

Relationship influences on students' academic achievement, psychological health and well-being at school

Rosalind Murray-Harvey

A generally accepted indicator of the quality of a student's experience of school is academic performance but other indicators that include psychological health and social/emotional adjustment have also been shown to have an impact. For this study, data were collected from both students and teachers about students' social/emotional adjustment and academic achievement and motivation. Data were obtained for 888 students across Years 5 to 9 from 58 classes in 21 South Australia schools. Students reported through a questionnaire on the extent to which they perceived relationships with family, peers and teachers as sources of stress or support at school; their psychological health; feelings about and sense of belonging to school; and their academic performance. Teachers reported on randomly selected students in each of their classes regarding their Academic Achievement and Motivation, and their Social/Emotional Adjustment to school. The significant associations revealed from correlation analysis between the Relationship, Psychological Health, and Social Adjustment variables, and Academic Performance were further investigated using path analysis. This analysis confirmed the strength of the connection between the student's social/emotional and academic experience of school, and highlighted that both academic and social/emotional outcomes are unambiguously influenced by the quality of the relationships between teachers and students which, when compared with that of family and peers, exert the strongest influence, on well-being and achievement outcomes for students.

A STUDENT'S overall experience of school is shaped by many factors including individual characteristics as well as their family and immediate social networks, the societal and cultural context in which they live and learn, and also the social and political agendas of the day that frame school policies, programmes, and practices. All these factors operate inter-dependently within the context of the school community (Halle, 2003) and their combined impact contributes to how students (and others) perceive the quality of their (social/emotional and academic) life at school (Zins et al., 2004).

Learning communities are built on relationships

The notion of relationships as it is understood in the context of a learning community embodies more than interpersonal

interactions among colleagues, and between teachers, families, and students. 'Relationships' is also an essential feature of the instructional interactions that frame communications between teachers and their students. Teachers' capacity to imbue productive values about schoolwork (Wentzel, 1999), to motivate engagement in learning (Deci & Ryan, 2000), to encourage persistence and reduce anxiety in the face of challenging tasks (La Guardia & Ryan, 2002), to listen to, respect (Goodenow, 1993), and to sincerely understand their students (Connell & Wellborn, 1991); all these rely on the effectiveness of teacher-student relationships where teacher modelling (Bandura, 1997), constructive feedback (Weiner, 1986) and supportive instructional communication are paramount. The notion of the school as a learning community, where learning is constructed as a funda-

mentally social process (Brown & Campione, 1994; 1996), suggests we ought not to underestimate the flow of influence from teachers' explicit or tacit judgements about students which, in turn, will impact not only on students' feelings about school but also on their academic motivation and achievement (Hareli & Weiner, 2002; Zimmerman, 1998).

Teachers' relationships with students operate at multiple levels and in the classroom context at least, need to be viewed as extending beyond notions of connectedness where our understanding of effective teachers is limited to interpersonal descriptors such as 'warm' and 'caring' and 'empathetic'. As important as these interpersonal teacher qualities are for both students' social and emotional development, and their engagement and motivation at school (see Martin & Dowson, 2009), relationships with students also need to be considered within a broader instructional framework that foregrounds what Martin and Dowson (2009, p.344) refer to as connective pedagogy: '... the delivery of teaching that interpersonally connects with learners ... to make the learning material meaningful ...' where relationships yield mutually beneficial learning outcomes for both students and teachers (Martin et al., 2007).

Re-presenting the ways in which learning and instruction occur in a school setting to view students and teachers 'in' relationship within a learning community may serve to redirect attention away from only asking the question 'Who is the problem?' (i.e. with a focus on student deficit or pathology), to finding answers to 'What is the problem?' (i.e. to include consideration of systemic issues).

Relationships, adjustment and achievement

Family influences including child-parent relationships have been extensively investigated for their association with social/emotional and learning outcomes (Pianta, 1999). Of interest in this study is the contribution of family influences when viewed alongside those of peers and teachers since

all three groups are potential sources of support and stress for students. Close relationships with parents have been found to buffer children from deviant peer influences. Relationships with parents maintain importance throughout adolescence and both younger and older adolescents continue to value support from family even when relationships with peers are becoming more important (Wong et al., 2002).

While this study considers students' relationships with family, peers and teachers it pays particular attention to the student-teacher relationship because, despite the evidence that such relationships make a difference (OECD, 2005; Rowe, 2002; Wubbels & Brekelmans, 2005), school practices suggest that more clarity is needed in arguing for the strength of the relationship-achievement-adjustment connection (Weissberg et al., 2003).

In this study, students' psychological health (well-being) has been conceptualised to include measures of apathy, somatic symptoms, depression, aggression, and self-esteem; all of which may have an impact on social/emotional adjustment and academic performance. Stressful relationships with teachers have been reported to negatively influence educational (especially motivation), psychological (anxiety, withdrawal, impulsiveness) and somatic (such as headaches, lethargy) outcomes for some students (see Sava, 2002).

Social/emotional adjustment and academic performance

There is increasing recognition, that not only does social/emotional adjustment at the individual level have an effect on academic performance, but that problematic social/emotional adjustment factors, which Zullig et al. (2009) describe as non-academic barriers to learning, can be indicative of deficiencies at the school and community level. These non-academic aspects of students' lives at school are represented in calls to include measures of school satisfaction (e.g. positive feelings about

school) and school climate (e.g. connectedness with peers and teachers) along with academic achievement measures in assessments of the quality of students' experience of school (Zullig et al., 2009).

In previous research (Murray-Harvey & Slee, 2007) where these variables were examined in relation to bullying and victimisation, a strong association between Academic Performance and Social/Emotional Adjustment was revealed. The current study more closely examines this relationship. The previous study also highlighted that teachers as well as family and peers, exert a powerful influence on students' social/emotional well-being. In the present study, the more focused analysis on teachers' relationships as they relate directly to student social/emotional and academic outcomes will expand on the findings of the earlier study. To achieve this, selected variables from the earlier study have been re-analysed in order to more fully consider: (1) the supportive and stressful relationship associations with social/emotional and academic outcomes for students; and (2) the connection between social/emotional adjustment and academic performance.

Method

Participants

Twenty-one Australian schools participated in the study, 10 primary, 10 secondary, and one R-12 school, representing rural, regional and metropolitan areas in South Australia, and both the independent and Government school sectors.

Families in South Australia are primarily Anglo-European with minority representation of Asian, Middle-Eastern, and Indigenous Australian students. While no specific data were collected on socio-economic status or ethnicity, schools across the sample included families from all socio-economic backgrounds.

The participants for this study were sampled from a population of over 3000 South Australian students who were part of a larger international project. Students completed an 86-item 'Your Life at School'

questionnaire administered by the class teacher in class. The items were developed or adapted from previous research by the authors as part of the international study. At the same time, the teachers completed an 18-item Teacher Rating Scale on an average of 15 randomly selected students in their class. Teachers and students in 58 classes provided the data for analysis. The matched student-with-teacher data resulted in 888 student cases being available for analysis.

The 888 students, of whom 51 per cent were males, were spread across the middle/upper primary and lower secondary (junior high) years as follows: 39.2 per cent were primary (7.4 per cent in Year 5, 13.3 per cent in Year 6, and 18.5 per cent Year 7), and the remaining 60.8 per cent were secondary (35.5 per cent in Year 8, 25.3 per cent in Year 9) school students. The mean age of students was 12.85 years (range 10 to 16 years).

Variables

The variables used in the analysis are listed in Table 1. Cronbach's alpha is reported in Table 1 where mini-scales were formed by combining questionnaire items. The mini-scales themselves were subject to more rigorous preliminary confirmatory factor analysis (CFA) for testing model fit of constructs using Mplus (Version 2.01, Muthén & Muthén, 1998) or LISREL (Version 8, Jöreskog & Sörbom, 1996) and any items that did not contribute to the specified mini-scale were removed. The generally applied goodness-of-fit (GFI) indices (Hu & Bentler, 1999) were used to determine acceptable model fit.

Supportive Relationships. This variable represented the Family, Peers and Teacher mini-scales that measured the supportiveness of relationships for students. Students indicated their level of agreement (coded 0=strongly disagree to 3=strongly agree) on three items: (a) 'If I feel left out I am encouraged by ...'; (b) 'If I express my troubles/problems I am listened to by...'; (c) 'These people usually try to understand my feelings...'

Table 1: Variable Means, Standard Deviations, and Cronbach's Reliability Indices.

| <i>Variable</i> | <i>Mean</i> | <i>SD</i> | <i>Cronbach alpha</i> |
|---|-------------|-----------|-----------------------|
| 1. Sex of student | 0.49 | 0.50 | |
| 2. Year level Years 5–9 | 7.58 | 1.21 | |
| 3. Supportive Relationships | | | |
| Family | 7.17 | 2.44 | .84 |
| Teachers | 9.18 | 3.93 | .84 |
| Peers | 6.00 | 2.67 | .86 |
| 4. Stressful Relationships | | | |
| Family | 4.21 | 3.24 | .76 |
| Teachers | 2.60 | 1.96 | .81 |
| Peers | 2.30 | 2.34 | .74 |
| 5. Psychological Health | | | |
| Apathy | 3.20 | 2.28 | .68 |
| Somatic symptoms | 2.63 | 2.27 | .70 |
| Depression | 2.74 | 2.31 | .71 |
| Aggression | 3.49 | 2.78 | .83 |
| Positive Self-Esteem | 10.29 | 2.95 | |
| 6. Social/Emotional Adjustment | | | |
| Enjoy school, Relate well, Proud of belonging | 6.08 | 1.97 | .77 |
| Feeling about school | 4.07 | 1.27 | |
| Teacher Ratings: | | | |
| Relationships (positive with adults/students) | 7.62 | 1.94 | .85 |
| Aggression (not aggressive or disruptive) | 8.52 | 2.02 | .80 |
| Trust (trustworthy, co-operative, reliable) | 11.51 | 3.23 | .91 |
| Mood (positive – not unhappy/anxious/withdrawn) | 12.67 | 2.55 | .82 |
| 7. Academic Performance | | | |
| Academic | 5.71 | 2.18 | .75 |
| Schoolwork rating | 1.79 | 0.80 | |
| Academic Achievement – teacher scale | 13.77 | 3.84 | .88 |
| Academic Motivation – teacher scale | 11.73 | 3.27 | .89 |

Stressful Relationships. This variable represented three mini-scales constructed from four questionnaire items for Family, three items for Peers, and two items for Teachers. An indicative Family item statement was: ‘My family thinks that schoolwork is more important than anything else I do’; a Peer item: ‘Classmates call me names’; and a Teacher item: ‘Teachers tell me off without listening to me.’ Students were asked to rate the frequency of having experienced the particular situation in the last school term on a four-point scale (coded 0=never to 3=very often).

Psychological Health. The five variables representing Psychological Health include four symptomatology mini-scales comprising: Apathy, Somatic Symptoms, Depression, and Aggression. Students rated how well each of the 12 items described how they felt (coded 0=not at all like me to 3=a lot like me). The self-esteem mini-scale was formed from the five positively scored items in Rosenberg’s self-esteem scale (1965).

Social/Emotional Adjustment. This variable represented both student and teacher data. Students indicated positive feelings about school from their selection from a series of seven faces 'the face most like you at school' (0=very unhappy face to 6=very happy face). In addition a mini-scale was formed that represented Belonging at School from items related to: (1) enjoying school; (2) getting along with other students; and (3) proud of belonging to school. Four mini-scales (Trust, Aggression, Mood, Relationships) were formed from the Teacher Rating Scale where teachers indicated whether the specified behaviour was regarded as having occurred or been performed 1=not at all to 5=very well. Trust indicated that the teacher judged the student to be co-operative, reliable and able to work without adult support; Aggression (reverse coded) indicated not disruptive in class and not overly aggressive to peers; Mood (reverse coded) represented the student as not anxious or worried, not withdrawn, and not unhappy/sad; and Relationships where teachers rated how well students related to adults and to other students in the school.

Academic Performance. As for Social/Emotional Adjustment, both student and teacher data were used to create the Academic Performance variable. A mini-scale was created from three items where students rated their own academic competence based on having experienced during the last term that: 'I can't understand my lessons'; 'I get low test results'; 'teachers ask me questions I can't answer' (reverse coded 3=never to 0=very often). A further item represented the students' global rating of schoolwork performance (reverse coded 0=poor to 3=excellent, to reflect positive performance). From the teacher data two academic performance factors were identified: Academic Achievement represented good at most subjects, completes work, copes with failure and learns academic subjects, and Academic Motivation (reverse coded) reflected motivation to achieve, working to ability, and good concentration/attention.

The variables Sex and Year Level take into account any gender and year level differences in students' experience of school.

Path analysis

Data analyses were undertaken using the Partial Least Squares Path Analysis (PLSPATH) software (Sellin, 1990). The first, correlational level of analysis, identifies associations between the variables. The second, regression analysis level, is used to pinpoint relationships among the variables. For this second level of analysis, seven variables were entered into a path model in the following order: Sex, Year Level, Supportive and Stressful Relationships (the explanatory variables); Psychological Health and Social/Emotional Adjustment (the mediating variables); and finally, Academic Performance (the criterion/dependent variable).

Results

Table 2 provides a summary of the correlations between the variables. Table 3 presents the results of the path model analysis. This analysis extends the correlation findings by identifying the strength of the relationships among all the variables investigated. That is, the effect one variable has on another, taking into account their effect on each other, including both the direct as well as indirect effects.

Correlation analysis

Psychological Health. A student's sense of feeling supported is strongly correlated with higher self-esteem ($r=.35$, $p<.001$) and less apathy ($r=-.37$, $p<.001$); and less strongly but still significantly related to other indicators of well-being: somatic symptoms ($r=-.19$, $p<.001$); depression ($r=-.18$, $p<.001$) and aggression ($r=-.24$, $p<.001$). And in relation to the specific Social/Emotional Adjustment measures, student reports of feelings about school ($r=.43$, $p<.001$) and sense of belonging to school ($r=.57$, $p<.001$) are particularly salient with regard to their Psychological Health. Teachers' perceptions

Table 2: Correlations between variables in relation to students' academic performance.

| | Sex | Year level | Supportive Relationships | Stressful Relationships | Psychological Health | Adjustment | Academic Performance |
|--------------------------|------|------------|--------------------------|-------------------------|----------------------|------------|----------------------|
| Year level | -055 | | | | | | |
| Supportive Relationships | 227 | -296 | | | | | |
| Teacher | | | | | -344 | 468 | 333 |
| Family | | | | | -348 | 311 | 272 |
| Peers | | | | | -216 | 351 | 211 |
| Stressful Relationships | -196 | 180 | -499 | | | | |
| Teacher | | | | | 356 | -515 | -481 |
| Family | | | | | 346 | -220 | -244 |
| Peers | | | | | 423 | -263 | -241 |
| Psychological Health | -017 | 152 | -396 | 536 | | | |
| Adjustment | 346 | -198 | 500 | -526 | -535 | | |
| Academic Performance | 254 | -128 | 359 | -504 | -509 | 722 | |

Notes: Decimal points omitted; two-tailed significance of Pearson's r coefficient $>.087, p<.01$; r coefficient $>.119, p<.001$.

Table 3: Path Analysis Total Effects and Standard Errors (SE) for the School Adjustment and Achievement Model.

| Variable | Sex | Year Level | Supportive Relationships | Stressful Relationships | Psychological Health | Social/Emotional Adjustment |
|-----------------------------|-------------|-------------|--------------------------|-------------------------|----------------------|-----------------------------|
| Sex | Effect (SE) | Effect (SE) | Effect (SE) | Effect (SE) | Effect (SE) | Effect (SE) |
| Year level | | | | | | |
| Supportive Relationships | 21 (03) | -28 (03) | | | | |
| Stressful Relationships | -11* | 14* | -50 (01) | | | |
| Psychological Health | -08* | 11* | -40 (03) | 45 (03) | | |
| Social/Emotional Adjustment | 35 (03) | -13* | 44 (03) | -34 (03) | -35 (03) | |
| Academic Performance | 23* | -11* | 37* | -38 (03) | -33 (03) | 59 (03) |

Note: Only beta path coefficients = or >08 (with a Jackknife SE not > than half the eta path coefficient) were considered to be meaningful effects; decimal points omitted. Path coefficients with an asterisk indicate the influence of only an indirect effect. Total effects represent the sum of direct and indirect effects.

of students' Social/Emotional Adjustment based on their ratings of Mood, Trust, Aggression and Relationships were also significantly correlated at the level of $p < .001$ ($r = -.28, -.33, -.26$ and $-.34$ respectively) with Psychological Health.

Relationships, Adjustment and Academic Performance. The strongest correlations emerged for teachers' supportive relationships with students for both Social/Emotional Adjustment ($r = .47, p < .001$) and for Academic Performance ($r = .33, p < .001$). The importance for students of supportive relationships with peers and family were also, but not as strongly correlated with Social/Emotional Adjustment (for peers $r = .35$ and family $r = .31$) and Academic Performance (for peers $r = .21$ and family $r = .27$). A similar pattern was found for Stressful Relationships where teachers' stressful relationships with students revealed a strong negative association with Social/Emotional Adjustment ($r = -.52, p < .001$) and Academic Performance ($r = -.48, p < .001$); considerably stronger than the associations for peers (Adjustment $r = -.26$ and Academic $r = -.24$) or family (Adjustment $r = -.22$ and Academic $r = -.24$) which were nevertheless significant at the level of $p < .001$.

Path analysis

Quality of the model

Several criteria are available in the path analysis output to judge the quality of the model (see Sellin & Keeves, 1994). All indicate a stable model showing good fit to the data. In particular, the amount of explained variance for Academic Performance of 55 per cent ($R^2 = 0.55$) is highly satisfactory for models of the kind found in educational research.

Relationships among variables

The path model analysis results point unequivocally to the influence of relationships in shaping the students' experience of school. Supportive relationships are strongly associated with reduced reports of Psychological Health problems (indicated by a path

coefficient of $-.40$) and higher levels of Social/Emotional Adjustment (.44), and indirectly linked with students and teachers congruent, affirming perceptions of students' Academic Performance (.37). In contrast, stressful relationships are associated with increased reports of Psychological Health problems ($-.44$). Academic Performance ($-.38$) and Social/Emotional Adjustment ($-.34$) are both negatively affected by Stressful relationships.

Also of interest is the finding that in the lower grades of school students report higher levels of supportive relationships with teachers, peers and family ($-.28$) whereas in the higher grades relationships are regarded as more stressful by students (.14). Two points are worthy of note regarding gender differences. Girls report their relationships with teachers as more supportive than do boys (.21) and compared with boys, their social/emotional and academic experience of school also emerges as more positive.

Discussion

The two main aims of this study were to examine: (1) the extent to which supportive and stressful relationships operate as protective or risk factors for students' social/emotional adjustment in the first instance and ultimately for their academic performance; and (2) the Adjustment-Achievement connection itself. It is not surprising that the student's experience of school is shaped by a multiplicity of factors that include but also extend beyond the individual. This study highlights that quality relationships with peers, family and teachers are all important for student achievement and adjustment and points particularly to the student-teacher relationship as a key influence on social/emotional and academic outcomes.

The finding that social/emotional and academic outcomes are highly related constructs has strengthened our understanding of this relationship. Teachers show consistency in their evaluations across the social/emotional and academic dimensions of students' lives at school. In other words,

where teachers perceive a student to have academic concerns, these concerns also seem to extend to similar negative evaluations of their social/emotional well-being.

The results of this study provide unequivocal support for the proposition of Zullig et al. (2009) that a range of non-academic dimensions of school life, such as school climate and school satisfaction need to be included in overall assessments of the quality of students' experience of school. The evidence is mounting that when schools attend to the non-academic (social and emotional) dimensions of well-being in order to create safe, inclusive and respectful learning environments, they are, at the same time, optimising opportunities for academic success (Hoffman, 2009).

Of particular significance for this study are the associations between Stressful and Supportive Relationships and Academic Performance. Stressful Relationships impact directly and negatively upon Academic Performance outcomes as well as upon Social/Emotional Adjustment. Supportive Relationships show a positive direct influence on Social/Emotional Adjustment and a very strong indirect association with Academic Performance.

The connection between Stressful and Supportive Relationships is noteworthy. The path analysis indicates that while stressful and supportive relationships operate independently they are highly connected. This means for example, that providing a more supportive relationship environment will not by itself reduce the effects of stressful relationships, or conversely, efforts to counter stressful relationships need also to include action to build supportive relationships. Based on this finding, school community interventions aimed at improving the quality of students' lives at school have to act on the one hand, to counter the effects of stressful relationships in students' lives and, at the same time, work to build the capacity of the school community to provide the supportive relationships that students perceive to be important for their well-being.

Models of effective learning environments these days include social/emotional along with cognitive/psychological dimensions as overlapping or multi-directional (e.g. DECS, 2006) and this study provides empirical confirmation of the strength of this social/emotional/academic performance connection. An important message for teachers and others working with students in schools is that focussing on relationships that build social/emotional competence should be seen as not merely adding value to the quality of students' lives at school but as an essential element for achieving successful academic outcomes.

In interpreting the study's findings it needs to be taken into account that the students' ages ranged from 10 to 16 years and that these years include students in both primary and secondary grades of schooling. The path analysis suggests that students in secondary schools consider their relationships with teachers to be more stressful than students in the primary years. The question arises as to how the structure of the secondary school might be re-shaped to strengthen and/or provide opportunities for productive teacher-student relationships to be built? It may be of interest in future research to separately tease out the student-teacher relationship effects for primary and secondary school students.

The path analysis highlights that there is in fact a complex network of inter-relationships that should be considered when we attempt to address any issue that arises within the context of a student's experience of school. In particular, problematic adjustment and achievement issues need to be viewed as systemic, relationship, and not merely individual student problems. It is easy for schools to portray students (often along with their families) as the source of problems that arise within the school context. Clearly contributions to the problem and to the solution are more far-reaching and involve teachers as well as families and peers. Representing schools as 'communities of learners' provides a positive way forward in that it acknowledges, even

legitimises, that building supportive as well as reducing stressful relationships is essential to meeting learners' needs.

The findings of this study are clear on several points as to the impact of school practice: in this case, the profound influence that teachers can make and the need to support their work as members of a learning community. Efforts to enact change towards a genuine valuing of the social/emotional lives of students at school are evident in models of school practice where 'community' and 'caring' (in the sense that it is used by Noddings, 2005) are explicitly stated and evaluated as desirable goals of education (e.g. the Reggio Emilia approach to early childhood education; Hoffman, 2009). Achieving such goals need not add a further layer of complexity to teachers' work. It may however require school communities in general to re-consider the views they hold about their work: giving less prominence to issues of control, deficits and remediation and more attention to skills and strategies needed to meaningfully connect with students. For teachers in particular, the importance of relationships in achieving optimum outcomes for students is about the quality of their instructional relationships. In this regard it may be useful for teachers to frame their role in the student-teacher relationship more definitively in terms of the 'instructional' elements of relationship

building. Professional development programmes have a place in supporting change at policy and practice levels; so too do teacher education programmes. There is plenty of evidence from different fields of research on school effectiveness, classroom climate, and motivation research, that the way teachers manage their classrooms and the values and behaviours they model, as well as the way they provide feedback, and their effectiveness in developing learning orientations, is relationship-based.

This paper provides weight to Martin and Dowson's (2009) claim that 'positive relationships with significant others are cornerstones of young people's capacity to function effectively in social, affective, and academic domains' (p.351). The challenge, particularly as it relates to adolescents' engagement with school, remains to convince educators, including parents, that social and emotional well-being is not only inextricably linked to successful academic outcomes but is itself a worthy achievement.

Address for correspondence

Rosalind Murray-Harvey

School of Education, Flinders University,

GPO Box 2100

Adelaide SA 5001

Australia.

E-mail:

rosalind.murray-harvey@flinders.edu.au

References

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Brown, A.L. & Campione, J.C. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice*. Cambridge, MA: MIT Press/Bradford Books.
- Brown, A.L. & Campione, J.C. (1996). Psychological theory and the design of innovative learning environments: On procedures, principles, and systems. In L. Schauble & R. Glaser (Eds.), *Innovations in learning: New environments for education* (pp.289–325). Mahwah, NJ: Erlbaum.
- Connell, J.P. & Wellborn, J.G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M.R. Gunnar & L.A. Sroufe (Eds.), *Self processes in development: Minnesota Symposium on Child Psychology: Vol. 29* (pp.244–254), Hillsdale, NJ: Lawrence Erlbaum.
- Deci, E.L. & Ryan, R.M. (2000). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Journal of Educational Psychology*, 73, 642–650.
- Department of Education and Children's Services (DECS). (2006). *Towards a learner well-being framework for birth to year 12*. Adelaide, South Australia: Department of Education and Children's Services.
- Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence*, 13, 21–43.
- Halle, T.G. (2003). Emotional development and well-being. In M.H. Bornstein, L. Davidson, C.M. Keyes & K. Moore (Eds.), *Well-being: Positive development across the life course* (pp.125–138). Mahwah, NJ: Lawrence Erlbaum Associates.
- Hareli, S. & Weiner, B. (2002). Social emotions and personality inferences: A scaffold for a new direction in the study of achievement motivation. *Educational Psychologist*, 37, 183–193.
- Hoffman, D.M. (2009). Reflecting on social emotional learning: A critical perspective on trends in the United States. *Review of Educational Research*, 79(2), 533–556.
- Hu, L. & Bentler, P.M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling*, 6, 1–55.
- Jöreskog, K.G. & Sörbom, D. (1996). *LISREL 8: User's Reference Guide*. Lincolnwood, IL: Scientific Software International, Inc.
- Klem, A.M. & Connell, J.P. (2004). Relationships matter: Linking teacher support to student engagement and achievement. *Journal of School Health*, 74(7), 262–273.
- La Guardia, J.G. & Ryan, R.M. (2002). What adolescents need: A self-determination theory perspective on development within families, school, and society. In F. Pajares & T. Urdan (Eds.), *Academic motivation of adolescents: Vol. 2* (pp.193–219). Greenwich, CT: Information Age.
- Martin, A.J. & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues and educational practice. *Review of Educational Research*, 79(1), 327–365.
- Martin, A.J., Marsh, H.W., McInerney, D.M., Green, J. & Dowson, M. (2007). Getting along with teachers and parents: The yields of good relationships for students' achievement motivation and self-esteem. *Australian Journal of Guidance and Counselling*, 17, 109–125.
- Murray-Harvey, R. & Slee, P.T. (2007). Supportive and stressful relationships with teachers, peers and family and their influence on students' social/emotional and academic experience of school. *Australian Journal of Guidance & Counselling*, 17(2), 126–147.
- Muthén, L.K. & Muthén, B.O. (1998). *Mplus User's Guide*. Los Angeles: Muthén & Muthén.
- Noddings, N. (2005). *The challenge to care in schools: An alternative approach to education*. New York: Teachers College.
- Organisation for Economic Co-operation and Development (2005). *Teachers matter*. Paris: OECD.
- Pianta, R.C. (1999). *Enhancing relationships between children and teachers*. Washington, DC: American Psychological Association.
- Rowe, K. (2002). *The importance of teacher quality*. Retrieved 30 October 2007, from: www.cis.org.au/issue_analysis/IA22/IA22.PDF
- Sava, F. (2002). Causes and effects of teacher conflict-inducing attitudes towards pupils: A path analysis model. *Teaching and Teacher Education*, 18, 1007–1021.
- Sellin, N. (1990). *PLSPATH programme manual: Version 3.01*. Hamburg, Germany.
- Sellin, N. & Keeves, J.P. (1994). Path analysis with latent variables. In T. Husén & T.N. Postlethwaite (Eds.), *The international encyclopedia of education* (2nd ed.). Oxford: Pergamon Press.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag.
- Weissberg, R.P., Kumpfer, K.L. & Seligman, M.E.P. (2003). Prevention that works for children and youth: An introduction. *American Psychologist*, 58, 425–432.
- Wentzel, K.R. (1999). Social-emotional processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology*, 91, 76–97.

- Wong, E.H., Dudley, J.W. & Cusick, L.B. (2002). Perceptions of autonomy support, parent attachment, competence and self-worth as predictors of motivational orientation and academic achievement: An examination on sixth- and ninth-grade regular education students. *Adolescence*, 37(146), 255–266.
- Wubbels, T. & Brekelmans, M. (2005). Two decades of research on teacher-student relationships in class. *International Journal of Educational Research*, 43, 6–24.
- Zimmerman, B.J. (1998). Developing self-fulfilling cycles of academic regulation: An analysis of exemplary instructional models. In D.H. Schunk & B.J. Zimmerman (Eds.), *Self-regulated learning: From teaching to self-reflective practice* (pp.1–19). New York: Guilford Press.
- Zins, J.E., Weissberg, R.P., Wang, M.C. & Walberg, H.J. (2004). *Building academic success on social and emotional learning: What does the research say?* New York: Teachers College Press.
- Zullig, K.J., Koopman, T.M. & Huebner, E.S. (2009). Beyond GPA: Towards more comprehensive assessments of students' school experiences. *Child Indicators Research*, 2, 95–108.

Reappraising academic and social adversity improves middle school students' academic achievement, behavior, and well-being. Geoffrey D. Borman, Christopher S. Rozek, View ORCID ProfileJaymes Pyne, and Paul Hanselman. PNAS August 13, 2019 116 (33) 16286-16291; first published July 29, 2019 <https://doi.org/10.1073/pnas.1820317116>. As a result, students realized improved social and psychological well-being, fewer absences and disciplinary infractions, and higher grade point averages. Student-teacher relationships also tend to be less positive and personal than in elementary school (where students most often interact with only one teacher), as middle school teachers set the tone for increased academic evaluation and more severe discipline for misbehavior (2, 10).