether the current findings regarding the complex effects associated with peer support generalize to contexts in which educational opportunities are more limited, and peer influences more constrained, than in the present Australian sample (Dimitrova & Wiium, *this volume*; Wiium & Dimitrova, 2019). Research should also investigate the possible exponentially beneficial effects on academic achievement when student connection is combined with the other Cs of competence, confidence, character and caring of PYD.

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