Gender Equity in Melbourne's Select Entry High School (SEHS) System

Report to the Department of Education and Training, Victoria and Industry Partners, Portable and Huddle

PROJECT REPORT

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Background to the Report

This research paper reports on findings from a comprehensive synthesis of research related to gender and Melbourne's system of Select Entry High Schools (SEHS). The research described in this report was commissioned and funded by the Department of Education and Training, Victoria, with industry partners Portable and Huddle. This research is situated within a larger project entitled: *Gender Equity - Consultation and Codesign*. The report synthesises previous research in the field, alongside reflections on new data collected over 2021/2022 from students, parents and educators from both within, and in proximity to, the SEHS system, with the aim of generating original, empirically driven recommendations for policy and practice in the area of SEHS entrance for young women.

The project aimed to better understand and address the drivers of gender disparity for high performing girls at SEHS in Victoria, given the larger proportions of male-identifying students and the subsequent gender imbalance present within the system. As feminist scholars whose research engages with gender identities and sexuality, the authors acknowledge the complexities inherent to discussions of gender identities. Therefore, throughout the report, we use a range of socio-linguistic terms to represent gender. As the codesign workshops used to generate project data did not explore gender identity, we cannot know how the participants understood their gender identities. To reflect this, we have used the terms 'boys' and 'girls' in order to engage with gender disparity, and also the terms 'female identifying' and 'male identifying' and 'girl identified' and 'boy identified' to attempt to capture some of the nuances of contemporary gender identities (see, for example, Miller, 2016; Zimman, 2009).

Introduction

This document reflects the findings from a comprehensive review of the research literature addressing known drivers of gender imbalance for this population of students and families. The content of this review likewise maps on to the findings of the codesign data collection/analysis component of the project. The research presented herein covers

the following areas, each with a focus on gender-based considerations: giftedness, select entry schools, SEAL programmes, school choice, friendships, high-stakes testing, test anxiety and self-beliefs.

The authors of this document would like to note the context of the research - the COVID-19 pandemic. We know from research that the pandemic had unequally distributed gendered effects. This is evidenced by the prevalence of women globally who are employed in 'frontline work', unpaid care work as well volunteer community work (McLaren et al., 2020; Swan, 2020). The closure of childcare centres and schools during periods of lockdown meant that working mothers in heterosexual relationships did the majority of home schooling (Alon et al., 2020; Collins et al., 2020; Del Boca et al., 2020). The accompanying global recession meant that businesses adversely affected by social distancing, such as retail, meant that women-dominated sectors were impacted disproportionately (Alon et al., 2020). Feminist work shows us that the impacts of COVID-19 upon paid work and domestic labour were raced and classed as well as gendered, and "that it became visible that women, especially women of colour in paid and domestic care work and key worker roles were keeping the system running" (Swan 2020, p. 694). It was beyond the scope of this research to determine the effect that COVID-19 has had on female-identifying high achieving students and/or parents/carers who identify as women.

In relation to this project, which examines why there are more male-identifying students in Select Entry High Schools (SEHS), there is a paucity of research that focuses specifically upon select entry schooling and gender, and even less in relation to Victoria's select entry schools. Much national and international research focuses upon elite schooling (see, for example, Kenway et al., 2017), and gender and elite schools, specifically girls and elite schooling (see, for example, Charles, 2013 and Charles & Allan, 2014). Generally, the literature shows that gaining a place at one of Victoria's select entry schools is understood to be a highly competitive process (Kronberg & Cornejo-Araya, 2018) that is complicated by the location of the schools, social class, race and, we would argue, gender identity.

Key Themes from the Empirical Literature

The themes discussed below come from hypothesised causes of the current gender disparity in SEHS. They were developed in consultation with the broader project team, as well as based upon results from codesign data collection and analysis of data collected during the course of this project. Whilst these themes are numbered, they are not in any deliberate hierarchical order.

Theme 1: Parental attitudes around school choice

Unsurprisingly, parental attitudes and motivations are central predictors of school choice, as shown in both the international and national research in the field. Parents' attitudes and beliefs are understood to be key to decision making around school choice, and there is a perceived need for schools and local authorities to recognise the importance of this predictive influence (Bukhari & Randall, 2009; Dare, Smith & Nowicki, 2016; Tsolidis, 2009; Windle, 2009). The issue of parental attitudes is complex. For example, Bukhari and Randall (2009) argue that some of the variables that affect parental attitudes towards school choice are political leanings, religion, socioeconomic factors, parents' own school experiences, and parental decision-making patterns. Socioeconomic and cultural factors are central considerations in Australian research around school choice and parental attitudes, as are attitudes towards school composition.

Social class and socio-economic status feature heavily in the literature around giftedness generally, where it is widely understood that middle class and affluent families are more likely to have children who attend select entry schools (Tham, 2021) and who are recognised as gifted (Dare, Smith & Nowicki, 2016). Dare, Smith and Nowicki identify in their 2016 study, that amongst the parents of gifted children that they researched with, 77% had completed graduate degrees, which suggests that they had sufficient educational background to advocate strongly for their children's education. Conversely Windle's 2009 research with communities in Melbourne's north found that amongst the migrant communities that dominate this area of the city, there is widespread unfamiliarity

with school structures and strategies and, "the circumstances of migration and settlement, including difficult relationships with schools, have resulted in continuing educational disadvantage for the [Turkish] community" (p.236). For Windle, much of the work done around advocating wider school choices, "has focused on the relationship between choice and technocratic and neoliberal definitions of efficiency and quality predicted by economic theory, while the wider implications for relationships of obligation, control and ownership under marketised conditions are ignored" (p. 232). This means that whilst choices may appear to have widened, they are based upon economic rationalisation and do not take into account the complexities inherent within class structures that work to advantage some and disadvantage others. Conversely again, for Walsh and Jolly (2018), the Australian 'tall poppy syndrome' can act as a barrier for students and parents in relation to select entry schooling.

Furthermore, Tsolidis (2009) writes about the complexities of school choice for lower income families who may not feel that they belong in schools dominated by particular middle-class subjectivities. She also alerts us to the polarisation of schooling that is reflected by the 'white flight' of affluent, white and middle-class parents which means that "schools with high enrolments of racialised and ethnicised students are shunned, adding a further dimension to the polarisation of school communities (p.6)".

Christina Ho (2019) finds that this is similarly the case in Sydney SEHS, and that the prevalence of Asian students within Sydney-based SEHS reflects the dramatic growth in Asian migration to Australia over the past 20 years. She writes that this is the cause of much anger for white Anglo-Australian parents who do not want their children to be an ethnic minority at school. Ho articulates that white Anglo-Australian parents position Asian parents in problematic ways, as 'Tiger Parents' whose desire for success for their children acts in opposition to the 'relaxed' parenting styles of Anglo families. The use of tutoring within Asian communities is a particular source of ire for Anglo parents according to Ho, who understand this as meaning that,

'Genuinely gifted' students now had no chance of entry into a selective school.

They argued that although these schools were designed for naturally gifted students, who would be unchallenged or bullied at comprehensive schools, they were now transformed into academic 'hothouses' catering for those who relied on tutoring and 'cramming', rather than talent (Ho, 2019, p. 519).

Li and Xie's work (2020) illustrates that socio-economic status is less of a factor in educational expectations for Asian parents than for white western parents and also in the expectations that students from Asian and western backgrounds have for themselves. In addition, the Asian dominance of SEHS and their equivalents globally are an enormous source of pride for Asian communities (Ho, 2019; Li & Xie, 2020). Crucially, the work of Ho (2019) and Li and Xie (2020) illustrate how Asian parents, particularly more recent migrants, use tutoring centres because they don't know the school system and feel that they can't guide their children themselves.

This is also the case for non-Asian migrant families for whom SES and cultural and social capital factor more heavily in their involvement with choices around schooling (Anthony-Newman, 2019). This means not only that the children of migrant families may miss out on educational opportunities but that schools miss out on the input of migrant families who "have rich resources to offer, but because of language barriers, lack of information on the school system available for parents, and inadequate preparation of teachers working with immigrant parents" are often absent from school boards and parent-teacher interactions (Anthony-Newman, 2019, p. 373). It is important to note here that families from racialised minority backgrounds may have negative experiences of school and therefore be less willing to engage with schools, particularly if they do not see themselves represented within the teaching staff (Delale et al., 2020). This is also the case for Aboriginal and Torres Strait Islander families who may not only have negative experiences of schooling but who also may find themselves deficit positioned within the Australian education system (Patfield et al., 2022; Sarra et al., 2018).

Additionally, given that both current Australian media and research from the field continue to amplify messaging that girls will perform better, exhibit greater learning confidence,

and have greater opportunities in a single-sex environment, freed up from prevailing gender role expectations (Bridge, 2020; Cherney & Campbell, 2011; Fitzsimmons et al., 2021), parents of girls may be invested in their daughters attending a single-sex high school. Of interest to this exploration is the fact that, in addition to Mac.Robertson within the SEHS system, the central Melbourne metropolitan region is home to four other single-sex government schools for female-identifying students. Accordingly, should families not gain entrance to Mac.Robertson as their first-choice SEHS placement, other centrally located girls' schools may be more attractive than the two select entry co-educational high schools located in the outer suburban regions of Melbourne.

In summary, the attitudes of parents and carers are a crucial component of decision making in families around schooling. It is imperative that local, state-based and federal governments engage with the diverse spectrum of these communities in order to develop a more sophisticated understanding of the complexities of contemporary parenting as they relate to school choice and engagement with select entry high schools.

Theme 2: Gifted students and the role of teaching staff

Teachers play a major role in the success of gifted students within both mainstream and select entry schools (Kronberg & Cornejo-Araya, 2018). The research demonstrates the importance of ongoing teacher professional development in relation to working with gifted students (Kronburg & Plunkett, 2012). The importance of teachers to the outcomes of gifted students is not limited to teaching methods, but also to the relational aspects of learning and teaching; for example, Kaman and Kronburg (2012) write that "students' relationships with their teachers have a direct effect on motivation, adjustment and self-regard. The quality of teachers and teaching methods contribute directly to the students' experience of their learning environment" (p. 5).

When we examined the role of teachers in relation to gender and giftedness, we found that research in gender and schooling reflects research related to gender and higher education; that is that women and girls are under-represented in relation to high

achievement in STEM subjects (Brenøe & Zölitz, 2019; Ellison & Swanson, 2018; Lim & Meer, 2017). Lim and Meer's research (2017) found that girls are more likely to achieve in STEM subjects if they are taught by a woman-identified teacher, whilst Brenøe and Zölitz (2019) found that where women and girls are exposed to more female peers, they are less likely to excel within STEM fields. The growing emphasis towards the importance of STEM subjects has many implications for women and girls, ranging from the economic (ibid.) to the social (Ellison & Swanson, 2018). The emphasis on the importance of STEM is also problematic because it reflects the social hierarchy of knowledge and the privileging of masculinist and white Cartesian ways of knowing within and beyond Australian education (Moreton-Robinson, 2004; Nicholas & Agius, 2018). The privileging of STEM in this way has been shown to have an impact upon the educational achievement of African American female-identifying students in the USA and that "a sense of segregation in STEM education settings can potentially affect one's racial, ethnic, and cultural identity, as well as persistence in STEM fields" (Ireland et al., 2018, p. 235). Further research is needed around the gendered, ethnic and racialised dimensions of STEM within the Australian context.

Research also shows us that school context is a vital factor in teacher expectations of students, and that race, gender and SES influence both the aspirations of students and their families as well as teacher expectations (Van den Broeck, Demanet and Van Houtte, 2020). Although Lie and Xie's (2020) research illustrates that SES is less of a factor for Asian families, schools are nevertheless the place where most interactions occur around expectations, and the socio-economic context of school has been shown to impact on teacher expectations (Koshy, Dockery & Seymor, 2019; Van den Broeck, Demanet & Van Houtte, 2020). This means that students in lower socio-economic areas of Melbourne may miss out on SEHS because their teachers do not have high expectations of them (See Tsolidis, 2009; Windle, 2009).

Whilst teacher expectations are a factor in the educational outcomes of all students, it is crucially important for Aboriginal and Torres Strait Islander students (Buckskin, 2019; Gray & Beresford, 2008; Sarra et al., 2018). This is because historically, Australian

education and therefore its educators, have been socially conditioned to have low expectations of Indigenous students. Where high expectations have been in place, this has often been from within a deficit framework that "posits that Indigenous children are less able to learn than their non-Indigenous counterparts because of their external situation" (Sarra et al., 2018). Sarra and colleagues articulate the need for ongoing teacher professional development in this regard and suggest the adoption of two-way learning and teaching (see Purdie, Milgate & Bell, 2011; Sarra et al, 2018). For Patfield et al. (2022), not only do low school-based expectations stymie the aspirations of middle-class Indigenous Australian, low expectations reflect the material effects of settler-colonial narratives where,

> Indigenous Australians are always afforded the lowest racial capital, even when other groups such as migrants from non-English speaking backgrounds experience an adjustment in the value of their racial capital as newer groups enter the country. Such entrenched social forces emphasise the explanatory power of race in terms of differing life chances, given that although all individuals and groups have power to exercise agency, their life chances can be circumscribed due to the lived impact of race (Patfield et al., 2022, p. 83).

This means that all Australian schools, including SEHS, have significant work to do to ensure the equity of opportunity for all students. Whilst teachers play a role in any such changes, it is the education system writ large that needs to be educated around the importance of interrogating dominant discourses around race and educational achievement.

Theme 3: Select entry schooling and SEAL programmes

Whilst there is a paucity of research that focuses specifically upon select entry schooling, there is a growing field of research that focuses upon Victoria's Select Entry Accelerated Learning (SEAL) programmes and the way that these work as an accompaniment, or alternative to, select entry high schools (Kronberg & Cornejo-Araya, 2018). SEAL

programmes are interesting in that research shows that they are highly successful within rural contexts where they tend to have a 'student-centric' view of justice (McLellan, 2021). However, McLellan (2021) also finds that SEAL programmes create a hierarchy of learning that privileges SEAL students, and several authors make a case of the integration of gifted students and SEAL learning techniques within mainstream classrooms (Kaman & Kronberg, 2012; Kronberg & Cornejo-Araya, 2018).

We did not find research that looked specifically at the gender balance in SEAL, but we suggest that there are similar issues in relation to teacher professional development and the identification of students with high abilities.

Theme 4: Cultural Composition of Selective Entry High Schools

As indicated in the data provided by the Department, in 2021, 87% of students attending SEHS schools were from a language background other than English. Research from the field suggests that this cohort is primarily comprised of students from various Asian backgrounds, with the most prominent language backgrounds being Vietnamese, Mandarin and Cantonese (Watkins, 2017; Tham, 2019). This is likely due to the strong emphasis that many Asian migrant families place upon academic performance, inclusive of tutoring as an entrance strategy into the SEHS system, in an attempt to ensure that the risk of migration 'pays off' (Ho, 2011). A central theme of research exploring this issue is the sense of in-group/out-group social organisation of selective entry schools, wherein Asian students were considered to have had extensive tutoring and preparation and where these schools were viewed as hyper competitive.

With respect to the cohort of Asian students, the concept of 'classed ethnicities' (Archer & Francis, 2006) helps to explain the ways in which students' subjectivities are "marked through notions of class-based knowledge and power, as well as through family ethnic histories and experiences that make up how individuals understand themselves", including an understanding of how broader discourses of 'success' and 'aspiration' might apply to them (Tham, 2019, p. 82). While these discourses were perceived as

advantageous in some way to the Asian students in Watkins' research (2017), it was notable that teachers felt as if they were struggling to attract and keep Anglo-Australian students in the select entry system.

As Watkins (2017) concludes from her multi-year Australian Research Council funded project, selective schools may be viewed as "too Asian", with "many parents of Anglo-Australian backgrounds simply look(ing) to alternatives […] opting out of the public system altogether and choosing to educate their children in the far less ethnically diverse private system" (p. 2306). The broad Australian trends of migrant families opting for participation in the academically selective system and Anglo families aiming for entry into the private system has been echoed elsewhere (Tham, 2019; Baker & Chrysanthos 2019).

Research shows us that Anglo-Australian parents carry anger towards the perceived Asian dominance of SEHS (Ho, 2019), and position Asian families as somehow 'gaming' the system through the use of tutoring. As previously stated, Ho reports that this is often because Asian families from more recently arrived migrant communities do not have the social capital to negotiate the Australian school system on behalf of their children. Ho's research also demonstrates that systemically, SEHS are separate from mainstream public schools, and that because of this and, we would argue, the method of entry (examination), the demographic composition of SEHS do not reflect the cultural or social diversity of Australian society nor the demographic profile of the local areas in which they are located (Ho, 2019). Given comparisons of publicly available data on the four Melbourne-based select entry schools and the neighbourhoods in which they are located, this appears to be the case for the Melbourne system as well.

Theme 5: Gender-based Considerations related to High School Travel Time

Melbourne's four select entry schools are located in disparate parts of the city as shown on the map below. The two single-sex select entry schools are located in the heart of the city, with myriad public transportation options. The two co-educational select entry schools are located in outer suburban regions, on opposing sides of the city with

significantly fewer and less frequent public transportation options. As compared to the single-sex girls' school (Mac.Robertson), the single-sex boys' school (Melbourne High) offers approximately 70 additional places for male-identified students for each of its four year cohorts (Years 9-12; myschool.edu.au). This imbalance of places in a centrally located SEHS school has implications for female-identified students who successfully obtain a place in the SEHS system, but who cannot be accommodated by an available place at Mac.Robertson.
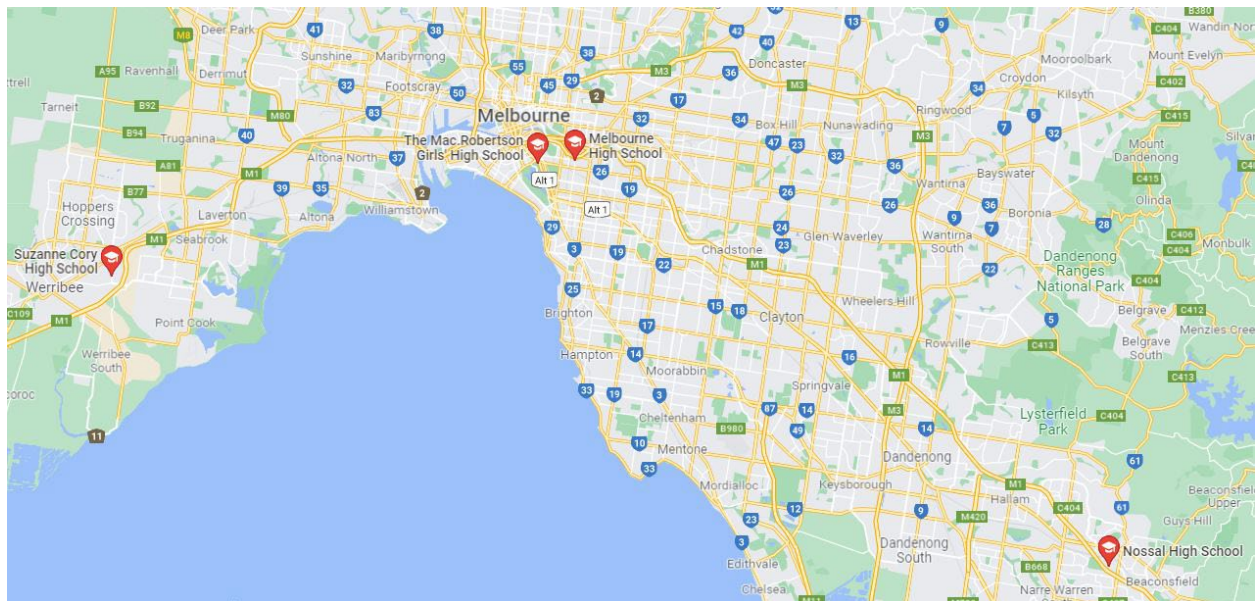
Given the varied locations of the four schools, the literature on gender-based considerations with respect to travel to/from high school was considered. International research has highlighted that male-identified students are significantly more likely to engage in 'active' travel to/from school (Pereira et al., 2014), with this cohort two to three times more likely to independently cycle to school than female-identified high school students (McDonald, 2012). Research from the Australian context has shown similar outcomes, with nearly three times as many adolescent boys cycling to school than their female peers (Leslie et al., 2010). Findings from this large-scale research has shown that higher perceptions of safety were positively associated with girls' active travel; notably, this association was not present for boys (ibid). This is in keeping with national research from the United States which suggests that parents' limits on their daughters' mobility are

stronger than limits placed on the mobility of their sons (McDonald, 2012). Gender is clearly a factor when it comes to decision making around both travel time and method of travel for high school students and their families; it stands to reason this offers some additional explanation for girls declining a SEHS placement which may be viewed as too far to reasonably travel.

Theme 6: Friendships

There is research that examines the importance of friendships in the lives of young people, and that there are raced, classed, gendered dimensions to this phenomenon. In addition, research by Sosnowy et al. (2019) demonstrates how neurodivergent young people often have difficulties in making and maintaining friendships. Often, the parents of neurodivergent young people perceive that their children have issues with socialising, whilst their children do not. Sosnowy et al. (2019, p. 48) report that for neurodivergent young people, "not understanding social rules in various contexts, such as in everyday conversation, or not wanting to adhere to social norms because it took a lot of effort and felt uncomfortable" were barriers to making and maintaining friendships with non-neurodivergent peers. Their work strongly advocates the adoption of the social model of disability (Shakespeare, 2006) within educational spaces, and states that schools and parents need a broader understanding of friendship for neurodiverse young people.

Friendships are important to educational success (Felmlee et al., 2018; Kretschmer, Leszczensky & Pink, 2018; Sonowsky at al., 2019). More than this, they are crucial to the mental health of children and young people and have been shown to impact upon the likelihood of experiencing cyberbullying and to shape pro and anti-social behaviours (Felmlee et al., 2018). With regards to gender, it has been shown that there are gender-based differences in how girl and boy-identifying students make decisions around friendship. Kretschmer, Leszczensky and Pink, (2018) illustrate how girls tend to prefer emotional closeness within dyadic relationships, whereas boy-identified students tend to interact within larger peer groups. This research also suggests that girls are more likely to gravitate towards other girls who have similar intellectual abilities, whilst boys will base

friendships on other factors - such as the possibilities for fun. That girls put such emotional importance on friendships may mean that they are less likely to want to move schools in the middle of their high school journeys. Plunkett and Kronberg (2007) show us that gifted children may have more advanced social and emotional maturity than chronological peers in psychosocial spheres such as friendship patterns and that they tend to "prefer friends who are their intellectual equal and can use their maturity as an asset to develop and nurture strong friendships" (p. 36).

The ways in which young people are socialised to behave in normatively gendered ways is well documented within the research (for example, Francis, 2000; Ringrose, 2007; van der Vleuten, Steinmetz & van de Werfhorst 2018). We have shown that normative, socially accepted ways of behaving as boys and girls impact on how friendships are made and maintained. There is also evidence that suggests that gender norms impact on how cisgender boys and girls perceive and enact competition, for example that girls are also more altruistic and less risk taking than boys (Dreber, von Essen & Ranehill, 2014). Literature on gender and competition in education also reports that boys are more likely to succeed in mathematics than girls and that gender norms around achievement, ability and competition impact upon this significantly (Dreber, von Essen & Ranehill, 2014; Irriberri & Ray-Biel, 2019).

Race and ethnicity also feature in the research around friendships. We have already seen the perceived importance of this in research that shows the fears that Anglo-Australian parents can have around sending their children to 'Asian' SEHS (Ho, 2019; Tsolidis, 2009; Tham, 2019; Watkins, 2017). Ho (2019) writes that SEHS in Sydney are dominated by students from Asian backgrounds, and that whilst there are low incidents of racism, ethnicity defines friendship groups within these schools. Ho demonstrates how friendship groups are often structured via linguistic background, meaning that racialised LBOTE students from non-Asian backgrounds may struggle to make and maintain friendships within SEHS.

Theme 7: High-Stakes Testing and Gender (In)equity

Despite research highlighting the negative ramifications of high-stakes testing, including implications for market competition and parental choice (Lingard, 2010; Mockler, 2013), student stress (Dufler et al., 2012) and teacher deprofessionalism (Lobascher, 2010), high-stakes testing appears to be a stable characteristic of the current Australian schooling system. As with many elements of pedagogy and practice, high-stakes testing is not a gender-neutral activity (Booher-Jennings, 2007). Researchers across western nations have documented female students' underperformance on high-stakes tests; the greater prevalence of test anxiety in populations of female students (Salehi et al., 2019; Hogberg & Horn, 2022; Malespina and Singh, 2022); and the implications of this phenomena for female students' academic trajectories given the well-established predictive impact of test anxiety on test outcomes. High-stakes tests have been found to mask the true abilities of female students, further entrenching gender-based inequalities in schooling. Case in point, in their large-scale research into differential outcomes by gender identity, Malespina and Singh (2022) found that, after statistically controlling for both test anxiety and students' self-beliefs about their ability, gender-based differences in exam outcomes were no longer present. In other words, this research suggests that, if female students possessed similar levels of confidence in their own capabilities and capacity for success on exams as male students, they would achieve similar (or better) exam results than their male peers. Hogberg & Horn's (2022) parallel investigations into high-stakes testing and stress using testing data from more than 300,000 primary and high school students across 31 countries across the European Union found that female students experienced significantly greater emotional distress as a result of high-stakes testing, prompting them to conclude that,

> …because high-stakes testing is used to sort students in stratified education systems, the findings in this study have implications for policymakers interested in how such stratification shapes the broader experiences of students in school. Policymakers that value student well-being would be advised to consider

alternatives to high-stakes testing or ways to lessen the stress caused by testing (p. 11).

Of greatest relevance to the question of gender equity in Melbourne's select entry schools, is recent research by Taylor (2019) titled "Fairness to Gifted Girls". Taylor's research investigated the use of high-stakes high school entrance examinations in New York City's select entry high schools - a parallel environment in terms of schooling structure and selection for high achieving students. As with Melbourne's SEHS, select entry high schools in New York City have disproportionately greater numbers of male students, with female students representing just 44.6% of the population due, in large part, to female students' underperformance on the mathematics component of the entrance exam. However, Taylor's investigations show that exam performance does not accurately reflect female students' abilities; notably, gender comparisons of students' grade point averages (class marks) for students who sat the exam indicated that girls earned the same teacher-allocated grades as boys who achieved higher exam scores. Further, simulations on what admissions would look like if class marks were used instead of a single high-stakes test found that, if grade point average was the sole admissions criterion, the proportion of girls across the city's select entry high schools would have been 68%. Taylor (2019) concludes,

> In light of the underrepresentation of female, African American, and Hispanic students, the imprecision in prediction found for the SHSAT [*entrance exam*] may make it difficult for the city to justify its continued use as the sole gatekeeper to New York's elite high schools. The fact that seventh grade GPA [*Year 7 average class marks*] is a far better predictor of high school success and is relatively gender-fair suggests that it should be an important part of the admissions process (p. 89).

Given the dearth of current Australian research examining this phenomenon locally, these large-scale international research investigations offer important insights into how reliance

on a high-stakes entrance exam may be disenfranchising young women who wish to attend Melbourne's SEHS.

Further, given the magnitude of difference specific to the numeracy elements of entrance exams in Taylor's (2019) research, coupled with what is known about the impact of teachers' lower expectations on girls' (under)performance in maths (Cimpian et al., 2020), this research has additional implications for the SEHS entrance exam. It is of critical importance that weighting and scoring practices associated with the SEHS entrance exam are refined in accordance with this body of literature, given the numerous social drivers of success in the area of numeracy for male-identified students, coupled with parallel subject-specific inequities faced by female-identified students.

Theme 8: Academic Self-Concept, High Ability Students and Gender

As previously noted, some Australian parents hesitate to consider a placement in select entry high schools due to perceptions of intense academic competition for students at these schools (Butler, Ho & Vincent, 2017). While some students may thrive in environments where they are surrounded by similarly high achieving peers, Australian researchers investigating select entry high schools have written about the "big fish, little pond effect" (BFLPE) by way of explaining the phenomenon of equally able, high-achieving students exhibiting lower academic self-concepts within academically selective high schools and higher academic self-concepts within mainstream schooling environments (Marsh & Hua, 2003). The BFLPE has been replicated across multiple countries, cultures and schooling contexts (see multi-context analyses presented in Seaton et al., 2009 for an overview), demonstrating that high-achieving students sitting at the top of their class within mainstream schooling environments typically exhibit higher academic self-concepts than similar ability students who had shifted to an academically selective school where they are no longer performing at the top of their class.

The premise of this phenomenon is that one's self-beliefs are based, in part, on social comparison using local, contextual norms; students regularly carry out comparisons of

their own achievement to others in order to infer their ability and develop their self-beliefs. Critically, higher beliefs in one's academic capabilities (academic self-concept) predict higher academic achievement and related trajectories, even when controlling for prior achievement and intelligence (Huang, 2011). Given research which has shown that female students are more likely to engage in social comparison (Guimond et al., 2007), it is not surprising that more recent research into the BFLPE has explored cohort differences by gender. Most notably, a study of over 35,000 high school students comparing science academic self-concept by gender and school make-up (e.g. low/high achieving school environments) found that the BFLPE was substantially larger for females than for males (Plieninger & Dickhäuser, 2015). The authors concluded,

> In other words, females, compared to males, more strongly seem to rely on the performance of their schoolmates when forming their science self-concept and therefore suffer more from the invidious effect of school-average achievement in high-ability schools (ibid, p. 223).

This line of research has direct relevance to parents'/students' school choice where concerns about 'hyper-competitive' select entry schooling environments for female students have some support in the empirical literature. School leaders and educators at SEHS schools may benefit from critical exploration and reflection on how social comparison/competition functions within their schools to serve some students while disadvantaging others. Communicating any strategies undertaken in their schools to enhance female students' academic self-concept and reduce social/academic comparison would be likely to make SEHS more attractive to female applicants and their families.

Conclusion

Research in the field demonstrates that parental decision-making and teaching staff play crucial roles for girls' educational achievement, including in decision making processes around SEHS entry. SEAL programmes also play an important role in the lives of gifted

students, particularly those in rural areas or who feel that SEHS is not for them. The intersections of class, socio-economic status, Indigeneity, race and gender identity have been shown to impact significantly upon the educational outcomes of young people as well as in decision making around select entry schooling. Whilst we have not found research that explores gender identity, giftedness and select entry schooling, we know from our own and other research that for trans* and gender diverse students, single sex schools are not necessarily safe spaces. Here again teaching staff are key to positive educational outcomes (Ullman, 2017) as is the provision of appropriate facilities within schools such as toilets (Ingrey, 2018).

School location and proximity to public transportation, as well as parents' and students' attitudes towards independent travel are also often cited as significant issues for families. As Kronberg and Cornejo-Araya (2018) stress, "The concern still exists for equal access opportunities, especially for those gifted and talented students living in remote areas and in terms of the lower expectations and provisions for students from rural areas, Indigenous and low socio-economic background" (n.p.).

Lastly, given what is known about high-stakes testing, test anxiety and gender, and the subsequent disadvantage and inequity for female students, considerations of the SEHS entrance test are warranted. Additionally, due to trends related to female students' academic self-concept in the area of STEM and underperformance on high-stakes testing in the mathematics domain, further investigations into the impact of exam weighting are strongly recommended as a result of this research.

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