Low School Belonging Predicts whether an Emerging Adult will be Not in Education, Employment, or Training (NEET) Post High-School

Abstract

Children who are excluded from school may end up being excluded from other social institutions. Yet little research has considered whether low school belonging is a risk factor for not being in education, employment, or training after graduation. Using two longitudinal cohorts from Australia (N = 14,082; 51% Boys), we explored this relationship. Controlling for a range of individual and school level covariates, we found that low school belonging at age 15 is a consistent and practically significant predictor of NEET status at ages 16-20. We conclude that this relationship is unlikely to be the product of low school belonging lowering the chances of students graduating high-school. Rather, low school belonging had a unique association with NEET beyond graduation. Given that NEET represents a range of vulnerabilities, educational policy and practice must find ways for schools to create opportunities for all students to feel included, valued, and accepted.

Educational Impact and Implications Statement

Every child has the right to belong. Ensuring that all children feel like they belong at school is a central goal of education. This is because of the importance of belonging for children's total wellbeing. In this research, we provide evidence that school belonging is an important predictor of whether a young person will not go on to further education, employment, or training (otherwise known as NEET) after leaving compulsory schoolings. We show that school belonging is a stronger predictor than socioeconomic status. We also show that students who feel like they belong at school are less likely to become NEET even if they don't graduate from high-school. This implies that educational policy needs to focus on ensuring that all children feel supported, valued, and included.

Keywords: school belonging; NEET; inclusion; attainment

Word count: 7370

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Every child has the right to feel like they belong (Johansson & Puroila, 2021). Not only is belonging a basic human need (Baumister & Robson, 2021) it has lifelong implications for wellbeing (Steiner et al., 2019). Educational systems, however, vary in the degree to which they provide opportunities for belonging and whether those opportunities are inclusive of all students (Johansson & Puroila, 2021). Importantly, schools are a central social institution that have historically reflected a range of systemic beliefs about who does and does not belong and thus can act as gatekeepers to future feelings of integration in society and its associated institutions (Armstrong et al., 2011). In the current research, we explore the potential link between students experiences of belonging to their school and their chances of not being in education, employment, or training (NEET) after leaving compulsory education. We explore this link while controlling for known links between various demographic and academic achievement variables and NEET status. In two longitudinal cohorts of Australian children, we found that low school belonging is at least as strong a predictor of NEET status as socioeconomic status (SES). This suggests that schools and school systems who do not provide the inclusive, welcoming, and accepting experiences that lead to feeling of belonging to a school may contribute to poorer opportunities for occupational attainment in the students they serve. Thus, a particularly important aim of this paper is to recontextualize NEET as part of wider social exclusion that has its origins in social institutions and systemic beliefs about who does and does not belong (Slee, 2019; Thompson, 2011)

The transition from compulsory schooling to further education or employment is one of the most critical, complex, and increasingly challenging of all developmental transitions (Dietrich et al., 2012). Outcomes of this period have lifelong implications and thus young people's experiences during this transition are crucial (Zarrett & Eccles, 2006). Youth who

do not transition into further employment, education, or training (NEET) after compulsory school are of particular concern to policy makers and government because this tends to signal a range of vulnerabilities (Elder, 2015). Youth who are NEET are at far greater lifetime risk of social exclusion (Bynner & Parsons, 2002; European Commission Joint Research Centre, 2015; Woodhouse & Thorpe, 2021). Although research has identified the social status, and academic achievement patterns of NEET youth (Bynner & Parsons, 2002; European Commission Joint Research Centre, 2015), little research (c.f. Muir et al., 2015) has considered the role of students' opportunities to experience belonging at school. In this paper, we suggest that low school belonging may be a critical precursor to NEET status.

School Belonging

Beyond academic success, school may provide one of the most critical pathways through which young people can fulfill their basic psychological need to belong (Baumister & Robson, 2021; Osterman, 2000). A student's sense of school belonging has been defined as their sense of affiliation with their school and how accepted, respected, included, and supported they feel by others within their school environment (Goodenow & Grady, 1993). Belonging to school is so important that it has been described as a pervasive psychological drive (Baumeister & Leary, 1995; Baumister & Robson, 2021; Leary, 2021) and a fundamental priority of schooling (Allen, Kern, et al., 2018, 2017; Allen & Kern, 2017). Educational researchers and practitioners have recognized the critical importance of school belonging in predicting a range of essential educational outcomes (Allen, Kern, et al., 2016; Korpershoek et al., 2019). School belonging has also been found to be an important predictor of mental health and emotional wellbeing (Arslan, 2018; Parr et al., 2020; Zhang et al., 2018). There is also evidence that school belonging is associated with the post-school aspirations of students (Irvin et al., 2011) and may be one of reasons for school drop-out (OECD, 2018; Sánchez et al., 2005; Slaten et al., 2016).

A student's sense of school belonging draws heavily on the social connections they

build at school including relationships with peers, teachers, and parents (Uslu & Gizir, 2017). As such, social and emotional competencies are an important aspect of a student's sense of belonging at school (Allen & Kern, 2017). Students who do not feel like they belong express feelings of alienation, isolation, and disaffection (Allen & Kern, 2017). Low school belonging has been found to predict social exclusion (Arslan et al., 2020). And thus social exclusion at school may create a pattern of exclusion throughout life. School belonging is not limited to social relationships and can also include the sense of belonging a student has to the educational institution itself and the complex interactions of the socio-ecology within a school system (e.g., such as its policies and practices) (Allen, Vella-Brodrick, et al., 2016; Allen, Vella-Brodrick, et al., 2018).

There are many mechanisms by which low school belonging might lead to non-participation in education, employment, and training in adulthood. Low school belonging during schooling is associated with increased emotional distress, physical violence (both as a perpetrator and a victim), increased prescription and other drug misuse, and STI diagnoses in adulthood (Steiner et al., 2019)—all factors which have been found to reduce employment (Hammer, 1997). Low school belonging can lead to poor psychological health in adolescence, which in turn, could lead young people to be excluded from social institutions (Allen, Kern, et al., 2018; Sapiro & Ward, 2019). Low school belonging is also associated with low academic motivation and academic stress, and patterns of educational dissatisfaction that may continue beyond compulsory schooling (Abdollahi et al., 2020; Allen, Kern, et al., 2018). We outline some broader theories for the connection below.

Not in Education Employment or Training

NEET is a well-studied but controversial concept in the social sciences. Its critics note that, as a group, NEET youth are heterogeneous and that many youths drift into and out of this category over time (Holte, 2017; Serracant, 2013; Yates & Payne, 2006). However, NEET status remains a critical predictor of life-long social exclusion and a focal point of

interventions aimed at increasing the life chances of young people (Bynner, 2012). Although NEET categorization may miss important nuances in interventions for specific individuals, it remains a critical concept for social policy (e.g. Woodhouse & Thorpe, 2021). This is because it encompasses a range of vulnerabilities (Elder, 2015) and is associated with a range of health, security, wellbeing, and lifetime attainment concerns (Bynner, 2012). Even though NEET can be a transitory state, a single period of being NEET tends can increase the chances of long-term negative occupational outcomes and, in particular, unstable and tenuous employment over the life span (Ralston et al., 2016).

There is established research on the link between negative school experiences and NEET (e.g., Muir et al., 2015). For the most part, this literature has focused on the outcomes of social exclusion (e.g., rejection and ostracism as well as educational outcomes like disengagement and absenteeism) or on narrow aspects of exclusion like bullying (Muir et al., 2015). Some qualitative research has noted that young people who are either NEET or at risk of being NEET report that their sense of exclusion from school involved both peers and teachers as well as a general sense that they did not belong (Muir et al., 2015). Yet large-scale quantitative research exploring both school belonging (as a particularly broad indicator of exclusion) and NEET is absent despite their strong theoretical links.

From a social science perspective, belonging and NEET can be seen as an outworking of social identity (Bynner & Parsons, 2002) and the politics of belonging (Halse, 2018). The politics of belonging is a framework for examining the ways in which social positions and identities are valued differently and contested and the ways in which systemic factors determine community boundaries around who does and does not belong (Yuval-Davis, 2006). Put simply, the politics of belonging aims to highlight the ways in which inclusion is defined and policed within social institutions.

Low school belonging could thus be predictive of NEET status because feelings of exclusion at school may be driven by the same systemic issues that exclude individuals from

the labor market (Bynner & Parsons, 2002; Côté, 1996; Halse, 2018). Different social positions (such as gender, ethnicity, and social class) and self or communally adopted identities are valued differently by social institutions and this can lead to patterns of exclusion (Yuval-Davis, 2006). Some youth face both implicit (e.g., school personnel stereotypes about race, class, and gender) and explicit (e.g., race, class, and gender-based exclusionary policies) barriers to full membership into social institutes such as work and school (Brown, 1995; MacDonald & Marsh, 2005; Yates et al., 2010). Thus, low school belonging and NEET are likely linked because they represent a pattern of being excluded from critical social institutions.

This association could be explained via the mechanism of cumulative disadvantage. Systemic factors might lead particular individuals to feel excluded from school: low school belonging may result in a failure to graduate from high-school because a young person's experience of not belonging causes them to disengage from school; youth who do not feel like they belong are more likely to be absent, to engage in truant behavior, and to leave school early without a qualification (Korpershoek et al., 2019; OECD, 2018; Sánchez et al., 2005). All of these factors make entering further education, training, or employment more difficult. Thus, we seek to explore the role of high-school completion in explaining the link between low school belonging and NEET status. We do this by examining if low school belonging predicts being NEET after controlling for completion of high-school.

Even outside high-school graduation there are reasons to believe that belonging is related to NEET. Youth who do not feel like they belong to school may graduate with a connection to school that is weakly maintained by parental pressure and government mandated compulsory enrollment. A weak connection to school may lead to disconnection to other social institutions where membership is not compulsory and where individuals are required to compete for places in the labor market or further education. Taken together, there are good reasons to expect that low school belonging and NEET are linked.

Alternative Pathways to NEET

It is important to note that we do not expect low school belonging to be a perfect or even the strongest predictor of NEET status. There are numerous pathways to NEET, many of which do not involve low school belonging. For example, research by Willis (2017) identified that some young men from the UK were NEET not only because they felt excluded from prevailing social institutions but also because of structural issues in the labor market—such as the proliferation of boring or meaningless work, tertiary qualifications with limited pathways to employment, or due to a lack of real options that meet the physical and psychological needs of young people (e.g., zero-hour contracts). In addition, there are other avenues through which young people may become NEET even when they have a close connection to their school. For example, a reviewer of this paper noted that many young people are full-time, unpaid carers for family members (Jongbloed & Giret, 2021). Thus, we do not expect low belonging to be a perfect or even strong predictor of NEET status. However, we do expect low school belonging to have a practically significant association with NEET status. In our study protocol, we suggested that an effect size of one percentage point would be considered meaningful (i.e., practically significant) in the context of the population of interest; approximately 8-9% of the in scope population are NEET in Australia (ABS cat. no. 6227.0).

Critical Controls

In the current research, we use school belonging at age 15 to predict whether a youth will be NEET during ages 16 to 20. However, it is possible that these factors are linked via third variables such as low achievement, SES, or living in a regional community. It is critical that our research controls for these factors. We identified a number of baseline demographic, academic, and school context variables that have been shown in the literature to predict NEET status. We control for academic achievement, school context (school average

achievement and school average SES), cohort (participants aged 15 in 2003 vs 2015), gender, socioeconomic status, place, and ethnicity.

Academic achievement appears to be the most predictive factor identified in the research; with higher achievement associated with a lower probability of being NEET (Bynner & Parsons, 2002). Research also shows that *school context* is predictive of NEET. Youth in poorer achieving and/or low SES schools more likely to be NEET (European Commission Joint Research Centre, 2015). Labor market conditions and, in particular, youth unemployment are also a critical predictors (European Commission Joint Research Centre, 2015). We therefore compare a *cohort* of youth who experienced relatively low levels of youth unemployment (a cohort starting in 2003) to a cohort with moderately high levels of youth unemployment (a cohort starting in 2015). We also explored the moderation of results by cohort. If significant moderation was not present this would provide evidence that we could reliably pool the cohorts for analysis. In Australia—the context for the current study—the mandatory age for leaving school was set at 17 years of age from 2008-2010 (Parker et al., 2019). Before 2008 some Australian jurisdictions had school-leaving ages as low as 15. The explicit aim of such policies is typically to reduce rates of dropout and increase young people's chances of gaining access to full-time employment, training, or education post high-school (Markussen & Sandberg, 2010). Thus, we pay particular attention to whether results are consistent across cohorts, not because we can disentangle the effect of labor market conditions or policy changes but because consistency across cohorts would speak to the generalizability of the associations detected. *Gender*, *SES*, *place* (major urban versus rural), and *ethnicity* have all been shown to have relationships with being NEET; with women, youth from low SES backgrounds, and rural youth all more likely to be NEET (European Commission Joint Research Centre, 2015).

We will also take an exploratory perspective on the degree to which belonging is related to NEET differs for boys and girls, by SES, place, ethnicity, and for youth of different achievement levels. We do this because the associations between belonging and NEET status

may differ for some groups. For example, more women than men may be NEET due to family obligations, thus weakening the association between belonging and NEET for this group. Likewise, it is well known that educational and occupational opportunities in rural setting have declined significantly in recent decades due to changes in agriculture, mining, and manufacturing (Parker et al., 2015). Finally, systemic and cultural issues may lead children from low SES backgrounds to believe that school is 'not for people like them' and thus to plan to enter the labor market or apprenticeship as soon as possible (Gambetta, 2019). In this case the link between school belonging and NEET may be weaker for children from lower SES backgrounds.

Current Research

Based on the available literature and theory, we advance the following research hypotheses:

- *Hypothesis 1* Low school belonging at age 15 will predict a period of NEET status between ages 16 to 20, controlling for background demographics, academic achievement, and school characteristics.

- *Hypothesis 2 (Exploratory hypothesis)* The relationship between low school belonging and NEET status varies as a function of academic achievement, SES/parental social class, ethnicity, rural status, and/or gender.

- *Hypothesis 3 (Exploratory hypothesis)* The relationship between low school belonging and NEET status generalizes across cohort (noting the potential role of changes in labor market conditions or changes to school-leaving age policy).

- *Hypothesis 4* The relationship between low school belonging and NEET status is at least partially explained by having graduated high-school.

Methods

Participants

There was a total of 14,082 participants (48.52% female) across the 2003 and 2015 LSAY cohorts. Approximately 87% of participants were born in Australia. The next most common regions of birth were: United Kingdom (1.65%), South-East Asia (1.6%), New Zealand (1.3%), Southern Asia (1.2%), and China (1.0%). Approximately 23% of the sample were either first (~11%) or second (~11%) generation migrants. Approximately 7.8% of the sample self-identified as Australian Indigenous. Approximately 60% of the sample lived in major urban centers (capital cities and surrounding suburbs). A further 20% lived in smaller urban centers; about 1.5% lived in remote locations; and the rest lived in provincial/rural locations.

Sample statistics can be found (broken down by if the participant was *ever* NEET at any stage across the years of interest) in Table 1.

Data were from two cohorts (2003 and 2015) of the Longitudinal Study of Australian Youth (LSAY). The LSAY cohort databases are a longitudinal extension of the Programme for International Student Assessment (PISA) which follows PISA participants yearly for 10 years. The data we draw on for this paper had 10 waves of data for the 2003 cohort but only four waves were collected for the 2015 cohort. Thus, we focus on four corresponding waves of data for both cohorts. LSAY is the longitudinal extension of the Australian component of the Programme for International Student Assessment (PISA) samples. The PISA based questions are not repeated in subsequent waves. Instead, subsequent waves consist largely of interviews with the participant about their education, housing, labour, and training status. Thus, predictors in this paper are measured only in the first wave (with the exception of high-school graduation). NEET status was derived from participants interviews that remained the same across waves. Data was collected across the year, each year, by a professional survey company.

PISA represents the first wave of the LSAY cohorts. Australian participants of PISA were given the option of signing up to LSAY voluntarily after completing the PISA tests and questionnaire. Unsurprisingly, many chose not to and this accounts for the smaller LSAY sample size. We defined the sample of interest as all those PISA participants that agreed to take part in LSAY. This represented slightly more than 50% of the PISA sample. In supplementary materials, we show that those who did and did not join the LSAY sample are significantly different on all predictor variables. However, the size of these differences is generally small. Nevertheless, we ran sensitivity analysis with the full PISA sample with missing values imputed and results were very similar. A data dictionary and full information on LSAY data collection methods can be found on the LSAY website.

Participants did not have a fixed NEET state. Most participants were never NEET. Of those that were NEET, most moved in and out of this status across the four years of interest (see Figure 1).

Measures

School Belonging

School belonging was measured using the PISA school belonging index at time wave 1. We used the survey organizers' composite score of belonging. The reliability for the scale was acceptable in both cohorts (Cohort 2003 $\alpha = .85$ 95% CI [.84 .85]; Cohort 2015 $\alpha = .85$ 95% CI [.84, .85]). The 6-item scale was measured with a 4-point Likert response with poles of 'strongly agree' and 'strongly disagree.' Example items include ("I feel like I belong" and "I feel awkward and out of place"). Parallel analysis by cohort suggested that a single component was sufficient to account for the variance in the items. The composite score that the survey organizers created was valanced so that high scores equaled a stronger sense of school belonging. There were small differences in the instructions to participants and minor item wording differences for the 2003 and 2015 cohort (see supplementary materials). These

differences were small enough that we do not expect them to have any influence on the results. Nevertheless, we always a) control for cohort and b) explore whether cohort moderates the relationships of interest in this analysis.

NEET Status

We defined NEET status as those youth who indicated at the time of testing that they were a) not studying for any sort of tertiary qualification, b) were no longer in high-school, and c) were unemployed or not in the labor market. This was measured in waves 2-5 using the derived variables from LSAY that ensured that NEET was measured consistently across waves.

High-School Graduation

High-school graduation was measured using an LSAY derived variable coded as 0 if participants had not graduated from high-school and 1 if they had graduated from high-school. This was measured in waves 2-5.

Individual Covariates

Achievement was represented by taking the first principal component of the PISA math, reading, and science tests. The 2003 cohort had five plausible values for each achievement test. The 2015 cohort had 10 plausible values per achievement test. For missing data we calculated 30 imputations (see details below) and randomly assigned a single plausible value to each imputation. Thus, each of the five plausible values for the 2003 appeared in six imputations and each of the 10 plausible values for the 2015 cohort appeared in three of the imputations. Science, reading, and math scores were formed into a single index by taking the first principal component for each set of plausible values. *Socioeconomic status* (SES) was assessed using the PISA Economic, Social, and Cultural Status (ESCS) scale. The ESCS is an index of parents' years of schooling, parental occupation, and home

and educational resources. Parental occupational prestige in the ESCS is measured via the International socio-economic index of occupational status (Ganzeboom et al., 1992). The scale is based on assigning occupations scores based on a model that maximises the role of occupation as a mediating variable between education and income. *Place* was defined according to the Australia Bureau of Statistics assignment of the school postcodes to geographic categories the participant was enrolled in at the first time wave. These categories were then simplified to an major urban center and surrounding suburbs versus provincial binary. *Gender* was measured using participant self-report (for this reason we use the term gender rather than sex). *Ethnicity* was measured by participant self-report and had three categories: 1) Australian Indigenous, 2) local-born non-Indigenous, 3) first-generation immigrant (i.e., born outside Australia).

In the protocol we stated that we would run sensitivity analysis with social class (based on the parent with the highest social class job). Social class was represented by transforming the H-ISEI (Highest-International Socio-Economic Index of occupational status Ganzeboom et al., 1992) into Erikson-Goldthorpe-Portocarero codes with class classifications of Salariat, Intermediate, and Working. Results were almost identical using social class or socioeconomic status so we retain the latter results here (see supplementary materials for results from the main model using social class).

School Level Covariates

School context was defined by school average achievement and school average SES. Both of these were formed by taking school aggregated means of the individual-level SES and achievement variables (see section Individual Covariates).

Analysis

Data cleaning, manipulation, and plotting were conducted in R (R Core Team, 2020). Due to the complexity of the models fit to the data, we ran all the multilevel models in Julia

(Bezanson et al., 2017), a scientific programming language designed to provide fast computing times. To predict belonging we fit the following model:

$$y_{belonging} \sim N(\alpha_{i[j]} + X_i\beta, \sigma_y^2), \ for \ i = 1, ..., n$$

$$\alpha_j \sim N(U_j\gamma, \sigma_\alpha^2), \ for \ j = 1, ...k$$

Where i is the individual participant in school j and X is a matrix of individual-level predictors. These individual predictors were the first principal component for the PISA achievement tests, the PISA SES index, and demographic variables including migrant status, Indigenous status, major urban location, gender identification, and LSAY cohort. U is a matrix of school-level predictors which in this research were school average achievement and school average SES. The models were fit with school belonging for individual i as a continuous outcome.

To predict NEET status we fit a three-level logistic regression model with observations from age 16 to 20 nested within participants who were themselves nested within the schools the participants attended at age 15. This model was fit as:

$$ln(\frac{p}{1-p}) \sim N(\alpha_{i[j[k]]} + X_i\beta, \sigma_y^2), \ for \ i = 1, ..., n$$

$$\alpha_{j[k]} \sim N(\mu_{j[k]} + W_j\gamma_1, \sigma_{\alpha j[k]}^2), \ for \ j = 1, ...m$$

$$\alpha_k \sim N(U_j\gamma_2, \sigma_\alpha^2), \ for \ j = 1, ...k$$

Where p is the probability of being NEET and X and U remain the same as above with the exception that X now also includes *school belonging* along with achievement, SES,

migrant status, Indigenous status, major urban location status, and gender identification. W includes only a single predictor for time wave. A binomial model was run with a logit link function. The only exception was when we ran models to calculate specific estimates of indirect and direct associations. In this case the binomial models were rerun with a probit link function to aid in the calculation of direct, indirect, and total effects. We ran the primary NEET models with both Bayes multilevel models and Generalized Estimating Equations (GEE) and the results were similar. As noted in the Deviations from Protocol section we chose to retain the maximum likelihood models to reduce the computational complexity for the several models we ran.

We used multiple imputations to account for any remaining missing values. Given that we had a mix of continuous and categorical variables we used a decision tree based missing data model via the MICE package (Buuren & Groothuis-Oudshoorn, 2011). Thirty imputations were extracted with a plausible value for achievement assigned to each imputation. Given that attrition was only relevant for the outcome variables, data were modeled in long form as this provides a natural form of full information modelling[1]. Missing data were 5% or less for the predictors, and thus, thirty imputations were deemed sufficient.

Deviations from Protocol

A redacted version of the protocol for this paper can be found in supplementary materials (the editorial team have access to the original date stamp protocol). There were several deviations from this protocol in this paper:

1. *NEET Definition.* We received advice from the survey organizers on how to calculate NEET status from derived variables in LSAY when developing the protocol. However,

[1] One observation, per participant, per row of data (i.e., long form data) provides a form of full information analysis because, as long as a participant had an observed outcome for at least one wave, they are included in the model. This is particularly the case in the current research where the focus is on between-person comparisons rather than within-person causal systems.

on receiving the data we discovered that their definition of NEET (focused on tertiary enrollment and employment status) would classify youth still in high-school as NEET. Our new definition of NEET made sure that participants still enrolled in high-school were not classified as NEET.

2. *Maximum Likelihood Estimation.* We had originally planned to use Bayesian multilevel models (with weakly informative priors). However, running these models took 45 hours and resulted in effective sample sizes that were too small. Achieving full confidence in the results would require us to significantly increasing the number of iterations run and thus significantly increase the required computing time. We thus decided to refit the models using maximum likelihood within Julia (given Julia's speed benefits). The results from both models were essentially identical, as were sensitivity models run using Generalized Estimating Equations (see supplementary materials for results).
3. *NEET Status across four-years.* A brand-new release of LSAY 2015 that occurred after we submitted our protocol allowed us to add an additional wave of data to our analysis. This allowed us to capture youth aged up to 20 years of age.
4. *High-school graduation.* In order to explore the role of high-school graduation as a mediator we focused on only the last wave of data. The reason for this was that not enough participants had the opportunity to graduate in the first few waves of data.

Results

Predictors of Belonging (Exploratory Analysis)

We first tested whether our demographic and academic achievement variables predicted feelings of school belonging. The results can be found in Table 2. Girls, urban youth, Immigrants, and youth who come from higher SES backgrounds had higher levels of belonging. Academic achievement was also a significant predictor, but the effect size was not practically significant. Indeed, the demographic and achievement predictors all had relatively weak effect sizes.

We also tested whether these individual-level estimates differed by cohort. Comparing this multi-group model to a model that only controlled for cohort indicated that the former was a significantly better fitting model (F (6, 2354800.79) = 2.598, p = 0.016)[2]. There were two significant differences by cohort for the influence of gender on belonging and for the influence of achievement on belonging. Exploring the marginal means for these significant interactions showed trivial differences (see Figure 2).

Predicting NEET Status

We next explored whether school belonging predicted NEET status controlling for demographics, school context, and academic achievement predictors. Results can be found in Table 3 with conditional means for belonging and other notable predictors in Figure 3. It is first worth noting that the participants in the 2015 LSAY cohort were 1.5 times more likely to be NEET at some stage from ages 16-20. This is consistent with the lower youth unemployment rates from 2004-2007 than in 2016-2019 (ABS Cat. No. 6291.0.55.001; see supplementary materials). High-levels of achievement and SES, and those who identified as male were all associated with a lower likelihood of being NEET, while Indigenous participants were almost two times more likely to be NEET than non-Indigenous participants. School context had large but unexpected effects. High-school average SES was a protective factor against NEET while high-school average achievement (controlling for individual achievement) appears to increase the chances of being NEET. This was almost entirely due to the multicollinearity between these two predictors: r = 0.72 [0.712,0.728]. This multicollinearity would be troubling if school context was a major focus. However, as proxies for school context, the inclusion of both school average SES and achievement allowed for more precise estimates of the influence of school belonging on NEET status (Bollinger & Minier, 2015). In supplementary materials, we show that estimates for both school SES and

[2] Note the F-test here is a multiple imputation version of a chi-square log-likelihood ratio test (Meng & Rubin, 1992).

achievement predicted a lower likelihood of being NEET, though only school average SES was significant. Our results show that school belonging at age 15 had a significant and strong protective influence on NEET status at ages 16 to 20.

Moderation of NEET Belonging Association

We explored if the effect of belonging on NEET varied as a function of achievement, gender, SES, place, Indigenous and immigrant status. There was no evidence that the results differed as a function of these variable ($F(6, 652.82) = 1.02$, $p = 0.412$). In addition, there was no evidence that the association between belonging and NEET varied as a function of cohort.

High-school Graduation as Mechanism

Finally, we wanted to know if school belonging had a unique effect on NEET status, or if its effect was purely a mechanism of a lower likelihood to graduate high-school. In a final model we thus predicted NEET including high-school graduation using the last wave of data only (see Table 4). Although high-school graduation was a significant predictor of NEET status, school belonging was still a significant predictor of NEET status. Figure 4 shows that those that graduated high-school almost never became NEET. Yet among those who did not graduate, belonging remained a practically significant predictor of NEET status. Predictors of high-school graduation can be found in supplementary materials.

We calculated the indirect effects of school belonging and its association with NEET status as mediated by high-school graduation. Results are presented in Table5. Although we found a significant indirect association, it accounted for only a small proportion (~14%) of the total association between school belonging and NEET status.

Discussion

There are many reasons why young people may become NEET. These include lack of real opportunities, other responsibilities, or due to feelings of disenfranchisement. We explored if feelings of low school belonging may be another mechanisms that leads to NEET. We thus set out to test if low school belonging was associated with NEET status using two longitudinal cohorts of Australian youth. As anticipated, we found that low school belonging was a practically and statistically significant predictor of NEET status and that this was the case despite controlling for a range of school and individual-level covariates. Results did not differ by cohort or across a range of social positions (gender, SES, ethnicity, and place). Further, high-school graduation did not appear to explain all or even most of the link between low school belonging and NEET.

Although there was little evidence of mediation, conditional estimates of the predicted probability of being NEET for a youth who was one standard deviations below the mean on school belonging was over one percentage points higher than a youth who was one standard deviations above the mean. For those who did not graduate high-school the predicted probability difference was approximately 2.5 percentage points (see Figure 4).

Research has consistently shown that not graduating high-school is a significant risk factor for a range of outcomes including lifetime employment, earnings, welfare requirements, and health (Hollands et al., 2014). Our results hint that high levels of school belonging among non-graduates has the potential to reduce the chances of a youth becoming NEET. Though more research is needed in this area. At the very least, our results suggest that schools and policymakers, should consider ways to ensure that schools are a place that is inclusive for all students. Not only is this because school belonging is intrinsically important, but, as our research suggest, efforts to help all children feel included, accepted, and valued at school might also be instrumentally important in assisting them in navigating their post-school pathways.

Predictors of School Belonging

Academic achievement was a significant predictor of school belonging in the current research but the practical significance of this association was trivial. Achievement has long been considered to have a reciprocal relationship with school belonging, yet this likely varies by nation depending on the degree to which high achievement is socially valued (OECD, 2019). The lack of relationship between achievement and school belonging in this study—as also found in PISA reports on Australia (OECD, 2019)—may imply that, in Australia, a young person's sense of school belonging is not contingent on their academic prowess. This may generalize to other Anglophone countries. Meta-analyses where most studies were from English speaking countries found only a small association between achievement and belonging (Allen, Kern, et al., 2016; Korpershoek et al., 2019). As we note below, academic achievement was a strong predictor of school graduation.

Demographic predictors were much more notable predictors of school belonging. Youth who were girls, immigrants, from urban contexts, and youth who come from higher SES backgrounds all had small, but positive relationships with belonging. This is consistent with previous research (OECD, 2019). Our research showed that Indigenous status was a positive predictor of school belonging. This is important in countering deficit-orientated language about Indigenous youth and their connection to education (Craven et al., 2016). Indeed, a focus on what drives Indigenous students to stay at school and why they experience a sense of belonging may have more impact in addressing Indigenous educational disadvantage than a focus on reasons for non-attendance or early school dropout. While this is a positive story, we acknowledge that this result was present while controlling for other covariates including SES. Part of the disadvantage that indigenous students face in education is conveyed through a history of marginalization that has resulted in Indigenous Australians having lower, on average, SES. In total (i.e., when not controlling for other variables) Indigenous students have lower levels of school belonging (De Bortoli, 2018). As such, these

results should be interpreted with care, but should serve as an incentive to consider the role that belonging might play in helping Indigenous students flourish in school.

School Belonging and NEET

Low school belonging was a consistent and reliable predictor of NEET status. Furthermore the marginal effect sizes were of practical significance (1-2 percentage points difference in NEET status where less than 10% of the population of interest are NEET). Low school belonging had a smaller association with NEET status than academic achievement did. But school belonging had a stronger relationship to NEET than did the traditional predictor of SES. Marginal effects suggested that low school belonging was particularly important among those that did not complete high-school—largely because so few young people who completed high-school became NEET[3]. Indeed, for youth who did not complete high-school, those who strongly felt like they belonged at school (+2 SD above the mean) were five percentage points less likely to be NEET than those who strongly felt like they did not belong to school (-2 SD below the mean). Strikingly, high-school graduation was not a practically meaningful mechanism for explaining the link between belonging and NEET.

Other mechanisms such as broad experience of perception of social exclusion and other the influence of low school belonging on educational, mental, and social health could help explain the association we found between school belonging and NEET status (Abdollahi et al., 2020; Allen, Kern, et al., 2018; Hammer, 1997; Hayes & Skattebol, 2015; Steiner et al., 2019). These alternative mechanisms should be considered in future research.

Our research shows that low school belonging may be a significant predictor of social exclusion after leaving school, and the lifetime of potential costs that NEET is associated

[3] Although this appears to imply moderation, this is not moderation. The reason for this is that logistic regression is linear in the predictors but not in the predicted probabilities. Hence, the marginal effect of school belonging, differs for high-school graduates and non-graduates.

with for mental health, earnings, and other attainment outcomes (Ralston et al., 2016). As we noted in the introduction, low school belonging may be a risk factor for these outcomes because it signals that young people are feeling excluded from critical social institutions (Bynner & Parsons, 2002). Because schools are compulsory to attend, low school belonging is an important arena for understanding how systemic factors influence who does and does not get to belong (Brown, 1995; MacDonald & Marsh, 2005; Yates et al., 2010).

From a policy perspective, our results raise issues related to the 'Matthew effect.' In simple terms, the Matthew effect suggests that advantage begets advantage while disadvantage begets disadvantage (Hillmert, 2011; Kerckhoff & Glennie, 1999; Ralston et al., 2016). It recognizes that social inequality is affected by accumulated dis/advantage (Hillmert, 2011). The link in our research between low school belonging and NEET, and empirical research linking NEET to a lifetime of disadvantage (Ralston et al., 2016), can be viewed as the accumulation of disadvantage by those who feel excluded from school. Social science has often focused on marginalization along traditional axes of disadvantage: gender, place, ethnicity, and in particular social class (Kerckhoff & Bell, 1997). Yet a focus on school belonging encourages research and practice to also consider other aspects of identity that may lead youth to be excluded from important social institutions. Our research encourages a focus on a complex investigation into the role of identity given that school belonging was relatively weakly predicted by traditional axes of disadvantage and that low school belonging predicted NEET status controlling for such social positions. Our research thus emphasizes the need for policy to focus on the degree to which all children feel included, accepted, and valued at school.

Other Predictors of NEET

Outside of low school belonging, predictors of NEET status followed established relationships. Youth who were low achieving, Indigenous, girls, and from low SES backgrounds were particularly at risk. School context also mattered. Analysis reported in

supplementary materials showed that attending a school with high levels of school average SES had notable protective benefits after controlling for individual-level variables. This may suggest that a form of social closure in which the scarce opportunities available for youth who struggle in school go to those who have connections (e.g., those who attended prestigious private schools) leaving those with fewer connections without a safety net (Gugushvili et al., 2017). Further study into the juxtaposition between school average SES and school average achievement is needed.

Limitations

Although the current paper has notable strengths (e.g., multiple cohorts of longitudinal data), there are limitations that readers should consider when interpreting its results. We noted in the discussion that belonging forces a spotlight not just on disadvantage due to social positions but also on disadvantage related to other forms of self or group identity. The role of social positions in predicting school belonging appeared to be relatively weak in our research. Yet, in our current research, we were not able to do full justice to an exploration of the role of social positions. As Yuval-Davis (2006, p. 200) notes, social positions "even in their most stable format, are virtually never constructed along one power axis of difference, although official statistics—as well as identity politics—often tend to construct them in this way. This is why the intersectional approach to social locations is so crucially important." To capture a true intersectional perspective we would have needed to estimate very complex higher-order interactions which we simply did not have the statistical power to address. Further, the rather reductive categorizations we used in this paper to maintain statistical power (e.g., urban versus rural) may hide considerable heterogeneity in the experiences of children with these categories. Indeed, it may be questioned whether a truly intersectional approach can even be addressed in any quantitative research, thus highlighting the need for continual and integrated qualitative research. Nevertheless, future research may be able to take a stronger intersectional perspective by looking at the

multiplicative rather than additive influences of social positions (e.g., gender, social class, place, and ethnicity).

The loss in sample size going from the Australian PISA sample to the LSAY sample is a concern. Yet it is encouraging that the results were largely similar when the sample was defined as the PISA sample or the LSAY sample.

Finally, although we aimed to control for a range of covariates at the individual and school level, there are likely other variables that we did not control for and that could have biased the results. As such, the results of the current research are most safely interpreted *comparatively* (i.e., what is the likely NEET status of a youth at age 16-20 who is high on school belonging at age 15 compared to a similar youth who is low on belonging) rather than *causally* (i.e., what is the causal effect of school belonging at age 15 on NEET status at age 16-20).

Implications

This study makes a number of novel contributions to the knowledge-base of school belonging. First, it is the only study known to the authors which has examined the relationship between school belonging and NEET status. Second, the results of the study strengthen the available evidence to date regarding the critical role schools play in providing an inclusive environment that helps prevent youth unemployment and youth disengagement from further educational opportunities in post-complusory education.

The present findings also add to the growing international body of research on school belonging, which demonstrates more broadly the universal importance of feeling connected to school as a predictor of a range of critical outcomes in adolescence (Arslan et al., 2020; Heck et al., 2014; Shochet et al., 2011). This study also strongly affirms the importance of school belonging. Although this has been understood in the literature previously, at least through mostly cross-sectional and short-term studies, previous research has also identified

that there are very few institution level interventions for school belonging (Allen et al., 2021). Feeling like you don't belong has been identified as the largest known independent correlate of depression in adolescence (Parr et al., 2020). As such, urgent attention is now needed to create more inclusive environments, design and validate interventions, and re-orientate policy toward understanding schools as places to belong and places to develop connections to society rather than merely places for academic accomplishment. School interventions that target care, respect and broad inclusion and build student-teacher relationships are likely to be beneficial for student belonging.

Conclusion

We found that there is an association between low school belonging and later NEET status, which is especially relevant among those who do not graduate from high school. Youth who feel excluded from school experience further exclusion from entry into many major social institutions. If schools can prioritize belonging and inclusion of all students, they may be able to help young people avoid a lifetime of social exclusion. From this perspective, interventions aimed at increasing school belonging present an important opportunity for policymakers to help ensure that education helps meets the basic need of students to belong and to potentially to broaden the options available to young people once they leave school.

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Table 1

Descriptive Statistics.

Characteristic	NEET, N = 1,323	not NEET, N = 7,670	p-value
Belonging	-0.34 (-0.70, 0.49)	-0.29 (-0.64, 0.49)	<0.001
Unknown	3	27	
Gender Identification			0.4
Boy	678 (51%)	4,026 (52%)	
Girl	645 (49%)	3,644 (48%)	
Indigenous Status			<0.001
Indigenous	134 (10%)	345 (4.5%)	
non-Indigenous	1,189 (90%)	7,325 (96%)	
Immigrant Status			0.067
Immigrant	300 (23%)	1,590 (21%)	
non-Immigrnat	990 (77%)	5,982 (79%)	
Unknown	33	98	
Place			0.2
Major Urban	766 (58%)	4,583 (60%)	
Provincial	557 (42%)	3,087 (40%)	
SES	0.26 (-0.44, 0.84)	0.47 (-0.11, 0.99)	<0.001
Unknown	10	29	
Achievement	-0.06 (-0.88, 0.62)	0.28 (-0.39, 0.87)	<0.001
School Avg. Achievement	-0.06 (-0.41, 0.33)	0.06 (-0.26, 0.39)	<0.001
School Avg. SES	0.19 (-0.13, 0.57)	0.38 (0.03, 0.65)	<0.001
Unknown	0	1	

[1] Median (IQR); n (%)

[2] Wilcoxon rank sum test; Pearson's Chi-squared test

[a] This table is based on the unimputed data. The data summarises scores for participants who were NEET at any stage versus those who were never NEET.

Table 2

Predictors of School Belonging.

Parameter	Beta	-95% CI	+95% CI
Intercept	-0.10	-0.14	-0.06
Achievement (SD Units)	0.00	-0.02	0.02
SES (SD Units)	0.11	0.08	0.13
Gender (Girls)	0.12	0.09	0.15
Place (Major Urban)	0.09	0.05	0.13
Indigenous Status	-0.02	-0.08	0.05
Immigrant Status	0.04	0.00	0.08
School Avg. SES (SD Units)	-0.01	-0.08	0.05
School Avg. Achievement (SD Units)	0.04	-0.01	0.09
Cohort (2015)	-0.20	-0.23	-0.16
Random Intercept: School	0.01		
Residual Variance	0.93		
School ICC	0.01		

Table 3

Model Predicting NEET Status.

Parameter	Odds Ratio	-95% CI	+95% CI
Intercept	0.02	0.02	0.03
School Belonging (SD Units)	0.81	0.77	0.85
Time Wave (1-Year Units)	1.23	1.18	1.28
Achievement (SD Units)	0.71	0.67	0.76
SES (SD Units)	0.85	0.80	0.92
Gender (Girls)	1.21	1.09	1.34
Place (Major Urban)	1.00	0.89	1.13
Indigenous Status	1.77	1.51	2.09
Immigrant Status	1.14	1.01	1.28
School Avg. SES (SD Units)	0.71	0.59	0.86
School Avg. Achievement (SD Units)	1.20	1.03	1.40
Cohort (2015)	1.35	1.21	1.51
Random Intercept: Individual	1.22		
Random Intercept: School	0.14		

Note. Random intercepts are not in odds-ratio units.

Table 4

Model Predicting NEET Status (Controlling for High-School Graduation).

Parameter	Odds Ratio	-95% CI	+95% CI
Intercept	0.27	0.24	0.31
High-School Graduate	0.67	0.60	0.75
Achievement (SD Units)	0.83	0.78	0.87
SES (SD Units)	0.92	0.86	0.99
Gender (Girls)	1.21	1.11	1.33
Place (Major Urban)	0.92	0.84	1.01
Indigenous Status	1.31	1.11	1.55
Immigrant Status	0.98	0.88	1.10
School Belonging (SD Units)	0.88	0.84	0.92
Cohort (2015)	1.16	1.05	1.28
School Avg. SES (SD Units)	0.75	0.64	0.88
School Avg. Achievement (SD Units)	1.12	0.98	1.27
Random Intercept: School	0.01		

Note. Random intercepts are not in odds-ratio units.

Table 5

School Belonging on NEET Status Mediated by High-School Graduation.

Parameter	Estimate	-95% CI	+95% CI
Indirect	-0.02	-0.04	-0.01
Direct	-0.13	-0.18	-0.08
Total	-0.15	-0.20	-0.10
Percentage of Total Mediated	13.92	4.00	24.68

Note. Calculated from a probit model with uncertainties from a quasi-bayes simulation

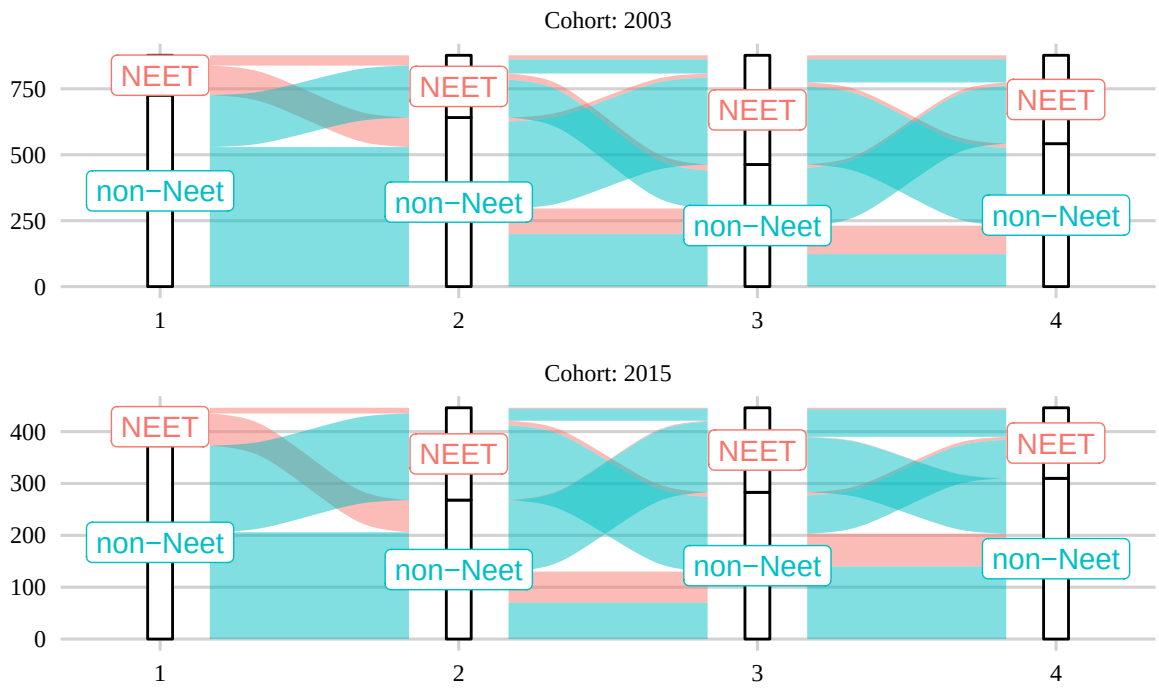

Figure 1

NEET status changes across four years.

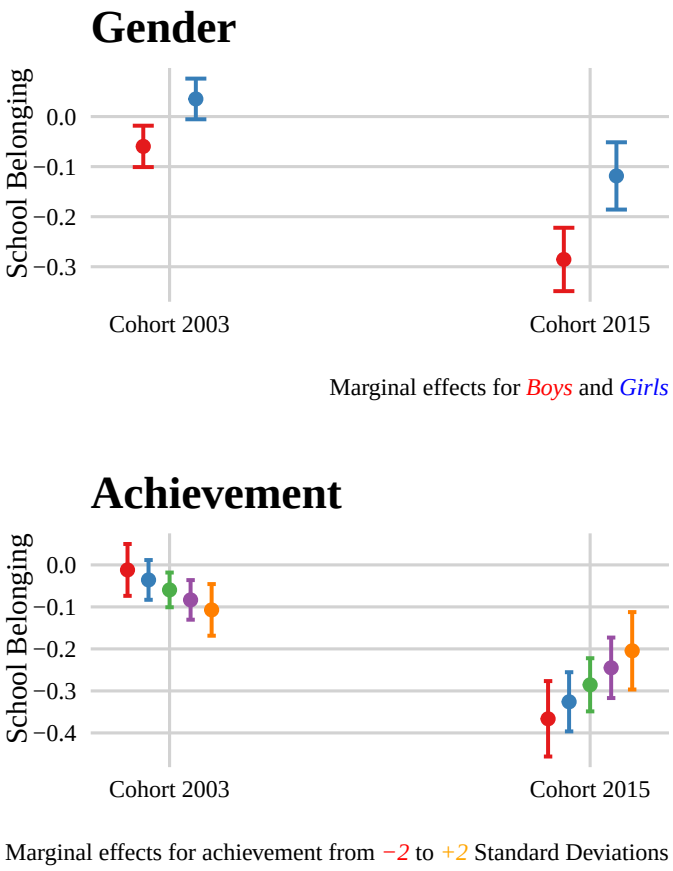

Figure 2

Cohort Differences in Predicting School Belonging.

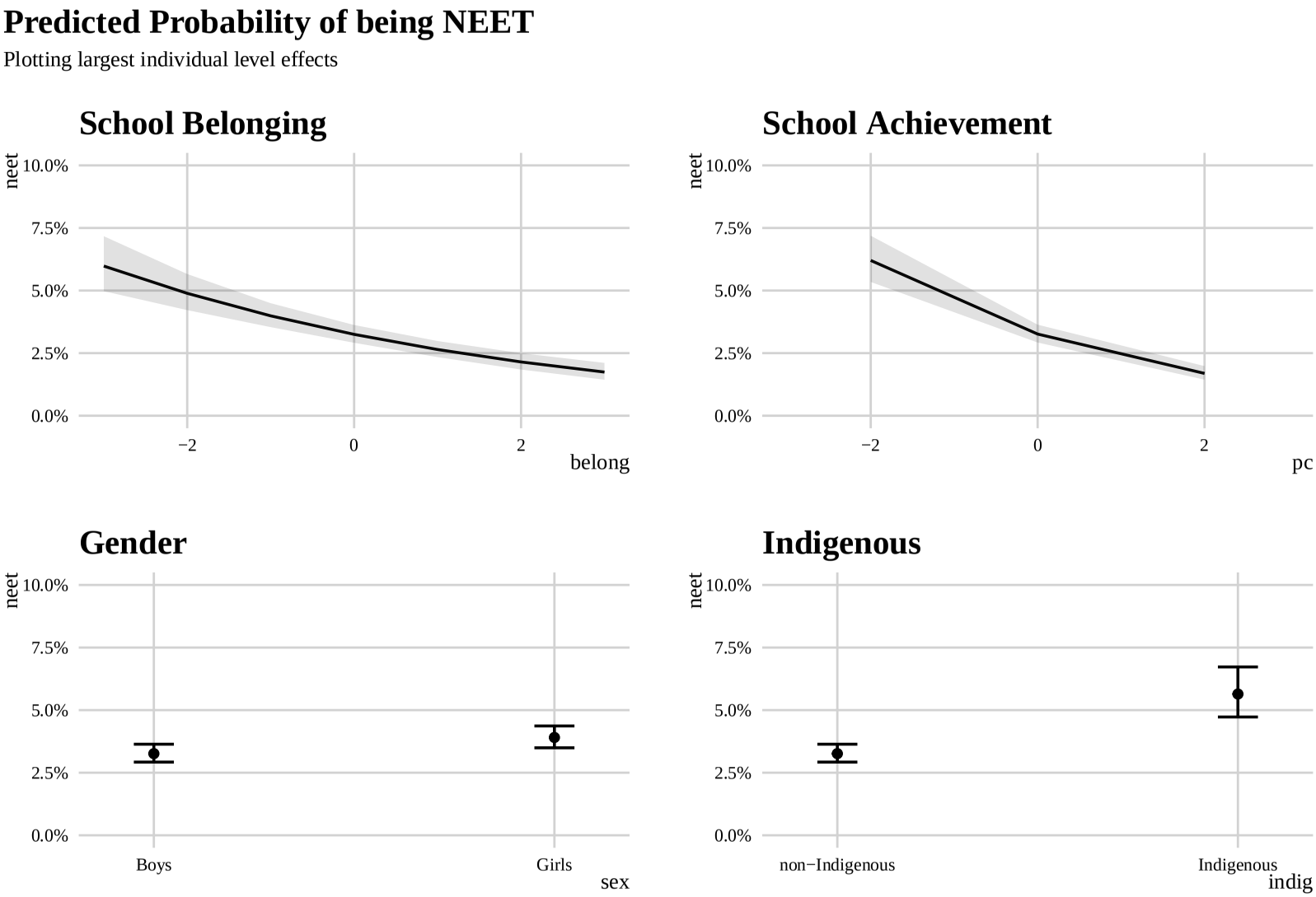

Figure 3

Marginal Effects for Predicting NEET Status.

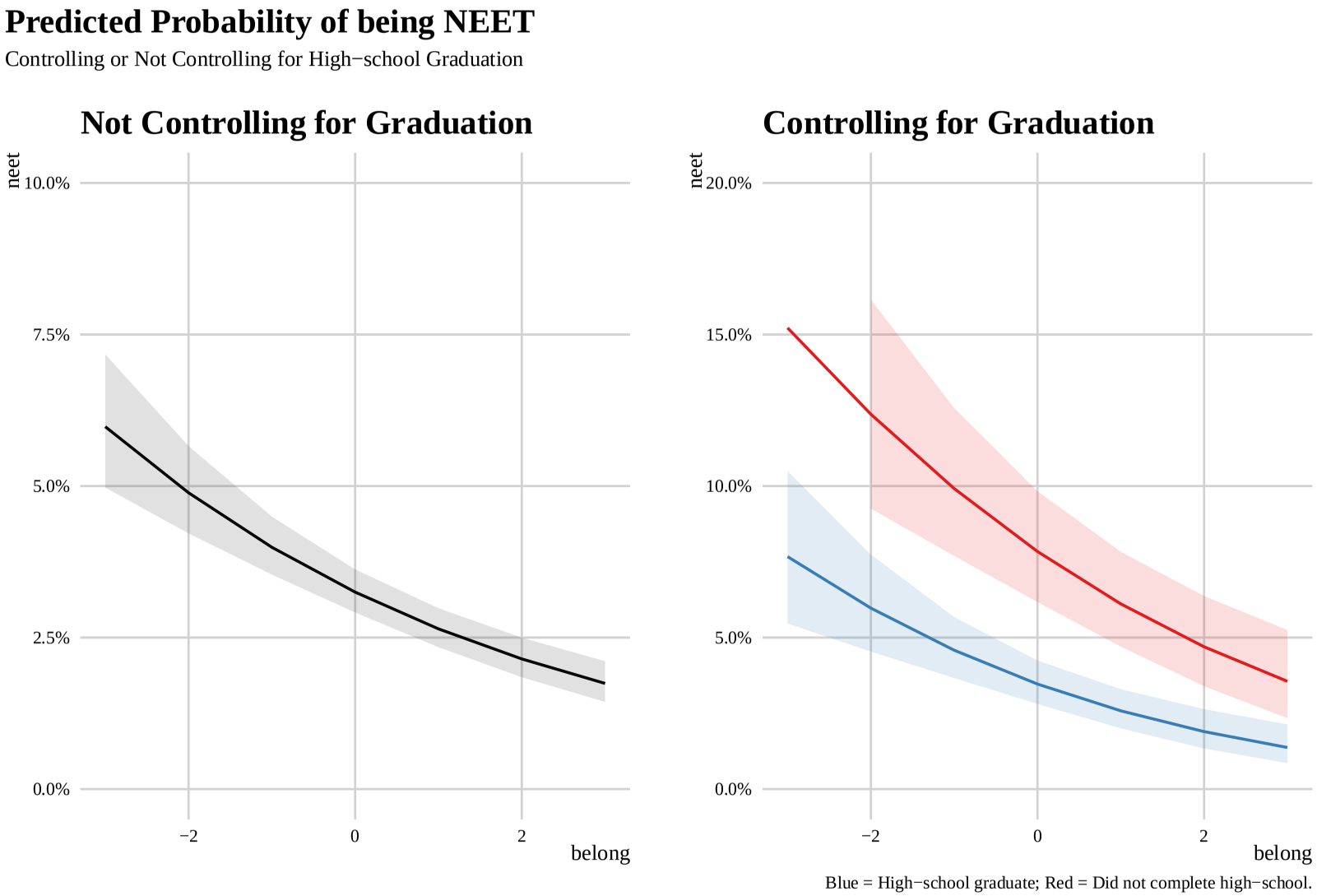

Figure 4

Marginal Effects for Predicting NEET Status.