



Personal agency among students from low socio-economic backgrounds: An examination of student profiles, perceived teaching support, and achievement

Rebecca J. Collie¹ · Andrew J. Martin¹ · Anaïd Flesken² · Brianna McCourt²

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Abstract

Personal academic agency—the thoughts, actions, and emotions that impact individual functioning at school—is central for academic success. On average, students from low socio-economic status (low-SES) backgrounds report lower levels of personal academic agency than their more advantaged peers, but there are also many who achieve academic success. Identifying different personal academic agency profiles among students from low-SES backgrounds may assist in targeting efforts to boost these factors within that population—and to identify students who are faring well, as well as those who might require additional support. This study examined five factors of personal academic agency (perceived competence, school belonging, perseverance, academic buoyancy, and conduct problems) among 20,125 secondary school students from low-SES backgrounds at 421 Australian schools. We identified profiles of students that vary in patterns of personal academic agency, and examined teaching support predictors and achievement differences associated with profile membership. Latent profile analysis revealed five student profiles: Vulnerable (9% of sample), Resigned (27%), Precarious (28%), Average (32%), and Flourishing (14%) profiles. Students' perceptions of teaching support predicted membership in more adaptive profiles (i.e., Average and Flourishing profiles)—with the most consistent teaching support predictors being emotional support, classroom management, and instructional relevance. In addition, the Flourishing profile displayed the highest achievement.

Keywords Student agency · Motivation · School belonging · Academic buoyancy · Conduct problems · Low socio-economic status · Teaching support

✉ Rebecca J. Collie
rebecca.collie@unsw.edu.au

¹ School of Education, University of New South Wales, Sydney, NSW 2052, Australia

² Centre for Education Statistics and Evaluation, New South Wales Department of Education, Sydney, Australia

1 Introduction

Major conceptual and empirical reviews of socio-economic status (SES) and academic outcomes conclude that common challenges faced by individuals from low-SES backgrounds have a strong, but not insurmountable, influence on academic development (Broer et al., 2019; Sirin, 2005; Winne & Nesbit, 2010). These reviews have also emphasized the need for further research to better understand students from low-SES backgrounds and how they may be more effectively supported and sustained in their academic development at school. One factor that plays a substantial role in impacting students' outcomes is their personal academic agency: students' beliefs and behaviors that impact their own functioning, as well as the broader context they are operating within, to bring about desired changes in their experiences (de Charms, 1968; see also Bandura, 2001). When students have high personal academic agency, they are more in control of their learning and are better geared towards success (Bandura, 2006; Eccles & Wigfield, 2020; Ryan & Deci, 2017).

Students from low-SES backgrounds generally report lower levels of personal agency, and academic achievement, than students from mid-to-high SES backgrounds (King et al., 2022; Martin et al., 2022). However, students from low-SES backgrounds are not a homogenous group—there are also many who demonstrate academic outcomes as strong as students from mid-to-high SES backgrounds (Cutmore et al., 2018). Prior research examining personal agency beliefs and behaviors among students from low-SES backgrounds has largely assumed subpopulation homogeneity, testing how these factors are associated with other variables in the sample as a whole (i.e., variable-centered examinations; e.g., King et al., 2022; Martin et al., 2022). Another approach is to allow for subpopulation heterogeneity by considering personal agency factors not as separate albeit associated predictor variables, but as indicator sets with potentially different combinations for various types of students—that is via student profiles (i.e., person-centered examinations). For example, an adaptive combination of agency beliefs and behaviors may promote positive achievement-related outcomes (Burns et al., 2022). This approach may provide understanding about different types of students from low-SES backgrounds in relation to their personal academic agency.

The aim of this paper is to examine heterogeneity in how personal agency factors combine among students from low-SES backgrounds, to identify the experiences of different students within this population, and thus to help to guide efforts to better target practice to the distinct needs of the different student types. We used latent profile analysis to identify personal academic agency profiles, and also examined predictors and outcomes of profile membership. Five personal academic agency beliefs and behaviors were examined: perceived competence, school belonging, perseverance, academic buoyancy, and conduct problems. We drew on a large state-wide dataset of secondary school students in New South Wales, Australia's most populous state, that enabled a purposeful focus on a sizeable and representative sample of students from low-SES backgrounds. After identifying profiles of students based on how they varied in their patterns of the

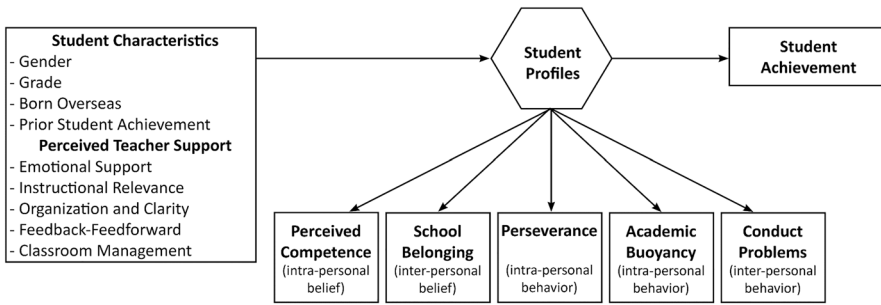


Fig. 1 Hypothesized model

five personal academic agency beliefs and behaviors, we then examined the extent to which students' perceptions of teaching support were associated with profile membership, and differences in academic achievement across profiles. Figure 1 displays the hypothesized model.

1.1 Students from low-SES backgrounds

In broad terms, SES describes an individual's (or family's) position in society based on factors like educational qualifications, income, and occupational status (Kraus et al., 2012; Mueller & Parcel, 1981; Sirin, 2005). SES provides resources at home and the social capital vital for school success (Aikens & Barbarin, 2008). In general, SES is also associated with the kind of school that students attend, with students from low-SES backgrounds often attending schools with fewer resources and materials, lower staff-to-student ratios, and so on (Aikens & Barbarin, 2008; Pribesh et al., 2011)—hence why many education departments implement needs-based funding and equity loadings for schools in efforts to reduce the impact of challenges resulting from low-SES backgrounds (e.g., NSW Department of Education, 2022).

Many students from low-SES backgrounds experience particular challenges that are negatively associated with academic development. Students from lower SES backgrounds can be more constrained in their ability to pursue goals due to experiences of fewer resources and more uncertainty (Kraus et al., 2012)—such as resource scarcity at home. As a result, students from low-SES backgrounds are more likely to feel that their actions are influenced by external forces beyond their control (Kraus et al., 2012). This is directly linked with their sense of personal agency (Kraus et al., 2012). Students from low-SES backgrounds may also be negatively impacted by a mismatch between their culture and that of the school (Stephens et al., 2012). Discomfort that arises from the differences in norms can lead to a sense of uncertainty about schooling, a low sense of belonging, and the perception that academic tasks are harder (Stephens et al., 2012), all of which are relevant to personal agency and achievement.

Combined, these experiences among students from low-SES backgrounds are often reflected in lower levels of personal academic agency (e.g., lower academic buoyancy, school belonging; Bostwick et al., 2022; King et al., 2022). Students

from low-SES backgrounds also tend to have lower achievement levels (ACARA, 2021). At the same time, however, there are students from low-SES backgrounds who achieve well (Coleman & Hagell, 2007; Cutmore et al., 2018; Finn & Rock, 1997; OECD, 2011; Ungar, 2011). Understanding who these students are is important for identifying how to sustain their positive academic development and may also provide insights into how schools can better support those who are struggling academically.

1.2 Context, personal agency, and achievement: conceptual underpinnings

In numerous motivational theories, agency beliefs and behaviors are highlighted as foundational aspects of optimal individual functioning, such as social-cognitive theory (Bandura, 2006), self-determination theory (Ryan & Deci, 2017), situated expectancy-value theory (Eccles & Wigfield, 2020), stage-environment fit theory (Eccles et al., 1991), and positive youth development models (Lerner et al., 2003). Alongside these, Stephens et al.'s (2012) cultural mismatch theory articulates a similar phenomenon relevant to students from low-SES backgrounds. In the present study, we harness commonality across the central processes of these different theories: There are contextual or environmental factors that can support personal agency beliefs and behaviors, which are in turn linked with positive outcomes (Bandura, 2006; Ryan & Deci, 2017; Stephens et al., 2012). For example, the triadic model in social-cognitive theory articulates processes among environmental, personal agency, and behavioral factors that shape and direct individual academic development (Bandura, 2001). Likewise, situated expectancy-value theory highlights the important role of socializers' beliefs (contextual factor) as relevant to agency beliefs and, in turn, positive outcomes (Eccles & Wigfield, 2020). Cultural mismatch theory articulates how contextual norms impact agency-related experiences and, in turn, academic performance among students from low-SES backgrounds (Stephens et al., 2012).

This central process of contextual factors to agency beliefs and behaviors and then to outcomes was examined in the present study by way of perceived teacher support, personal academic agency, and achievement. Notably, rather than examining a range of personal agency factors separately, we consider their interplay. The centerpiece of our study comprised identification of the diverse profiles that exist among students from low-SES backgrounds based on their experiences of intra- and inter-personal agency beliefs and behaviors.

1.3 Intra- and inter-personal agency beliefs and behaviors

Intra- and inter-personal agency beliefs and behaviors impact individuals' experiences and outcomes (Bandura, 2006; Eccles & Wigfield, 2020; Lerner et al., 2003). As noted above, agency reflects the perceptions (i.e., belief) and capacities (i.e., behavior) that we can impact our experiences (and contexts) to bring about desired change (de Charms, 1968; see also Bandura, 2001). Agency has often been examined via capability self-beliefs (e.g., perceived competence, self-efficacy; Bandura,

2006; Ryan & Deci, 2017), but can also be captured by other beliefs and behaviors that enable students to have an impact on their world (Lerner et al., 2003). *Intra-personal agency* refers to internally-focused psycho-social beliefs and behaviors, whereas *inter-personal agency* refers to socially- or outward-focused beliefs and behaviors (Lerner et al., 2003; Martin et al., 2017). In the present study, we examined two agency beliefs and three agency behaviors that can be considered intra- or inter-personal factors. The factors also capture students' approaches to opportunity and adversity at school, which are two agency-related responses that impact how students navigate the ups and downs in their educational journey (e.g., Covington, 1992).

Beginning with the agency beliefs, *perceived competence* refers to an individual's belief in their capacity to accomplish a given task (Bandura, 2001; Law et al., 2012). Students who are high in perceived competence hold positive self-expectancies, have adaptive attitudes if they do not succeed, and are more likely to possess positive cognitive and emotional processes when meeting task demands (Bandura, 2001). *School belonging* is defined as the extent to which students feel a sense of community and belonging in their school and with their peers (Anderman, 2003; Bostwick et al., 2022). School belonging also encompasses a student's sense of relatedness with others (Ryan & Deci, 2017). School belonging and positive relatedness are considered buffers against stress and risk, a source of emotional support through academic life, and a basis for adaptive social-emotional and academic development (Furrer & Skinner, 2003; Martin & Dowson, 2009; Pianta et al., 2012).

Turning to the behaviors, students' *perseverance* refers to their commitment and persistence in their schoolwork (Richardson et al., 2012). Perseverance is an important aspect of students' adaptive engagement and a key dimension of students' positive responses to extended, large, or multi-part academic tasks (Bostwick et al., 2022). *Academic buoyancy* refers to an individual's capacity to effectively respond to academic challenges that are typical of 'everyday' life at school (Martin & Marsh, 2006, 2008). For instance, students may face challenges such as test pressures, competing assignment deadlines, and poor grades—which all connote everyday setbacks. Notably, whereas perseverance relates to consistency of effort on work and does not directly imply challenge per se, academic buoyancy focuses specifically and explicitly on responses to challenge and adversity. Moreover, whereas perceived competence focuses on a sense of academic capability, academic buoyancy concerns specific experiences of academic adversity. A student might feel academically competent in science, while also struggling with particular setback in a science activity. *Conduct problems* are patterns of behavior that transgress the rights of others or age/context-appropriate rules or norms (American Psychiatric Association, 2013). Students can experience different pathways of conduct problems depending on their age (and age of onset), developmental course, associated risk factors, and context-related demands and circumstances (Frick & Viding, 2009; Gutman et al., 2019). In the academic context, conduct problems are in part a response to psychosocial and academic challenges (Johnson et al., 2019).

Taken together, the five factors were selected because they traverse a range of salient intra- and inter-personal agency factors that also reflect students' responses to opportunity and adversity at school (Covington, 1992). We examined two beliefs

that span internal and external interactions related to opportunity: (a) perceived competence represents a key intra-personal belief related to personal agency (Bandura, 2006; Lerner et al., 2003), and (b) school belonging captures the social or inter-personal process implicated in personal agency that is central to students' influence on the school environment (Bandura, 2006; Ryan & Deci, 2017). We also examined three behaviors that span well-recognized cognitive-, emotional-, and social-behavioral dimensions (e.g., Fredricks et al., 2004): (a) perseverance is an intra-personal cognitive-behavioral response to opportunity, (b) academic buoyancy is an intra-personal emotional-behavioral response to adversity, and (c) low conduct problems are an inter-personal social-behavioral response to opportunity (Bandura, 2006; Lerner et al., 2003). Combined, the five factors span major experiences related to personal agency. As we describe in more detail below, the focus on opportunity and adversity also enables different theoretically-driven typologies to be examined.

The five intra- and inter-personal agency factors are predictors of students' academic development (e.g., Bostwick et al., 2022), and are particularly relevant for students from low-SES backgrounds who may not have the contextual privileges or supports that students from other backgrounds often have (Kraus et al., 2012; Sirin, 2005). Indeed, students from low-SES backgrounds often report lower levels of the adaptive factors and higher levels of conduct problems (King et al., 2022; Martin et al., 2022)—often due to their experiences in a contextual environment that is less well resourced and supportive. However, this is not necessarily the case for all sub-populations of students from low-SES backgrounds, which is important to examine.

1.4 Personal agency profiles among students

Although personal agency beliefs and behaviors can combine in various patterns (or profiles) for different types of students (Burns et al., 2022), only limited research has considered these or related agency factors by way of profiles. The bulk of past research examining these or related agency factors among students from low-SES backgrounds has involved variable-centered examinations (e.g., King et al., 2022; Martin et al., 2022). Variable-centered analyses (e.g., by way of structural equation modelling process models; e.g., Martin et al., 2022) focus on identifying how variables are interrelated among a population as a whole and have revealed, for example, that school belonging is an important personal academic agency factor associated with positive outcomes among students from low-SES backgrounds (Bostwick et al., 2022). However, variable-centered analyses do not typically consider how experiences differ for subpopulations—and thus may mask students from low-SES backgrounds who are thriving at school.

More recently, researchers have begun to turn their attention to person-centered approaches (e.g., by way of latent profile analysis), which focus on identifying individuals with common attributes or experiences and then grouping similar individuals together in profiles (Morin et al., 2016). Person-centered approaches offer complementary yields to variable-centered approaches. Whereas variable-centered analyses highlight variables of interest for guiding intervention broadly across a population, person-centered analyses highlight the types of individuals within that

population and how efforts can be targeted to their precise needs. For some profiles, there may be factor combinations that diverge from what is seen in variable-centered analyses. Person-centered analyses are, then, salient for identifying different types of students within a population—such as among students from low-SES backgrounds. Such approaches are also relevant for practitioners who do not perceive the classroom in terms of variables, but rather think more in terms of students or student types.

There is emerging research examining profiles of personal agency beliefs and behaviors among students, providing early evidence of different profiles. For example, Burns et al. (2022) found five profiles among secondary school students based on coping, school belonging, and parent support: one agentic profile (above average on all factors), one low-agentic profile (below average on all factors), and three mixed profiles (e.g., average on coping and school belonging, but below average on parent support). Miller et al. (2021) identified three profiles among secondary students based on cognitive engagement, emotional engagement, and social engagement: one low-agentic profile (below average to average on all factors), one agentic profile (average to above average on all factors), and one mixed profile (above average cognitive engagement, below average emotional engagement, and average social engagement). Collie et al. (2017) examined academic buoyancy, social and academic support factors, and experiences of academic adversity among secondary school students. They found three distinct profiles: an agentic profile (above average buoyancy and social support, and below average academic support and adversity), a low-agentic profile (below average buoyancy and social support, and above average academic support and adversity), and a mixed profile (average academic buoyancy and social support, but above average academic support and academic adversity).

Together, prior research provides some idea of how different personal agency factors can co-occur among students. However, this work did not specifically focus on students from low-SES backgrounds. The particular experiences of students from low-SES backgrounds may give rise to differing combinations, which was the focus in our study.

1.4.1 Conceptual support for distinct profiles

Earlier, we introduced our broad conceptual framing for the process examined in our study (contextual factors to personal agency profiles to achievement). Now, we delve more deeply into the profile aspect of this process to introduce conceptual support for making predictions about different profiles that may exist among students from low-SES backgrounds. For this, we refer to Covington's (Covington & Müeller, 2001; Covington & Omelich, 1985, 1992) work, which considers individuals' approaches to opportunity and adversity. The motive to approach opportunity, *success orientation*, involves proactive and adaptive efforts to learn and achieve (Covington & Müeller, 2001). In contrast, the motive to avoid adversity, *failure fearing*, arises from concerns about poor performance and involves self-protective efforts to avoid failure and maintain self-worth (Covington & Müeller, 2001). In our study, success orientation may be considered via high perceived competence, school belonging, perseverance, and low conduct problems. In contrast, failure fearing may

be considered via academic buoyancy. Here, low levels of buoyancy reflect failure fearing because these students are struggling with academic adversity and hold concerns about its negative consequences (Martin & Marsh, 2008).

According to Covington (1992; Covington & Müeller, 2001), success orientation and failure fearing interact on two intersecting spectrums from low to high to reflect different typologies or profiles—which are optimally examined by way of person-entered approaches. For example, a pattern of high success orientation and low failure fearing reflects an agentic profile as the individual views their success as being dependent upon factors in their control (Covington, 1992). This profile would display above average personal agency (incorporating below average conduct problems)—like, for example, the agentic profile identified in Miller et al. (2021).

As another example, a pattern of low success orientation and high failure fearing reflects a low-agentic profile that has lower confidence and is fearful of poor performance (Covington & Müeller, 2001). This profile would be characterized by below average personal agency (incorporating above average conduct problems, from withdrawing effort)—aligned with the low-agentic profiles in, for example, Collie et al. (2017).

There are also mixed patterns. For example, high success orientation and high failure fearing would reflect a profile that aims to evade failure by excessively striving for success (Covington & Müeller, 2001). Because potential failure is threatening, individuals in this typology can experience reduced agency and heightened self-doubt—but are persevering nonetheless (Martin et al., 2001). This profile would report above average personal agency (incorporating below average conduct problems), except for academic buoyancy, which would be below average (reflecting fear of failure as described above).

Another mixed profile might involve low success orientation and low failure fearing, which captures individuals who have become convinced of their low abilities and so are no longer trying to avoid poor performance (Covington & Müeller, 2001). This profile would be characterized by below average personal agency (incorporating above average conduct problems), but also above average academic buoyancy. Because these students are indifferent to poor performance (low failure fearing) they are buoyant in the face of it.

Taken together, Covington's (Covington & Müeller, 2001; Covington & Omelich, 1985, 1992) work suggests that different combinations of personal agency factors mapped in terms of success orientation and failure fearing are possible. We provided four example combinations above, but these two motives can also co-occur at other levels (moderate success approach and low failure fearing, etc.). Indeed, it is this flexibility in the possible combinations that allows Covington's work to be relevant to different populations of students. The precise combinations (and sizes) may be different in a sample of students from low-SES backgrounds compared with those from mid-to-high SES backgrounds. For example, students from low-SES backgrounds can experience barriers to success orientation and greater personal and contextual challenges that may heighten the risk of poor performance and the motive to avoid it (Aikens & Barbarin, 2008). Obstacles, such as experiences of limited resources and greater uncertainty, can mean that individuals from low-SES backgrounds are more aware of potential adversity within a context (Kraus et al., 2012)—and as a result

can experience lower levels of personal agency within those contexts. Cultural differences between the student and the school (including the “hidden curriculum”) can also mean students from low-SES backgrounds experience greater barriers for personal agency (Stephens et al., 2012). At the same time, research identifies students from low-SES backgrounds who thrive at school (Cutmore et al., 2018), and has also shown that high levels of personal agency help to offset some of the negative outcomes that can result from having a low-SES background (Lachman & Weaver, 1998).

The aim of the present study was to ascertain what profiles reflecting the two broad motives are evident in a sample of students from low-SES backgrounds. We suggest a focus on students from low-SES backgrounds is important because these students are not homogenous, and so teasing apart the experiences of different types of students within this population is a worthy focus. We broadly hypothesized that there would be evidence of agentic, low-agentic, and mixed profiles as introduced above. Specific to our sample, we expected that there would be more low-agentic and mixed profiles than agentic profiles, and that these would be relatively larger than the agentic profiles, given the common barriers faced by students from low-SES backgrounds (e.g., Stephens et al., 2012). Ascertaining the extent to which these personal agency profiles exist among students from low-SES background will sharpen current understanding of these students, and how to better support and sustain them.

1.5 Perceived teaching support and personal agency profiles

Although the main aim of the present study was to identify personal agency profiles among students from low-SES backgrounds, we were also interested in the role of perceived teaching support factors in relation to profile membership. Students’ perceptions of teaching support are associated with their academic development (Granziera et al., 2022). Teaching support describes the various resources and assistance from teachers that help students learn and develop academic skills (Wong et al., 2018). In the present study, we examined students’ perceptions of teaching support factors that have been identified as essential in various frameworks of effective instruction (e.g., Hamre et al., 2013; Skinner et al., 2022): emotional support, instructional support, and classroom management.

We operationalized *emotional support* as students’ perceptions of general pastoral care received from teachers, including the extent to which teachers are interested and invested in students’ learning and academic progress (Hamre et al., 2013; Skinner et al., 2022). Next, we operationalized instructional support via three factors that aid the processes of learning (Hamre et al., 2013; Skinner et al., 2022). *Relevance* is students’ perceptions of the personal alignment with and meaningfulness of academic content and tasks (Martin et al., 2022). *Organization and clarity* refer to how teachers arrange, organize, and clarify tasks, content, and lesson time (Martin et al., 2022). *Feedback-feedforward* is corrective information and improvement-oriented guidance to students during learning (Hattie & Timperley, 2007; Martin et al., 2022). Finally, *classroom management* is defined as students’ perceptions of

structures, rules, and behavioral expectations in the classroom (Hamre et al., 2013; Skinner et al., 2022).

Taken together, the five perceived teaching support factors have been identified in prior variable-centered research as essential for student success (e.g., Assor et al., 2002; Mayer & Moreno, 2010; Wisniewski et al., 2020). In the present study, we extend that knowledge by examining the perceived teaching support factors as predictors of students' membership in the different personal agency profiles. Doing so among students from low-SES backgrounds will help uncover knowledge about how to more readily identify agentic profiles and the perceived practices that support them—and also low-agentic profiles and what pedagogical approaches can be implemented to better support these students. Based on prior variable-centered research (e.g., Wisniewski et al., 2020), we anticipated that students reporting higher levels of the teaching support factors would be members of agentic profiles, rather than low-agentic or mixed profiles. We left as an open empirical question the extent to which particular teaching support factors would play the most salient role.

1.6 Achievement differences across profiles

Each of our five personal agency factors have been a focus of much variable-centered research showing their links to academic achievement (Granziera et al., 2022; Kremer et al., 2016; Richardson et al., 2012; Roorda et al., 2011). However, these studies have not captured the extent to which varying student combinations of these indicators (i.e., profiles) may be associated with achievement. Indeed, the population homogeneity for factor associations that is assumed under variable-centered approaches may mask more diverse associations with achievement among subpopulations. Person-centered analysis examines these subpopulations and how they are associated with achievement. One recent study (Burns et al., 2022) found that more agentic student profiles were associated with higher achievement; however, that study did not focus on students from low-SES backgrounds and comprised a narrower set of profile indicators than our study. In the present study, it was hypothesized that agentic profiles would display the highest achievement, whereas low-agentic and mixed profiles would display lower achievement. We left as an open empirical question the extent to which low-agentic and mixed profiles would differ on achievement.

2 Study overview

Latent profile analysis (LPA) was used to identify student profiles based on the five personal agency factors (perceived competence, school belonging, perseverance, academic buoyancy, conduct problems). Following this, the perceived teaching support factors (and for completeness, background characteristics) were examined as predictors of students' profile membership, and mean differences in achievement

(controlling for prior achievement) were compared across profiles. Figure 1 demonstrates the hypothesized model.

3 Method

3.1 Sample and procedure

Data were collected as part of the “Tell Them from Me” (TTFM)¹ student survey run every year by the New South Wales (NSW) Centre for Education Statistics and Evaluation (CESE) within the NSW Department of Education. Originally developed in Canada (Willms, 2014), the survey has been adapted to the Australian context, and administered in several different countries including Australia, the United States, and Uruguay (The Learning Bar, 2019). The survey includes a wide range of questions about students’ experiences at school, including their psychoeducational beliefs and behaviors, as well as their perceptions of teaching support. The current study used data from students who participated in the 2021 TTFM surveys. We also had access to students’ 2021 achievement scores (and 2019 scores as prior achievement) from their results in the nation-wide standardized achievement test, National Assessment Program—Literacy and Numeracy (NAPLAN; National Assessment Program [NAP], 2016).

The NSW Department of Education provides all NSW government schools with free-of-charge access to TTFM as an online survey. The department manages school recruitment and data management, while the survey is created and run by an independent company, The Learning Bar. The goal of the survey is to capture student voice and to provide data to school leaders to help drive student and school improvement. During the last school term of each academic year (e.g., November 2020), schools receive an invitation to participate in the following year’s TTFM survey (e.g., the 2021 TTFM survey). Schools can sign-up to participate until data collection commences in late Term 1 (e.g., March 2021 for the 2021 TTFM survey). Parents are given the opportunity to decline participation for their children using opt-out consent forms provided by CESE (available in 22 languages). In 2021, 88% of NSW schools with secondary enrolment participated in secondary school survey, with an average student response rate of 72%.

The present study examined data from 20,125 secondary school students from low-SES backgrounds who were from 421 schools. This sample comprised students who were in grades 7 and 9 in 2021, and who participated in TTFM (7 students who had missing data on all substantive factors were excluded from this final sample). Grades 7 and 9 were the focus for the present study because these grades undertook the NAPLAN test in May, 2021—and so have contemporaneous achievement data.

We obtained our sample of students from low-SES backgrounds by selecting out the lowest quartile from the broader sample of students. Student SES was assessed using a composite measure conceptually similar to the Index of Economic, Social and Cultural status (ESCS) used in the Programme for International Student

¹ “Tell Them From Me” is a registered trademark belonging to The Learning Bar.

Assessment (PISA). The index is based on students' responses to survey questions on their family structure, highest level of parental education, and availability of educational resources at home, such as books or a computer. The survey provider (The Learning Bar) imputed missing values and reduced the three component indicators into one SES indicator using factor analysis. From this measure, four quartiles of SES were identified. More precisely, we looked at the full TTFM sample of 74,778 grade 7 and 9 students from 423 schools and identified four quartiles of SES. We selected students in the lowest quartile for examination in the present study (i.e., 20,125 students, which is slightly larger than 25% of the full sample because some students had missing data on the SES variable). The sample of students in the lowest quartile attended 421 of the 423 schools. Students who appeared in the other quartiles (i.e., mid-to-high-SES; $n=54,653$) were not examined in research questions, but they were included in measurement invariance tests (see Data Analysis) and attended 420 of the 423 schools.

Among our focal sample of students from low-SES backgrounds, students were in grades 7 (51%) and 9 (49%), and the sample was split between male (50%) and female (47%) students (3% did not report their gender). Most students were born in Australia (87%), and 20% of the students were of Aboriginal and/or Torres Strait Islander descent. Participating schools were located in rural (1%), regional (32%), and metropolitan (68%) areas in NSW, and were co-educational (92%), single-sex boys' (3%), or single-sex girls' (5%) schools. The average number of student participants per school in the current study was 48 ($SD=32$). The average school size was 817 ($SD=343$) students. In terms of school SES, participating schools were low (29%), below average (39%), above average (19%), or high SES (13%). The average proportion of low-SES student participants per school was 30% out of all participants per school. The study received Institutional Review Board ethics approval.

3.2 Measures

Items were collected as part of TTFM or NAPLAN. Unless otherwise stated below, all substantive variables were rated by students on a scale of 0 (*strongly disagree*) to 4 (*strongly agree*). Reliability for all scales was calculated using coefficient omega (ω). Table 1 displays reliability estimates, which were adequate (i.e., $\omega \geq 0.70$) for all scales except one first-order factor that was slightly below cut-offs (truancy, $\omega=0.67$; see Limitations). Scores from the scales have demonstrated evidence of validity in prior research, including anticipated associations with correlates, sound factor structure, and evidence of longitudinal and measurement invariance (Bostwick et al., 2022; Martin et al., 2022).

3.2.1 Profile indicator variables

Perceived competence was measured with items adapted from the Patterns of Adaptive Learning Scales (PALS; Midgley et al., 2000; Roeser et al., 1996). Whereas the PALS items assess self-efficacy (i.e., task-specific confidence; Rodgers et al., 2014), the TTFM items are reflective of the broader construct of

Table 1 Reliabilities and descriptive statistics for students from low-SES backgrounds

	ω	M	SD
<i>Profile indicator variables</i>			
Perceived competence	0.82	2.61	0.91
School belonging	0.89	2.26	0.96
Perseverance	0.87	1.89	1.06
Academic buoyancy	0.87	1.95	1.04
Conduct problems	0.77	0.44	0.57
<i>Student characteristics</i>			
Prior achievement	–	251.13	53.27
<i>Teaching support</i>			
Emotional support	0.91	2.25	0.95
Classroom management	0.85	2.26	0.83
Instructional relevance	0.83	2.16	0.94
Organization and clarity	0.93	2.51	0.92
Feedback-feedforward	0.85	1.98	0.78
<i>Outcome</i>			
Achievement	–	528.50	67.08

perceived competence, which reflects students' general sense of competence in learning (3 items; e.g., "I am certain I can learn the skills taught in school this year"; TTFM scale title: "Academic self-concept").

School belonging was assessed with items adapted from PISA (OECD, 2017) asking whether students feel included in and connected to their school, can build social connections with peers, and feel comfortable to be themselves (6 items; e.g., "I feel included in school activities"; TTFM scale title: "Sense of belonging").

Perseverance was assessed with the EPOCH Measure of Adolescent Well-being (Kern et al., 2016) subscale relating to students' persistence in their schoolwork (4 items; e.g., "I keep at my schoolwork until I'm done with it;" TTFM scale title: "Perseverance"). All items were scored from 0 to 4, but two sets of value anchors were used: two items were scored from 0 (*almost never*) to 4 (*almost always*) and the other two items were scored from 0 (*not at all like me*) to 4 (*very much like me*).

Academic buoyancy was measured with Martin and Marsh's (2008) items focused on students' ability to effectively navigate everyday academic setbacks (4 items; e.g., "I'm good at dealing with setbacks at school—e.g., negative feedback on my work, poor result;" TTFM scale title: "Academic Buoyancy").

Conduct problems was assessed as a higher-order factor comprising two subscales: disruptive behavior and truancy. Items were adapted from PISA (Willms, 2003). Disruptive behavior comprises items focused on students' disruptive or aggressive behavior in the classroom (5 items; "[In the past 4 weeks, I have been spoken to by a teacher or principal for] Being disruptive in class;" TTFM scale title: "Positive Behaviors at School"). Truancy was assessed with items about lateness and truancy (3 items; "[In the past 4 weeks] I have missed a day at school without

permission,” TTFM scale title: “Truancy”). Items for both scales were scored from 0 (*Never*) to 3 (*Almost every day*).

3.2.2 Predictors

3.2.2.1 Perceptions of teaching support Students were asked to report on the general support they receive from their teachers, as well as the specific support they receive from one teacher. As such, perceived teaching support captures both broad, domain-general perceptions of support received at school, as well as targeted, domain-specific perceptions of individual teachers.

The two domain-general teaching support factors were emotional support and classroom management—and focus on students’ perceptions of the overall school learning climate. *Emotional support* was assessed using items focused on students’ sense that teachers show interest in their learning, support their goals, listen to their opinions, and care for them (6 items; e.g., “Teachers are interested in my school assignments;” TTFM scale title: “Advocacy at school”). Items were scored from 0 (*Never*) to 3 (*Almost every day*).

Classroom management was assessed with items focused on students’ perceptions of the classroom management practices, including rules, teachers’ practices, and behavioral expectations, that enable effective learning to occur in their school (6 items; e.g., “In our school, our teachers expect us to pay attention;” TTFM scale title: “Positive Learning climate”).

The domain-specific teaching support factors were three forms of instructional support and focus on students’ perceptions of the classroom learning climate: instructional relevance, organizational and clarity, and feedback-feedforward. For these domain-specific constructs, students were asked to report on the teaching support provided by one teacher—either their mathematics, English, or science teacher. Assignment to each teacher was random and enabled reports about teachers from three core secondary school subjects, while avoiding overburdening the students. As per Martin et al. (2022), students’ responses about the individual teacher served as their scores for the teaching support constructs.

Instructional relevance was assessed with items that ask about the meaningfulness, usefulness, and purposefulness of the content they cover in their class (3 items; e.g., “[In the past two weeks] We explored ideas and topics that are meaningful;” TTFM scale title: “Relevance”).

Organization and clarity was assessed with items that focus on students’ perceptions of how effectively their teacher manages learning time, is organized, and explains content clearly (6 items; e.g., “[In the past two weeks] Our [math/science/English] teacher is good at explaining difficult ideas;” TTFM scale title: “Effective learning time”).

Feedback-feedforward was assessed with items that ask about reciprocity in information from and to students, including teacher explanations, corrective information, and improvement-oriented information and questioning (6 items; e.g., “[In the past two weeks] The feedback from assessments and quizzes helps me learn;” TTFM scale title: “Explicit teaching practice and feedback”). Four items were rated

from 0 (*Never or hardly ever*) to 3 (*In all lessons*) and two items were rated from 0 (*Strongly disagree*) to 4 (*Strongly agree*).

3.2.2.2 Background characteristics Although not a main focus, for completeness, four student characteristics were also examined as predictors of profile membership: gender, grade, born overseas, and prior achievement. Grade was a dichotomous variable (0=grade 7, 1=grade 9), as was gender (0=male; 1=female). Born overseas was scored 0 for no (born in Australia) or 1 for yes (born in another country). Prior achievement was assessed as a mean score of reading and numeracy from students' scores on NAPLAN from two years prior in 2019 (see more on NAPLAN under Outcomes below). These background characteristics have all been linked to learning outcomes among students from low-SES backgrounds (Chiu et al., 2012; Cobb-Clark & Moschion, 2017; Granziera et al., 2022; Reardon et al., 2013). Examining these background attributes provided the opportunity to examine the extent to which they predict profile membership.

3.2.3 Outcomes

Achievement was assessed with students' NAPLAN scores while controlling for prior achievement. NAPLAN is a national standardized assessment aimed at ascertaining the extent to which students are meeting national literacy and numeracy benchmarks. Students undertake NAPLAN tests every two years from grade 3 to grade 9. In the present study, we had access to students' NAPLAN scores from the tests they undertook in 2021 (to assess achievement) and 2019 (to assess prior achievement). Achievement was assessed via a mean score of students' reading and numeracy achievement. The reading test involves assessing students' comprehension and interpretation of language conventions (NAP, 2016). The numeracy test assesses four strands of numeracy: number (e.g., addition, multiplication, fractions, percentages); algebra, function, and pattern (e.g., equivalence, patterns, equations); space (e.g., geometric terms, shapes); and, measurement, chance, and data (e.g., time, length, mass, probability; NAP, 2016). These two scores were averaged to create an achievement mean. Table 1 displays the achievement means for the present sample. For reference, the average national year 7 scores in 2021 were 542.3 ($SD=67.9$) for reading and 550.3 ($SD=77.3$) for numeracy (ACARA, 2021). The average national year 9 scores in 2021 were 576.80 ($SD=71.4$) for reading and 587.5 ($SD=64.2$) for numeracy (ACARA, 2021).

3.3 Data analysis

Analyses were undertaken with *Mplus* 8.7 (Muthén & Muthén, 2021). We accounted for the clustering of students within schools using the "type=complex" option in *Mplus*. All models employed the robust maximum likelihood (MLR) estimator, which is robust to non-normality. Missing data ($\leq 19\%$) were handled using full

information maximum likelihood (FIML) estimation procedures (Enders, 2010).² When FIML is used in conjunction with the MLR estimator, evidence shows it is appropriate under missing-at-random (MAR) assumptions, in some situations when MAR assumptions have been violated, and even in samples with high missing data (< 50%; Enders & Bandalos, 2001; Shin et al., 2009).

Preliminary confirmatory factor analyses (CFA) were conducted to determine the psychometric properties of the measures and correlations. Separate models were estimated for the profile indicators and the predictors, and factor scores were saved from and reliability estimates were calculated from these models (see Supplementary Materials for details). Notably, the CFAs involved measurement invariance constraints across our focal sample and the remaining students not focused on in the present study (i.e., students from mid-to-high-SES backgrounds). These constraints ensure that our findings can be compared with studies involving the broader population of students—given that the means and variances shown in the present findings are in reference to the whole sample (rather than being standardized within the focal sample of students from low-SES backgrounds). Achievement outcomes were entered as manifest scores in modelling.

We used latent profile analysis (LPA) to identify student profiles via the means and variances of the profile indicator variables. Means and variances were freely estimated across profiles (we freed variances given we had no conceptual reason to expect these would be identical across profiles; Morin & Litalien, 2019). Profile indicators were standardized ($M=0$, $SD=1$, and where $M=0$ represents the sample-wide average across students from both low-SES and mid-to-high SES backgrounds). Analyses employed the assumption of conditional independence, where any covariance between indicator variables is assumed to be fully explained by the latent profile variable. This assumption was upheld given we had no a priori theoretical or empirical reason for relaxing it (e.g., Meyer & Morin, 2016). We estimated solutions with 1 through 8 profiles, and used 10,000 random sets of start values, 1000 iterations, and 500 final stage optimizations. Replication of the best log-likelihood value was checked for all models. Several fit indices were assessed to identify the optimal solution: the Akaike information criterion (AIC), the consistent-AIC (CAIC), the Bayesian information criterion (BIC), and the sample-size-adjusted-BIC (SSA-BIC). For these fit indices, lower values indicate better fit. Elbow plots were also checked to ascertain the point where the decline in the CAIC, BIC, and SSA-BIC values noticeably flattens (Morin et al., 2016). The p -value from the adjusted Lo–Mendel–Rubin Likelihood Ratio Test is reported (p LMR), where a significant p -value provides evidence that the solution provides better fit compared to a solution with one less profile. Alongside these fit indices, we also considered parsimony, conceptual relevance, and statistical adequacy (i.e., model convergence, no negative variance estimates) to select the final solution.

After identifying the final solution, we ran several models to test how the perceived teaching support factors (emotional support, instructional relevance,

² Further details about missing data are provided in Supplementary Materials. Additionally, and to ensure these missing data did not unduly impact findings, analyses were rerun only with participants that had no missing data and the same student profiles were identified as described in “Results”.

organization and clarity, feedback-feedforward, classroom management) are associated with profile membership. Although not part of the substantive focus, for demographic and background insight into the profiles we also tested the role of student characteristics (gender, grade, born overseas, prior achievement) as predictors of profile membership. We tested associations using a multinomial logistic link function via the 3-step manual approach (Vermunt, 2010)—and controlling for shared variance among the teaching support factors and background characteristics. Following this, and also using the 3-step manual approach (Vermunt, 2010), we conducted mean comparisons to evaluate the profiles in terms of student achievement via the multivariate delta method (Raykov & Marcoulides, 2004) with the outcome regressed on prior achievement across all profiles simultaneously (McLarnon & O’Neill, 2018; see also Collie et al., 2021).³

4 Results

4.1 Preliminary analyses

Table 1 shows the reliability coefficients and descriptive statistics for variables. Measurement invariance (of loadings, intercepts, variances, covariances, and latent means) was evident for the profile indicator variables, as well as the predictors when examined across our focal sample (students from low-SES backgrounds) and the remaining sample (i.e., students from mid-to-high-SES backgrounds; see Supplementary Materials for details). Supplementary Materials provide correlations from these models and indicate that the factors are moderately correlated (and thus are considered distinct from one another). Indeed, this is consistent with the early work by Martin and Marsh (2006) that demonstrated perceived competence and perseverance (among other factors) as between-network validity constructs. Notably, this strong measurement support means we were able to proceed with our main analyses to identify subpopulations specifically evident within the sample of students from low-SES backgrounds.

4.2 Main analyses: latent profile analysis

4.2.1 Profile identification

Fit statistics for the LPA solutions are shown in Table 2 and elbow plots are provided in Supplementary Materials. The AIC, CAIC, BIC, and SSA-BIC all decreased as additional profiles were added, and the *p*LMR values suggested solutions with up to 7 profiles were a better fit than the immediately prior solution. The elbow plots did

³ Although not a central focus in our study, for completeness, we tested whether profile membership moderated the association between prior achievement and achievement (Nylund-Gibson et al., 2023). These tests indicated very similar slopes across profiles ($bs = .82$ to $.87$) and Wald tests confirmed this (all non-significant except for one comparison). Because of these results and because we were interested in broad differences across profiles, we proceeded without moderation.

Table 2 Fit statistics and entropy for latent profile solutions among students from low-SES backgrounds

	Log-likelihood	Free Parameters	AIC	CAIC	BIC	SSA-BIC	pLMR	Entropy
1 profile	-134,573.70	10	269,167.39	269,224.71	269,246.49	269,214.71	-	-
2 profiles	-116,414.65	21	232,871.31	233,058.41	233,037.41	232,970.67	<.001	0.80
3 profiles	-109,080.10	32	218,224.19	218,407.61	218,477.31	218,375.61	<.001	0.81
4 profiles	-105,760.49	43	211,606.97	211,853.44	211,947.09	211,810.44	<.001	0.83
5 profiles	-102,892.38	54	205,892.76	206,202.28	206,319.89	206,148.28	<.001	0.81
6 profiles	-100,893.02	65	201,916.04	202,288.61	202,430.17	202,223.61	<.001	0.82
7 profiles	-99,183.81	76	198,519.62	198,955.23	199,120.76	198,879.23	<.001	0.81
8 profiles	-97,554.64	87	195,283.29	195,781.95	195,971.43	195,694.95	.17	0.81

AIC, Akaike Information Criteria; CAIC, Consistent Akaike Information Criteria; BIC, Bayesian Information Criteria; SSA-BIC, sample-size-adjusted Bayesian Information Criteria; pLMR, p-value of the Lo-Mendell-Rubin Likelihood Ratio Test

LPA Results Showing Student Profiles

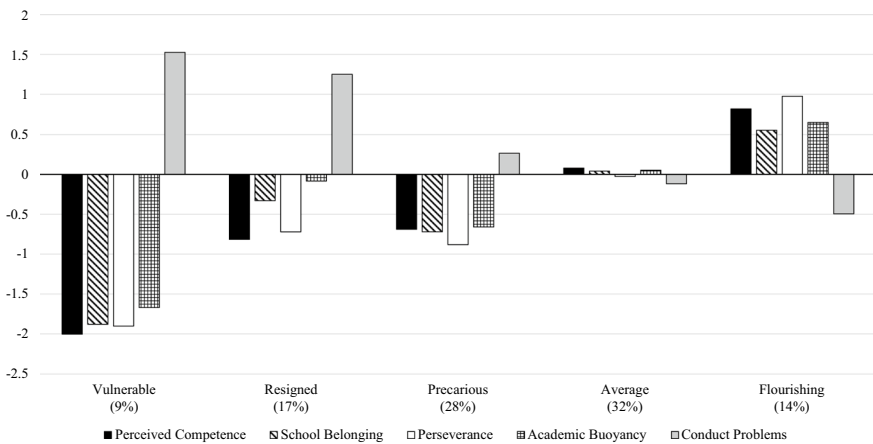


Fig. 2 LPA Results Showing Student Profiles. *Note:* Results are standardized such that zero represents the mean for students from both low-SES and mid-to-high backgrounds (see Data Analysis). For a table of means and variance (including 95% CIs), please see Supplementary Materials

not reveal a point where the fit statistics clearly flattened—however, a very slight flattening was evident at 5 profiles. Together, the fit statistics suggest that the optimal solution might have around 5 profiles, and likely less than 7 profiles. As such, we next considered the conceptual relevance, parsimony, and meaningfulness of the 5-profile solution, along with adjacent solutions involving 3 through 6 profiles. It was evident that the 6-profile solution had two very similar profiles, indicating that it offered no new information over the 5-profile solution. In contrast, although the 3-profile and 4-profile solutions contained profiles also evident in the 5-profile solution, they were missing one or two novel and qualitatively distinct profiles

that appeared in the 5-profile solution. We therefore selected the 5-profile solution as our final model, which is shown in Fig. 2 (see Supplementary Materials for detailed results). As Fig. 2 shows, results are standardized such that zero represents the sample-wide average across students from both low-SES and mid-to-high SES backgrounds.

We now report on the different profiles that emerged based on our personal agency factors and mapped in terms of success orientation (i.e., high levels of perceived competence, school belonging and perseverance, and low levels of conduct problems) and failure fearing (i.e., low levels of buoyancy). Students classified in profile 1 (9% of the sample) reported well-below-average perceived competence, school belonging, perseverance, and academic buoyancy, along with well-above-average conduct problems. This pattern of results reflects a low-agentic profile (low success orientation and high failure fearing; Covington & Müeller, 2001). This profile was named the *Vulnerable* profile because of the combination of low adaptive factors and high conduct problems.

Students classified in profile 2 (17%) reported well-below-average perceived competence and perseverance, below-average school belonging, average buoyancy, and well-above-average conduct problems. This is a mixed profile—specifically, low success orientation and low failure fearing (Covington & Müeller, 2001). This pattern of results reflects a student who is not feeling particularly agentic in terms of perceived competence and perseverance, but who reports average feelings of being able to cope with everyday setbacks at school. This profile was named the *Resigned* profile because these students appear to have abandoned effort (well-below-average perseverance) and become resigned to poor performance (average buoyancy means they are not worried about academic challenges).

Students classified in profile 3 (28%) reported well-below-average values across perceived competence, school belonging, perseverance, and academic buoyancy, and above-average levels on the maladaptive factor (conduct problems). This profile reflects another low-agentic profile (low success orientation and high failure fearing pattern; Covington & Müeller, 2001). Notably, this profile is similar to the *Vulnerable* profile on the adaptive factors, but differs with relatively lower levels of conduct problems. This profile was named the *Precarious* profile because this type of student does not have particularly elevated levels of conduct problems, but they do appear to be facing challenges on the other factors.

Students classified in profile 4 (32%) reported average levels of all variables. This profile reflects an agentic profile (moderate success orientation and low failure fearing; Covington & Müeller, 2001) because they have average levels that reflect a generally positive array of factors. This profile was called the *Average* profile because their beliefs and behaviors hover around the broader sample-wide mean, which incorporates students from all socio-economic backgrounds.

Students classified in profile 5 (14%) reported well-above-average levels of perceived competence, school belonging, perseverance, and academic buoyancy, and well-below-average levels of conduct problems. This pattern reflects an agentic profile (high success orientation and low failure fearing; Covington & Müeller, 2001) given the students feel agentic at school in terms of both their agency beliefs and

behaviors. This profile was named the *Flourishing* profile because these students appear to faring well on all factors.

4.2.2 Predictors of profile membership

Table 3 displays results of models examining the teaching support factors as predictors of profile membership. All five factors predicted membership in the Flourishing profile over the remaining profiles. Several perceived teaching support factors predicted membership in the Average profile over the Precarious profile (all teaching support factors were significant predictors except organization and clarity), the Resigned profile (all factors were significant predictors except feedback-feed-forward), and the Vulnerable profile (emotional support, classroom management, instructional relevance were significant predictors). Perceived teaching support also predicted membership in the Precarious profile over the Resigned profile (organization and clarity was the only significant predictor) and the Vulnerable profile (emotional support, classroom management, and instructional relevance were significant predictors). Finally, three perceived teaching support factors predicted membership in the Resigned profile over the Vulnerable profile (emotional support, classroom management, and instructional relevance were significant predictors). Taken together, the most consistent predictors were emotional support, classroom management, and instructional relevance—these factors predicted membership in the two agentic profiles (Flourishing, Average) over all other profiles, and in the Precarious and Resigned profiles over the Vulnerable profile. Classroom management was the strongest predictor, followed by instructional relevance and emotional support. For results involving background characteristics, see Supplementary Materials. Briefly, grade 7 students, students born overseas, and those with higher prior achievement were typically members of more adaptive profiles. However, there were mixed findings for students' gender.

4.3 Outcomes of profile membership

Analyses involving the achievement outcome demonstrated several significant mean differences after controlling for prior achievement (pairwise z -test results ranged from 4.07 to 24.36, all at $p < 0.001$). Table 4 displays results. The Flourishing profile had the highest achievement, followed by the Average profile, then the Precarious profile. The Resigned profile and Vulnerable profile had the lowest means that were not significantly different from one another. The pattern of results was similar when achievement was standardized within grade, so we report unstandardized means for ease of interpretation.

Table 3 Student characteristics and teaching support as predictors of membership in student profiles

	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>b</i>	<i>SE</i>	<i>OR</i>
Flourishing versus average			Flourishing versus precarious			Flourishing versus resigned			Flourishing versus vulnerable			
Emotional support	0.25*	0.07	1.64	0.64*	0.08	2.55	0.56*	0.09	2.57	1.28*	0.10	3.59
Classroom management	0.52*	0.04	1.37	1.13*	0.04	1.88	1.03*	0.05	2.52	1.88*	0.10	6.56
Instructional relevance	0.49*	0.09	1.44	0.94*	0.10	1.49	0.94*	0.12	1.91	1.29*	0.11	3.63
Organization and clarity	0.37*	0.09	1.21	0.40*	0.09	1.37	0.65*	0.10	1.27	0.52*	0.13	1.68
Feedback-feedforward	0.19*	0.07	1.68	0.52*	0.07	3.10	0.24*	0.09	2.81	0.38*	0.13	1.46
Average versus precarious			Average versus resigned			Average versus vulnerable			Precarious versus resigned			
Emotional support	0.39*	0.05	1.48	0.31*	0.08	1.32	1.03*	0.07	2.81	-0.08	0.05	0.93
Classroom management	0.61*	0.04	1.84	0.52*	0.06	1.37	1.36*	0.08	3.90	-0.10	0.06	0.91
Instructional relevance	0.45*	0.05	1.56	0.45*	0.07	1.06	0.80*	0.09	2.22	0.01	0.06	1.00
Organization and clarity	0.04	0.06	1.04	0.28*	0.06	1.67	0.15	0.10	1.16	0.25*	0.07	1.28
Feedback – feedforward	0.13*	0.06	1.14	0.05	0.04	1.84	0.19	0.10	1.21	-0.08	0.07	0.93
Precarious versus vulnerable			Resigned versus vulnerable			Resigned versus vulnerable			Resigned versus vulnerable			
Emotional support	0.64*	0.06	1.90	0.06	0.06	1.90	0.72*	0.07	2.05	0.07	0.07	2.05
Classroom management	0.75*	0.07	2.12	0.07	0.07	2.12	0.85*	0.08	2.33	0.08	0.08	2.33
Instructional relevance	0.35*	0.08	1.42	0.08	0.08	1.42	0.35*	0.09	1.42	0.09	0.09	1.42
Organization and clarity	0.12	0.09	1.12	0.09	0.09	1.12	-0.13	0.11	0.88	0.11	0.11	0.88
Feedback-feedforward	0.06	0.06	1.06	0.09	0.09	1.06	0.14	0.14	1.15	0.11	0.11	1.15

For results involving background characteristics, see Supplementary Materials

b, unstandardized beta; *SE*, standard error; *OR*, odds ratio

**p* < .05

Table 4 Achievement means (controlling for prior achievement) across the profiles

	Vulnerable	Resigned	Precarious	Average	Flourishing
<i>M</i>	100.45 ^a	102.25 ^a	115.25	120.32	124.80
<i>SD</i>	52.38	37.69	29.28	30.49	31.91

Because the tests involving outcomes included controls for prior achievement, the *SD* actually represents the square root of the residual variance for achievement for each profile

^aThese two means were not significantly different. All other means were significantly different from one another

5 Discussion

Students from low-SES backgrounds are disproportionately likely to experience academic disadvantage and difficulty—but the adverse impact of experiences associated with low-SES (e.g., fewer resources at home) is not insurmountable, and research is needed to better identify students who are experiencing academic success and what factors contribute to this (Broer et al., 2019; Sirin, 2005; Winne & Nesbit, 2010). The present study sought to ascertain various subpopulations (or profiles) of students from low-SES backgrounds who varied in their patterns of personal academic agency—and to examine perceived teaching support factors and academic achievement associated with profile membership. LPA revealed five student profiles: Vulnerable, Resigned, Precarious, Average, and Flourishing profiles. The five perceived teaching support factors predicted students' membership in agentic profiles (i.e., Average and Flourishing profiles) over the other profiles—and the most consistent teaching support predictors were emotional support, classroom management, and instructional relevance. The Flourishing profile displayed the greatest achievement levels. As we discuss below, identifying salient personal agency profiles among students from low-SES backgrounds provides direction for practitioners and researchers to help sustain agentic profiles among these students and better assist those who would benefit from further support.

5.1 Student profiles

We identified five personal agency profiles mapped in terms of the two motives of success orientation and failure fearing (Covington, 1992). Two agentic profiles (moderate to high success orientation and low failure fearing) were identified: the Flourishing profile, which represented 14% of students from low-SES backgrounds, and the Average profile, which represented 32% of students from low-SES backgrounds. Combined, this is a promising finding in that almost half of students from low-SES backgrounds are faring well in terms of their agency profiles—which is made even more noteworthy given that the values in these two agentic profiles are in reference to the broader sample-wide means (incorporating students from mid-to-high SES backgrounds as well).

Turning to the low-agentic profiles (low success orientation and high failure fearing), we also identified two of these: the Precarious profile, which represented 28%

of students, and the Vulnerable profile, which represented 9% of students. The Precarious profile was interesting in that these students did not have particularly elevated levels of conduct problems. This combination suggests that this profile was faring reasonably well on conduct problems, but requires support to develop the other factors (e.g., see Sullivan et al., 2014). Combined, the low-agentic profiles reflect students from low-SES backgrounds who do not appear to experience adequate levels of agency at school and it is important to determine what may help them to move out of these profiles into more agentic profiles. Perceived teaching support provides one avenue to address this (discussed below).

We also identified one mixed profile, the Resigned profile (low success orientation and low failure fearing), which represented 17% of students, and displayed well-below-average perceived competence and perseverance, but average buoyancy and well-above-average conduct problems. This profile aligns with research showing that students may reach a point after experiences of academic challenge at which they abandon effort to protect their self-worth (Covington, 1992). In the case of our study, it is possible that the Resigned profile effectively navigates academic adversity (as evidenced by their average buoyancy) because they have become resigned to poor performance (well-below-average perceived competence) and thus do not put much effort into their schoolwork (well-below-average perseverance). We did not see any evidence of other mixed profiles (e.g., high success orientation, high failure fearing). This may be related to the personal agency factors we examined (perhaps different profiles are evident with other agency factors), or because of our focus on students from low-SES backgrounds (who can face more barriers to success in their schooling, or cultural differences between home and school; Aikens & Barbarin, 2008; Kraus et al., 2012; Stephens et al., 2012). Future research is needed to explore this further.

Taken together, the profiles reveal new knowledge about personal agency among students from low-SES backgrounds. For example, whereas variable-centered research shows that perceived competence and academic buoyancy are positively associated at a sample-wide level (Bostwick et al., 2022), this was not the case for the Resigned profile. Moreover, although adaptive agency indicators are negatively associated with conduct problems at a sample-wide level (Martin et al., 2022), this was not the case for the Average profile in particular, and the Precarious profile to a certain extent. Students who are below-average on the adaptive factors (perceived competence, school belonging, perseverance, and academic buoyancy), but who vary on conduct problems—well-above-average for the Vulnerable profile, above-average for the Precarious profile—would appear as very different students in the classroom and effective teacher support for these students could look quite different. The same is true for the Resigned profile and the Precarious profile. Our findings thus yield knowledge relevant for efforts specific to different profiles. For example, whereas the Precarious profile would benefit from efforts to boost both perceived competence and school belonging, for the Resigned profile efforts related to school belonging are less central and efforts may be better focused on boosting perceived competence. In that sense, our findings indicate the most salient areas of focus for practice.

5.2 Teaching support perceptions as predictors of student profile membership

The five perceived teaching support factors were associated with membership in different student profiles. More positive perceptions of teaching support predicted membership in the agentic profiles (Flourishing, Average) over the low-agentic (Precarious, Vulnerable) or mixed profiles (Resigned). In addition, more positive perceptions of teaching support predicted membership in the Precarious and Resigned profiles over the Vulnerable profile. The most consistent and strongest predictors (in order of decreasing influence) were classroom management, instructional relevance, and emotional support. It was interesting that the three most salient predictors traversed the three domains of pedagogy (Hamre et al., 2013)—thus, further underscoring the importance of emotional support, instructional support, and classroom management.

It is possible that classroom management played a significant role in predicting membership in agentic profiles because this factor is essential for student agency (Ryan & Deci, 2017) and research shows it is particularly important for students from low-SES backgrounds. That is, well-structured and non-disruptive learning contexts can help students from diverse backgrounds to develop their agency because the rules, norms, and goals are clear rather than being part of a “hidden curriculum” (Atlay et al., 2019). Alongside this, instructional relevance may play a salient role for students from low-SES backgrounds because research shows it means that teachers are better able to acknowledge the perspectives and experiences of these students—and thus to create a better fit for these students (Tomlinson & Jarvis, 2014) and less cultural mismatch (Stephens et al., 2012). Finally, emotional support means that students feel their teachers care about them and are attuned to their learning needs (Skinner & Belmont, 1993). This individualized attention is important for ensuring students feel valued and welcomed members of the classroom, and may be particularly important for students from low-SES backgrounds who may have to navigate differences in the practices and values of their home life and their school life (Tomlinson & Jarvis, 2014). Alongside the most consistent predictors, the other two practices (organization and clarity, feedback-feedforward) also predicted membership in agentic profiles, highlighting that all five teaching support factors are important avenues for practice.

5.3 Achievement across student profiles

Findings demonstrated that the Flourishing profile displayed the highest achievement (controlling for prior achievement), followed by the Average profile and then the Precarious profile. The Resigned and Vulnerable profiles had the lowest achievement. It is not surprising that the Flourishing profile had the strongest achievement given that the adaptive agency factors (of which this profile displayed high levels) are all linked with greater achievement (e.g., Roorda et al., 2011). The reverse is true for conduct problems (Kremer et al., 2016)—and the Flourishing profile was characterized by low levels of this factor. The fact that the other agentic profile, the Average profile, displayed the second strongest achievement was also expected for the

same reasons. Although we did not hypothesize any specific differences between the low-agentic and mixed profiles, it was interesting that the Resigned and Vulnerable profiles displayed similar achievement despite being characterized by very different levels of the agency factors. Perhaps these similar achievement levels occurred because the Resigned profile has begun to abandon effort to protect their sense of self-worth (Covington, 1992) and with this comes an alleviation of personal agency (as reflected in their higher scores on these indicators relative to the Vulnerable profile)—but also low achievement (Covington, 1992).

5.4 Implications for practice

One area for practice is to differentially target the personal agency indicators as appropriate to each student profile. This involves first identifying the specific focus for each student profile. For example, for students in the Average profile, efforts may want to focus on boosting perseverance (which was their lowest adaptive factor), whereas for students in the Resigned profile, strategies to boost their perceived competence and perseverance, and reduce conduct problems appear most pertinent. To identify student types within the classroom, teachers may have an informal idea of where students from low-SES backgrounds would be positioned within the different profiles, or they could use teacher assessments or student self-reports to better target support to different students' needs. Having identified the specific focus for each profile, it is necessary to curate efforts to meet the needs of each student type. For students in profiles requiring support for perceived competence, strategies include having students set self-focused goals for their learning (rather than other-focused goals; Martin et al., 2022). For students in profiles requiring support for school belonging, teachers may want to apply classroom approaches to develop a sense of community, and shared language and norms for interacting with others (Ryan & Deci, 2017). Perseverance can be increased by encouraging students to set growth goals that are not too distal and that are optimally challenging (CESE, 2021). To boost students' academic buoyancy, teachers can incorporate debrief time after giving feedback on an assignment to help students manage any negative emotional responses (Ahmed Shafi et al., 2018; see also CESE, 2022). Finally, conduct problems often occur because students do not feel a strong connection to their teachers or are not engaged in their learning. Teaching practices to improve these experiences are important, as discussed next.

Another potential area for practice is to target the teaching support factors. Although we cannot determine with our correlational design if boosting the teaching support factors would help students move into more adaptive profiles (experimental research is needed for this), nor whether students' perceptions of the teaching support factors would be impacted, we do provide some suggestions for practices as these have more broadly been identified as effective teaching practices. Starting with classroom management, efforts to boost students' perceptions of this practice could include seeking students' input in the development of classroom or school rules and norms, and providing rationales for why behavioral expectations are important (Skinner & Belmont, 1993). For instructional

relevance, students' perceptions of this factor can be increased by emphasizing the usefulness and applicability of learning tasks, and designing tasks to be personally meaningful to students (Hidi & Renninger, 2006). Emotional support can be promoted by listening to students' opinions, dedicating resources and time to all students, and supporting students' learning goals (Skinner & Belmont, 1993). Efforts to boost students' perceptions of feedback-feedforward should focus on providing concrete, targeted, and constructive feedback (CESE, 2022). Finally, to boost students' perceptions of organization and clarity, researchers suggest it is important to communicate expectations for learning, provide well-organized tasks, and offer clear directions for how students can succeed in their tasks (Jang et al., 2010; Skinner & Belmont, 1993).

5.5 Limitations and future directions

There are several limitations to consider when interpreting results and that provide direction for future researchers. First, apart from the objective achievement data, the study primarily relied on student reports. This means that it is not possible to ascertain the extent to which students' reports of the teaching support factors represent accurate interpretations, or whether common method bias impacted the results. Future research that incorporates both teacher- and student-reports of teaching support is important to address these limitations. Second, although the achievement data were longitudinal, our profile indicators and predictors were cross-sectional. This means we could not test causal ordering between the predictors and profile membership. Going forward, it will be important to ascertain whether perceived teaching support is associated with later profile membership. Relatedly, beliefs are typically considered to precede behaviors (e.g., Bandura, 2006). In an effort to gain an overall sense of students' functioning around these agency factors, we examined how students' beliefs and behaviors co-occur without considering possible ordering effects. In future, it will be important to consider how profiles of agency beliefs are linked with (profiles of) agency behaviors using longitudinal methods. This will yield knowledge about ways in which agency belief profiles can be targeted to promote subsequent behaviors.

Third, data were collected during the COVID-19 pandemic. In NSW in 2021, students were attending school as usual during the data collection period (remote schooling came into place for several months after data collection). Nonetheless, it is important to test these profiles with data collected at a different time to rule out any broader pandemic impact on students' experiences. Fourth, our study conducted analyses at the student-level. In future, researchers may consider multilevel designs, such as classroom-level analysis. We did not have access to classroom information and so could not explore potential profiles at the classroom level. This is an important question for future research given that perceptions of teaching support are likely to be more similar within classrooms. Fifth, we examined five important personal agency indicators, but there may be other indicators that warrant investigations of profiles (e.g., students' expectancies and valuing under situated expectancy-value

theory; Eccles & Wigfield, 2020). As such, research that considers other factors is important to extend understanding about the most salient personal agency factors for students from low-SES backgrounds. Finally, the reliability for truancy was slightly below accepted cut-offs; however, because this variable reflects students' actual behavior (rather than a latent construct), we proceeded in using this variable.

6 Conclusion

The present study identified subpopulations (or profiles) of students from low-SES backgrounds who varied in their patterns of intra- and inter-personal agency. These analyses have enabled us to identify subpopulations of students from low-SES backgrounds who are thriving academically—and they provide an idea into the perceived teaching support factors associated with profile membership and the achievement outcomes for each profile. In so doing, findings provide understanding about the experiences of students from low-SES backgrounds within schools and can help to inform practice and research going forward.

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Declarations

Conflict of interest The authors have no conflicts of interest to declare that are relevant to the content of this article.

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Informed consent Parents and carers may decline participation for their children using opt-out consent forms. Students may skip any question.

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Rebecca J. Collie Ph.D., is a Scientia Associate Professor of Educational Psychology in the School of Education at the University of New South Wales, Australia. Rebecca conducts research in the broad areas of wellbeing, motivation, and social-emotional development using quantitative research methods.

Andrew J. Martin PhD, is a Scientia Professor of Educational Psychology in the School of Education at the University of New South Wales, Australia. Andrew's research focuses on motivation, engagement, learning, and quantitative research methods.

Anaïd Flesken Ph.D., is a Senior Policy Analyst at the Centre for Education Statistics and Evaluation in the New South Wales Department of Education, Australia. Anaïd's research focuses on student engagement and wellbeing in NSW public schools.

Brianna McCourt Ph.D., is a Principal Policy Analyst at the Centre for Education Statistics and Evaluation in the New South Wales Department of Education, Australia. Brianna's research focuses on student engagement and wellbeing in NSW public schools.