Author response to reviews of

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School Belonging Predicts whether an Emerging Adult will be Not in Education, Employment, or Training (NEET) after School

Author name on behalf of co-authors
submitted to *Journal of Educational Psychology*

RC: ***Reviewer Comment*** AR: Author Response ☐ Manuscript text

Dear Dr. Samuel Greiff,

Thank you for considering our manuscript for publication at *Journal of Educational Psychology*. We appreciate the feedback that you, and the reviewers have provided. The suggested changes were useful and, in our opinion, have improved the manuscript. In the following itemised list we respond to each comment point-by-point.

One change not asked for, but which we think will help the reader, is we have moved the appendixes to supplementary materials. It was clear in the review process that the inclusion of sensitivity analyses in the appendix caused confusion.

Contents

1. Reviewer #1

RC: **Comment 1.**

Thank you for sending me the paper for review. In accordance with my feedback to the journal editor, I focus in this review on the education, labour market and policy aspect of the paper, and not on methodological issues. My overall verdict is that the topic, research question and hypotheses of the paper are relevant and important, and that the paper can be an important contribution to its research field. With that said, I would like to raise some minor issues that I think should be ironed out before the paper is publishable.

AR: Thank you. We appreciate the value you saw in our work and we appreciate the comments.

RC: **Comment 2.**

First, a general issue: You ask if and state that school belonging is a risk factor for NEET status many times in the paper. However, it seems to me that it is rather "low school belonging" that is a risk factor? Please consider adding "low" where relevant.

AR: Yes this is a good point. We have made this change throughout.

RC: **Comment 3.**

P. 3: You refer to youth who are NEET as "[a] transition", which is not preise. NEET is a status into which one transitions when failing to transition to other statuses, such as being in further education or working. Please rephrase.

AR: Good point. We have made this change.

> 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).

RC: **Comment 4.**

P. 4: The clause "as one way in which youth are placed at the margins of critical social institutions" seems to be to refer to low school belonging and not school belonging in general, which is just a scale. Please consider adding "low" before "school belonging" or adding "(or not)" to the clause.

AR: Good point. This sentence has been removed as part of the revision. However, as above (Reviewer 1 Comment 2), we have added low before school belonging where relevant.

RC: **Comment 5.**

P. 4: The sentence "And understanding NEET as part of wider social exclusion is needed (Thompson, 2011)" seems incomplete. Please rewrite.

AR: This sentence has also been removed as part of the rewrite requested by other reviewers.

RC: **Comment 6.**

P. 4: You write: "A lack of school belonging has been found to predict social exclusion (Arslan et al., 2020) and social exclusion at school may create a pattern of exclusion throughout life." Here, the term social exclusion is used twice, and seemingly to refer to different things. Please be more precise.

AR: Apologies. We were trying to state a chain in mechanisms not to imply two different types of social exclusion. We have now corrected this.

> 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.

RC: **Comment 7.**

P. 8: The abbreviation "SES" is defined upon the second and not the first use. Please correct.

AR: Apologies. This has now been corrected.

RC: **Comment 8.**

P. 10: In hypothesis 4, you refer to "high-school graduation". To me, this is unclear. Could you write "having graduated from high-school" or something more clear?

AR: Thank you. We have made the suggested change:

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

RC: **Comment 9.**

P. 11: You define NEET as youth who "... were not in the labour market". This is not fully consistent with the claim on p. 15 that you focus on "employment status". Indeed, in most technical definitions, not being employed is not the same as being unemployed. The unemployed are in the labour market, even though they are not working, while those who are not in the labour market are called "inactive". I think you may want to write "were unemployed or not in the labour market" instead. Please consult Elder (2015) for more details on this issue. (Alternatively, if "unemployed" is a self-reported status here, please explain this to the reader.)

AR: The reviewer is correct. We have made the suggested changes to the definition of NEET.

> 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.

RC: **Comment 10.**

P. 16: You write "being female", but in line with how gender is self reported in your data, perhaps "identifying as female" is more precise?

AR: This has been corrected:

> 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.

RC: **Comment 11.**

P. 18: The bracketed text "(almost all youth who graduated high-school did not experience NEET)" is better phrased as "(almost no youth who graduated high-school experienced NEET)".

AR:

In responding to the other reviewers comments this section has been deleted.

RC: **Comment 12.**

P. 19: You state that your results "hint that high levels of school belonging among non-graduates could help mitigate" concerns that "not graduating high-school is a significant risk factor for a range of outcomes including lifetime earnings, welfare requirements, health, and employability". The mediating factor NEET status is omitted in this argument, which I find problematic.

AR: This has been corrected.

> 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.

RC: **Comment 13.**

P. 22: The sentence: "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 raised on the fringes of society." This implies that "low school belonging" and being "raised on the fringes of society" are one and the same thing. Are they?

AR:

This has been reworded to be more specific:

> 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.

RC: **Comment 14.**

P. 22: You write that "[t]he role of identity, the politics of belonging, and the authentic self are meaningful avenues for future research on school belonging." There is, however, a substantial qualitative literature on this topic that you may want to at least acknowledge with a reference - starting, in many people's view, with Willis (1977).

AR: This section has had a significant rewrite and simplification. Nevertheless, we read Learning to Labour and agree that it is highly relevant and we cite it in several places. For example, we now write:

> 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).

RC: **Comment 15.**

P. 22: You write about "a rich school". This is ambiguous to me. Is it the school, the students' families or both that are rich?

AR: This has been corrected:

> 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.

RC: **Comment 16.**

P. 23: You state that "[t]raditionally, NEET research is concerned with the full period of age 15-24 years of age". Technically, this is not correct. The earliest resarch using this concept, such as the British Social Exclusion Unit's (1999) Bridging the Gap and Bynner and Parson's (2002) Social exclusion and ... (which you refer to), considered NEET for smaller age ranges, as Holte (2018), whom you refer to, remarks on. However, it is true that much of the international literature now uses broader age ranges. Please rephrase.

AR: In the rewrite this mistake was removed. Indeed, this whole section was reworded to accommodate other reqested changes.

RC: **Comment 17.**

P 23: The sentence claiming that being NEET at age 24 will result in worse lifetime outcomes than being NEET at age 20 needs to be substantiated with a literature reference or removed; I am not convinced that this is the case.

AR: The reviewer is correct that this is purely speculation on our part. As such, we have removed this claim.

RC: **Comment 18.**

P. 24: In my view, please state the main empirical result, i.e. that there is correlation between low school belonging and later NEET status, which is relevant especialyl among those who do not greaduate from high school, in the conclusion.

AR: We agree. The conclusion now reads:

> 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.

2. Reviewer #2

RC: **Comment 1.**

The submitted manuscript, "School belonging predicts whether an emerging adult will be not in education, employment, or training (NEET) after school" uses two secondary longitudinal datasets from LSAY to determine the extent to which school belonging predicts NEET status. The authors conclude that school belonging does, indeed, predict NEET, and therefore recommend that policy makers develop interventions to support students' sense of belonging.

There were several aspects of the manuscript that were quite strong. For example, I found the use of two, large, longitudinal datasets, one from 2003 and the other 2015, to be an interesting way to consider potential differences or similarities across two time contexts. I also appreciated the authors' focus on school belonging as a potential predictor of NEET, rather than only including more traditional constructs such as SES or high school graduation. The focus on school belonging provides a bit more nuance to this issue.

However, I have several concerns that may or may not be able to be addressed in a revision. I cannot recommend publication in the Journal of Educational Psychology in its current form.

AR: We thank the reviewer for noting the strengths of the paper. We also appreciate that they have noted that "The authors and I likely operate from different paradigms." Although we work from different paradigms, we appreciate the collegial and thoughtful spirit in which the comments were made. Although, we disagree with some of the comments below (or at least do not agree that the reviewers interpretation of our text is what we intended), we acknowledge that, even where we disagree, thinking carefully about what the reviewer has said has resulted in us changing the framing of the paper in a way that we think better articulates what we are trying to say. We also acknowledge that in many places our writing was confusing and needlessly complex. We hope we have addressed this in the revision.

RC: **Comment 2.**

My primary concern is regarding the deficit (and sometimes dehumanizing) language used throughout the manuscript, which shapes the research questions, analyses, and conclusions. The authors and I likely operate from different paradigms, so I'd like to explain how this work came across to me, with the hope that it might offer some food for thought for the authors.

This research assumes that there is something "wrong" with students labeled as NEET. Even the idea of NEET as a construct strikes me as a bit dehumanizing, and I question whether it is a construct worthy of study. What does it mean for students to live on the "margins of society" or be "at risk?" What are students "at risk" for? It seems as though the issue lies more with the institutions, rather than the humans being studied. This also requires us to consider why we want students to thrive in a White, heteronormative society, rather than consider issues with the context itself. In the discussion, the authors briefly talk about issues of inequality, but the blame still seems to be put on the adolescents themselves. The implied conclusion is that policy makers and educators need to fix students - that there is something wrong with their sense of belonging, and therefore we need to intervene at the student level to figure out how make them better fit into existing societies and expectations. This is exacerbated by the focus on the impact of NEET on the economy, which is a dehumanizing way to consider the needs of real people. Although I understand that some readers may find the economic impact to be a strong argument, I found it quite off-putting, as it considers people in accordance to the cost they place on a society, instead of focusing on the real humans who may not be appropriately supported by

institutions. Instead, perhaps the more meaningful questions revolve around why some students do or do not feel a strong sense of belonging and how institutions, like schools, can change to better meet students where they are.

Given this concern, I encourage the authors to shift to using more asset-based language and consider the real repercussions for labeling students as at risk, on the margins, or NEET.

AR: Before going into detail we want to note that we have substantially revised the entire manuscript in response to this comment. We agree that we were often clumsy in our wording and could have been much clearer. We apologise that our shortcomings led the reviewers to read our paper as deficit orientated. We think this is most evident in the new introduction:

> 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)

We think it is worth stating upfront that deficit orientation is a concept with multiple different viewpoints in the literature (Davis & Museus, 2019). We view deficit orientated research to be inherently about blaming victims rather than recognizing context and acknowledging the role of social institutions. We agree with Davis and Museus (2019) that anti-deficit research should:

a) Acknowledge systemic influences and challenge the perspective that full engagement with social institutions, as currently structured, are the primary solution to disadvantage.
b) Aim to articulate pervasive and often implicit nature of deficit orientation so that standard concepts don't go unchallenged.
c) Aim to challenge core social institutions for their role in perpetuating disadvantage.

We believe our paper is indeed anti-deficit in nature and we certainly did not intend to imply that there is something 'wrong' with youth who are NEET. Indeed, we believe our research does the very opposite. For example, our aims were:

a) To challenge the notion that formal education was the solution to NEET. Rather our aim was to show that schools themselves may be vectors by which students may find their transition from school

hampered by focusing on experiences of school belonging. We aimed to do this by positioning school belonging within the concept of the politics of belonging. The central idea being that it is systemic influences that decide who gets, and who does not get, to belong.

b) Our research challenges the concept or meritocracy as it relates to NEET. We aim to show, for example, how factors unrelated to 'merit' (where merit is wrongly assumed to mean academic achievement) contribute to a young person's post high-school pathways.
c) In the discussion we focus on mechanisms that are anti-deficit. For example, we discuss the role of social closure (the idea that wealthy parents hoard the resources necessary for their children to maintain their social position).
d) Most of the team's background is in psychology. Thus, we acknowledge that we mostly write about how certain social positions are embodied and experienced by individuals and we argue that it is worth focusing research on this individual experience (in our case, the experience of feeling lonely at school and the way this might contribute to later life outcomes) provided such research acknowledges the critical role of systemic influences. We do not believe a focus on individual experience is deficit orientated when it is, in our case, couched in systemic influences (i.e., systemic influences on who does and does not get to belong).

There are other areas we do not agree with the reviewer. In particular, we do not think researching NEET is itself dehumanizing. We understand the reviewers position—indeed we reference several of criticisms of the NEET concept in the paper for the interested reader—but we believe it is important to acknowledge that youth who meet definitions of NEET do tend to face significant lifetime disadvantage. Acknowledging that fact that being outside employment, education, or training as a young person is often associated with hardship is not the same as suggesting that these outcomes are merited. We also do not believe it is deficit orientated to acknowledge that NEET has societal costs not just individual costs (though we have removed all reference to the economic costs of NEET).

Nevertheless, in reviewing our paper we do believe we could have done a much better job of outlining our beliefs. In particular, we think the opening should have identified systemic influences earlier and more forcefully. We also agree that we could have simply stated an anti-deficit position from the outset (see Reviewer 2 Comment 2). We also aim to close the paper on a much stronger anti-deficit position:

> 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.

We also believe we should have written about the politics of belonging more succinctly and not allowed our writing on this topic to be so watered down. We have now removed the discussion about identity and provided and much clearer and shorter discussion of the politics of belonging:

> 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.

RC: **Comment 3.**

Although the authors used a secondary dataset, I have several questions about the measures. Why were only three ethnicities utilized? Is this typical of data collected in Australia? These three options may substantially limit students' responses and may not be truly representative of their identities.

AR: Australia is one of four traditional multicultural societies (along with the UK, Canada, and New Zealand). Almost 50% of the population are either first or second generation migrants but there is huge diversity in the countries this represents with large European (Continental and otherwise), Asian, Pacific, and Middle Eastern populations. Australia also has an Indigenous population who are made up of Torres Strait Islanders and a large number of individual nations. We could have been more fine-grained but we specifically choose not to. First, inclusion of many sparse groups that contain relatively small number of people are low on power and may artificially produce results that give a misleading picture. Instead, we have provided more information in the methods of the sample breakdown:

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.

We also acknowledge, in the limitations, concerns with our approach:

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).

RC: **Comment 4.**

Additionally, why were contexts labeled as either urban or provincial and how was this binary determined? What about suburban students? In the U.S. there are several different designations for rural populations, and students who live in remote rural areas have different opportunities and access issues than students who live just outside of town or a small city. This simplistic binary is concerning given the nuance that could be found in varying contexts.

AR: As above (Reviewer 2 Comment 3) this was a deliberate decision to ensure results were robust and not misleading. As shown above (Reviewer 2 Comment 3) we have provided a more detailed breakdown in the methods. The distinction we have used is a common one in the Australian context.

RC: **Comment 5.**

Please clarify how SES was determined. How are some occupations considered "higher class" than others? For example, an HVAC technician may make more money than a university professor (and in my community, usually do). So, who would be considered "higher class" and is that designation fair? How can we rank parental occupation in this way? And then later, why are there only 3 classifications for social class?

AR: SES was taken from the OECD developed Economic Social and Cultural Scale (ESCS) present in all PISA cycles. As noted in the paper this is a composite measure of *parental education, household resources, and parents occupational prestige*. PISA defines parental occupational prestige in this composite 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. We clarify this in the paper:

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.

This ESCS composite is a continuous measure. Critically, this is the central measure we use in the paper. Social class *only* appears in sensitivity analysis in supplementary material.

Social class is based on a transformation of the parents occupation as coded by the International Standard Classification of Occupations. The transformation is to place these occupations into the EGP coding scheme (Goldthorpe/Erikson/Portocarero class schemes). This is a very common social class coding scheme particularly in Europe. This classification is based on the theory of Max Weber. Here social class is based on social relations in economic life and particularly in relation to the nature of relationships between employee and employer (Chan & Goldthorpe, 2006). The EGP has two dimensions upon which classes are defined. First is the amount of authority/autonomy an individual has in their employment relations (more authority is associated with higher status). Second is the degree to which people work with symbols (or sometimes the management of people) versus things (e.g., manufacturing). The former convey higher status. It is critical to note that EGP is not designed to ascribe inherent value but to capture social status as it is experienced.

We retain only three classes for similar reasons to ethnicity and rural/urban divide. It helps ensure sufficient statistical power but it is also consistent with how the EGP scheme is typically used in empirical research (Chan & Goldthorpe, 2006). We appreciate that the number of classes to extract is a complex issue. This can vary from hundreds of classes in neo-Durkheim micro-class systems to three as we do here. Given that social class is a control variable and also only present in sensitivity analysis (and never in the main analysis) we believe our approach is consistent with previous literature and reasonable.

RC: **Comment 6.**

Regarding the NEET measure, how was "being in the labor market" determined? What about those who participate in the gig economy, but aren't provided health insurance or a living wage? What about students who take care of family members, such as full time parents, those who care for elderly family members, etc. Are they labeled as NEET?

AR: Here we used the LSAY derived labour force status which is a combination of multiple responses from participants during an extended interview. Here we combine both those listed as unemployed as well as those not in the labour force. That is consistent with the definition described by reviewer 1 as "were unemployed or not in the labour market." As the reviewer rightly points out (see Elder, 2015) NEET status is different from research on unemployment as it is designed to capture 'a wide range of vulnerabilities' in young people and this includes not only the unemployed but also those out of the labour market and thus would capture many of the groups you mention. The only one we do not clearly cover is work in the gig economy. Gig work is not collected in LSAY in the cohorts and waves we cover. We believe our approach to labour market status is: a) consistent with the general definition of NEET (Elder, 2015); and b) consistent with the written advice we received from the government National Centre for Vocational Education Research on how to define NEET in LSAY.

In passing it is worth noting that the Australian context is somewhat different from the US context. For example, the reviewer points to health insurance status. This is not relevant in the same way given Australia has universal health care that is not tied to employment or insurance.

The reviewer notes students who are unpaid carers. These participants would not be identified as NEET because they are students. Fulltime carers would be characterized as NEET. As such, we have added the following section in the introduction to better contextualize what our research question's limitations:

> 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).

RC: **Comment 7.**

The authors need to provide more information about how the data were collected. Although the authors direct readers to the LSAY website, it would be helpful to have some additional information clearly stated in the document itself. For example, please describe the number of waves, whether all measures were included in all waves, whether data were collected at similar timepoints each year, etc. Then, if readers would like more information, they can check out the website.

AR: Thank you. This information has now been added.

> 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.

RC: **Comment 8.**

Throughout the manuscript, but most prominently in the discussion, the authors use the term meaningfully or practically significant. This term needs to be unpacked. What do the authors mean how is this determined? Is practical significance a subjective designation? If so, that's okay, but the process for determining practical significance should be transparent.

AR: Apologies. This was defined in the pre-registration but the reviewer is correct that it was not defined in the paper. We do so in the introduction:

> 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).

RC: **Comment 9.**

Additionally, the authors need to be clearer regarding the potential implications of this work for future research as well as practice and policy. Simply stating that the Matthew Effect might be at play doesn't tell readers a lot about why this research is important and the practical actions that could be taken to support students in more meaningful ways. What would a school belonging intervention look like and is this the best way to influence students' long-term goals and experiences?

AR: Prior to the *Conclusion* section, we have now added an *Implications* section to make clear the potential implications for future research, practice and policy.

> 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.

RC: **Comment 10.**

Be sure to use APA 7th edition throughout the manuscript. For example, "figure" should now be above the figure, as done with tables. Also, why are some tables listed as part of the appendices?

AR: Apologies. We were using the JEP submission Latex engine which has not yet been updated to APA 7. We are not really sure how to fix this but did inform the editorial team at the initial submission (and they approved the submission). This would be fixed in the publication where the journal will transform the latex file via there custom template.

The tables listed in the appendix are supplementary materials. They are mostly from sensitivity models (i.e., replacing SES with social class, using GEE rather than multilevel model, etc.) and were listed as supplementary materials in the paper. To make this clearer, we have moved them from an appendix to supplementary materials.

RC: **Comment 11.**

Watch for minor typing errors (e.g., belong instead of belonging ¬- p. 10, using data as singular - table 1)

AR: Thank you. We have given the paper a careful edit.

RC: **Comment 12.**

Consider adjusting the title. The use of the word "after" is confusing, since for me I would think of an after school program, rather than post-graduation.

AR: Good point. We have replaced after school with post high-school.

RC: **Comment 13.**

I could not locate the Muir et al., 2015 citation, which is heavily cited. Is there a different citation that could be used instead?

AR: We believe this citation is important, given its focus on NEET in Australia. This citation is to a chapter in a Brill publication. Brill is a standard academic publisher and an e-version is available via Springer's Humanities, Social Science, and Law collection which most academic libraries are likely to have a subscription to.

3. Reviewer #3

RC: **Comment 1.**

This paper is well written. The models are fairly sophisticated, although apart from their mathematical expression, little narrative is devoted to their explication. Perhaps a more expansive discussion of the model and model fitting exercise are contained in the supplementary materials, to which reviewers appear not to have access. This also appears to be a pre-registered report (?), suggesting that the analysis plan has been approved by JEP or another registering service at an earlier date, which puts the current suite of reviewers at somewhat of a disadvantage, particularly if their interest is primarily methodological. Assuming as much, and assuming reviewers of the original registered report were in support of the analysis plan, I'm inclined to recommend publication...again on the assumption that key information is contained in the supplementary materials.

AR: We apologies that you were not able to access the pre-registration. It was attached to the submission as supplementary materials and, although it worked for us, we understand that the vagaries of the submission system mean this may not always be the case for everyone. Rest assured that the editorial team did have access to the unblinded pre-registration.

Nevertheless, we really appreciate your comments. We have expanded upon the model as follows:

> 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:
>
> $$ln(\frac{p}{1-p}) \sim N(\alpha_{i[j[k]]} + X_i\beta, \sigma_y^2),\ for\ i = 1, ..., n$$
>
> $$\alpha_{j[k]} \sim N(\mu_{j[k]} + W_j\gamma_1, \sigma_{\alpha j[k]}^2),\ for\ j = 1, ...m$$

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

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.

4. Reviewer #4

RC: **Comment 1.**

School Belonging Predicts whether an Emerging Adult will be Not In Education, Employment, or Training (NEET) after School In School Belonging Predicts whether an Emerging Adult will be Not In Education, Employment, or Training (NEET) after School¸ the authors use PISA data to assess whether school belonging, along with a host of other demographic variables, predicts youth not being in employment, education, or training (NEET) between the ages of 16-20. They test this using a series of logistic multilevel models. The authors conclude that school belonging at age 15 predicts NEET status in that school belonging is a protective factor of being NEET in ages 16-20. The authors suggest that this relationship is not likely accounted for by the relationship between belonging and high school graduation. The authors argue that school belonging is an important policy concern for economic reasons with NEET youth costing the economy billions of dollars per year.

The focus of the study has important policy implications as well as the potential to inform diversity, equity, and inclusion efforts. The authors adequately justify the importance of the work and explain their methods generally well. However, in its current form there are a range of issues with the manuscript that prevent me from suggesting acceptance at this time. Issues are detailed below by section but I will highlight a few here.

AR: We really appreciate your comments here. We thank you for noting the strengths of the paper and we hope we have addressed your concerns in the revision.

RC: **Comment 2.**

First, the introduction relies on outdated and limited literature in terms of its description of identity and belonging. The vague descriptions of "identity capital" and "politics of belonging" in the introduction and discussion of the manuscript are not only unclear in their meaning and how they inform the current study but also raise concerns in their general deficit framing.

AR: Identity capital has been removed from the paper and we now streamline the section on the politics of belonging to show more clearly how it is related. Importantly, as we outline in detail above (Reviewer 2 Comment 2), the politics of belonging is specifically anti-deficit and that is the reason for its inclusion. That is, it focuses on how systemic factors determine who does and does not belong. We have now made this clearer:

> 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.

We have also introduced newer research on the related topic of inclusion in the introduction. This reads:

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)

RC: **Comment 3.**

Further, some decisions regarding analyses are not strongly justified (e.g., collapsing across cohorts, using 5 of the available 10 PVs in 2015 cohort, not testing the hypothesized mediation, only using 5 imputed datasets, repeated predictor in regression tables, etc.).

AR: We address these issues below.

RC: **Comment 4.**

For these reasons and those detailed below, the findings are unclear as are the potential contributions this manuscript makes to the large and mostly uncited body of work on school belonging.

AR: We make reference to research on school belonging mostly from the last 10 years; including a brand new special issue on the topic:

> 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 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.

We have also added more recent literature on belonging in the discussion:

> 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.

RC: **Comment 5.**

P. 6. Paragraphs of "politics of belonging" and "identity capital" are quite unclear in their meaning as well as how they inform the study. There seem to be many underlying assumptions that the authors have about the development of identity that aren't coming through here and need to be supported with literature on this matter. The few citations included are quite old and do not truly address identity development or the development of belonging. There is much classic work by Goodenow and Anderman on school belonging that could inform this work as well as a larger body of recent work. There is also much discussion of something called the "politics of belonging" with one citation used repeatedly. Is there a larger body of work to pull from in support of this theory? Please clarify the meaning of these paragraphs.

AR: The section on the politics of belonging has been streamlined extensively (see Reviewer 2 Comment 2 above). We also note that the politics of belonging aimed to provide the mechanism between belonging and NEET. There is an extended section on the concept of school belonging itself which does have extensive citation to recent work (see Reviewer 4 Comment 4 above).

Also we wanted to affirm that we have conceptualise school belonging based on Goodenow and Gradey's definition: "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)" as we acknowledge this is the most widely used definitions.

RC: **Comment 6.**

The meaning of the last sentence regarding "low identity capital" and an identity market is very unclear. What is an identity market? Are the authors suggesting that one can either feel a strong sense of belonging to school or the labor market and these two are competing in some way? Would the authors suggest this to hold true for low SES participants as well considering that working while attending school is the norm for this group?

AR: This section has been removed as part of the revision.

RC: **Comment 7.**

P. 6: What are 21st century skills?

AR: This term has now been removed from the manuscript.

RC: **Comment 8.**

P. 8: "It is also possible that these factors are linked via third variables such as…etc. For this reason, it is critical that our research controls for these factors." Do the authors mean to say that for this reason they assess these variables as moderators or mediators? If the authors believe that some of these factors explain the relationship between NEET and school belonging, one would expect these to be treated differently than simple controls. The authors need to differentiate between what they see as controls and what they see as important explanatory variables to be tested as mediators or moderators. * P. 9: Authors state which variables have "significant relationships with NEET" but do not clarify what those relationships are. For example, what does it mean that gender, SES, place, and ethnicity are predictors? In which direction and in what magnitude?

AR: Here we mean that control variables need to be added to help account for potential confounding (i.e., omitted variable bias). The point about being more specific about the confounding relationships is well made. We have now corrected this:

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.

RC: **<u>Comment 9.</u>**

As a result of all of this, hypothesis 2 quite vague.

AR: We note that H2 is an exploratory hypothesis and will thus be somewhat vague by design. The reason this is a exploratory hypothesis is we do not have enough existing research or theory to provide a more specific hypothesis. Nevertheless, we outline in the new section on control variables (quoted Reviewer 4 Comment 8 above) some rationals for why should look at potential heterogeneous relationships but important demographics.

RC: **Comment 10.**

Table 1: Needs to be reorganized for clarity. For example, why is Achievement under the SES heading? Also rename categories where appropriate. For example, Female category should be named Gender since authors list each gender separately underneath this header.

AR: This is a good point re gender. We have now made this change and considered the naming of the other categories.

Achievement, however, is not listed under SES as a heading. The only row subsumed under SES is the indented unknown which is the number of participants with missing data for this variable.

RC: **Comment 11.**

P. 12, PV use: Why did the authors use only 5 of the 10 PVs for the 2015 cohort? Further explanation of the method and justification for this choice is needed.

AR: The rationale for this was that it allowed us to directly test for potential cohort effects. In PISA 2003 achievement was represented from 5 plausible values for math, reading, and science. In PISA 2015 the OECD extracted 10 rather than 5 plausible values (PVS). This was despite having a similar underlying model used to genertate the PVs. Selecting a random 5 PVS from the 2015 PISA cycle allowed us to integrate the data across these two cohort. This was important when we had only 5 imputations (assigning 1 PV to each imputation). As suggested by the reviewer, we now have thirty imputations. Thus, we now use all ten imputations. For the 2003 cohort, each PV appears in six imputations (five plausible values for 30 imputations). For the 2015 cohort, each PV appears in 3 imputaitons (10 PVs for 30 imputations). This is now covered in the manuscript:

> *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.

RC: **Comment 12.**

Did the attrition sample vary from those who chose to remain in LSAY on any of the key study variables?

AR: We now provide summarized information on this in the paper and a table of differences in the supplementary materials. The added text in the paper reads:

> 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.

RC: **Comment 13.**

Five imputations for a sample that is missing outcome measures on 50% of the sample seems very limited. Further justification is needed for this decision.

AR: We apologies for this confusion. There are in effect two separate samples here. The PISA sample and the LSAY sample. The LSAY sample is a sub-sample of the PISA sample and, as stated, we defined the sample of interest as the LSAY sample. From here attrition was relatively minimal. Nevertheless we now use 30 imputations.

RC: **Comment 14.**

Please define the term "urban youth" and describe how this was operationalized. Also, does this mean the referent group includes rural and suburban participants? Further info is needed.

AR: The description is based on the definition of postcodes from the Australian Bureau of Statistics. Here we define urban as people living in a major urban center (typically a state capital). This would include surrounding suburbs and accounts for approximately 70% of the Australian population. We have change urban to major urban center. We also give more detail in the methodology:

> 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.

RC: **Comment 15.**

How was high SES determined? Please describe.

AR: We apologies for the confusion. We assume this refers to SES and not the sensitivity analysis done with social class.

If so we do not mean high as a discreet category but rather that SES is positively related to belonging for example. We change this to say “youth who come from higher SES backgrounds” throughout.

RC: **Comment 16.**

The differences displayed in Figure 2 are labeled as trivial. However, the 2015 estimates are in the negatives while the 2003 estimates hover around zero. Is this truly trivial?

AR: The effect the reviewer refers to is the cohort effect which we agree not trivial. We do highlight in the paper that this is effect is quite large. What is represented in this figure and is described as trivial in the results is the *cohort by achievement interaction*. That is the cohort effects do not differ much by achievement levels. As can be seen in this figure the confidence intervals for marginal effects for each achievement level all overlap.

RC: **Comment 17.**

Further justification is needed for collapsing across cohorts. Have the authors considered presenting models separately for 2003 and 2015? Authors state the model controlling for cohort had a better fit than the multigroup models. This does not adequately justify the decision to collapse. A twelve-year gap between cohorts could indeed be meaningful. The finding that the 2015 cohort was 1.5 times more

likely to yield NEET participants at some point than the 2003 cohort supports a decision to present separate models as does the increase in minimum age for dropout between the two cohorts.

AR: As we note in the paper we do not merely control for cohort we also explore whether the effects of interest vary by cohort. This is equivalent to testing the models separately. Consider:

$$y = \alpha + \beta_1 X + \beta_2 Z + \beta_3 XZ$$

where y is a continuous outcome of interest; x is a continuous predictor of interest; and z is a dichotomous variable (e.g., the cohort dummy in our case) gives equivalent conditional estimates to:

$$(y|z = 0) = \alpha + \beta_1 X$$

and

$$(y|z = 1) = \alpha + \beta_1 X$$

Thus, we do indeed test the hypothesis the reviewer requests. We found on only two occasions that regression estimates differ by cohort (for achievement and for gender) and as shown in Figure 2 these *interactions* are trivial and are associated with the influence of covariates only. There were no significant interactions for the focal parameters indicating that belonging was associated with NEET status similarly in both cohorts. This provides empirical justification for combining the cohorts.

Although the above equations give identical point estimates, there are good reasons to use an interaction rather than separate models. Namely, by using an interaction on the whole sample you retain the power of the whole sample in estimating conditional means from the model. For an example, in the free R program, you can run the following code which shows identical conditional means but tighter confidence intervals:

```
library(ggeffects)
data(iris)
head(iris)

#Interaction gives the same conditional means but
# less uncertainty than individual models
m1 <- lm(Sepal.Length~Sepal.Width*Species, iris)
ggeffect(m1, terms = c("Sepal.Width [2]","Species"))
#Indvidual models
m2.setosa <- lm(Sepal.Length~Sepal.Width, iris,
subset = iris$Species == 'setosa')
ggeffect(m2.setosa, terms = c("Sepal.Width [2]"))
m2.versicolor <- lm(Sepal.Length~Sepal.Width, iris,
subset = iris$Species == 'versicolor')
ggeffect(m2.versicolor, terms = c("Sepal.Width [2]"))
m2.virginica <- lm(Sepal.Length~Sepal.Width, iris,
subset = iris$Species == 'virginica')
ggeffect(m2.virginica, terms = c("Sepal.Width [2]"))
```

RC: **Comment 18.**

P. 17 - Re: Multicollinearity: Were multicollinearity diagnostics run or are the authors simply relying on the correlation between the two? Please clarify. Also, if HS SES and achievement were truly multicollinear, then the authors need stronger justification for including both in the model. Did the authors run the model separately alternating the inclusion of each of these variables to see if the results remained consistent? Did the authors consider creating a composite of these two variables as a measure of "school context" as they suggest? What other trouble-shooting was done to address this problem?

AR: Multicollinearity among covariates is an interesting area of nuance. As we note in the paper, the multicollinearity that we mention in the paper is actually beneficially when the covariance is among control variables. In particular, we cite the work of Bollinger & Minier (2015) who show that controlling for a set of highly correlated proxies of a potential confounder of interest increases the precision of the central parameter of interest. Put simply, the association between belonging and NEET status is better estimated by including several highly correlated proxies of the school context where the school context was a potentially critical confounding source of variance. In the original submission we showed this improvement was likely negligible as models with just school average SES or just school average achievement gave essentially identical results for the focal parameters. Thus, yes, we did run the models separately as suggested.

RC: **Comment 19.**

Moderator analyses: Were there any particular reasons why the authors suspected the effect of belonging on NEET would vary by the six moderators tested? Did they have any specific hypotheses for these moderators?

AR: As noted above (Reviewer 4 Comment 9) this is largely exploratory but we do outline some potential rationals in the introduction:

> 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.

RC: **Comment 20.**

P. 18: The authors set up the paper to suggest they are interested in high school graduation as a mechanism and indeed even name the first paragraph on this page as such. Yet they do not test this mediation. This is misleading. The authors should consider either running these analyses as they set up the study or dropping this focus from the paper.

AR: As noted in the paper, the mediation analysis was part of the pre-registered plan. However, in the original model, belonging as a predictor of school graduation did not have confidence intervals well separated from zero and so we did not meet the first assumptions of testing mediation. However, in adding 30 imputations and the additional changes requested, the confidence intervals for belonging no longer include zero. Thus we now provide full mediation results. Despite this, over 75% of the total effect of belonging on NEET does not go through school graduation. This means most of the association between school belonging and NEET is not due to differences in high-school graduation rates. As such our interpretation of the results is retained. That is that belonging appears to influence NEET status largely by mechanisms beyond simply blocking of educational progression. The results now state:

We calculated the indirect effects of school belonging and its association with NEET status as mediated by high-school graduation. Results are presented in Table

RC: **Comment 21.**

Add p-values to tables B1-F1. Also name Gender dummy whatever 1 is on that code.

AR: In relation to the coding of gender this is a good point. We now make the change suggested by the reviewer.

In relation to p-values, this is no longer recommended practice by the American Statistical Association (Wasserstein & Lazar, 2016). The confidence intervals are generally easier to interpret, preclude common misunderstandings about p-values, avoids stargazing (scanning tables for indicators of significance and ignoring both estimates and their associated uncertainties), and provide the same information as p-values but in a less misleading manner. Thus, we would prefer to retain confidence intervals only.

RC: **Comment 22.**

Why is Urban entered twice in the regressions presented in B1-E1? Also many spelling errors in these tables.

AR: Apologies. Urban was not entered twice in the model but the R code we used to generate the tables mistakenly introduced a copy and paste error. We apologize for this and have now fixed the issue. Likewise with the spelling errors referred to.

RC: **Comment 23.**

How was unemployment/loss of work/childbirth accounted for in NEET status. Were those who lost work and seeking employment combined with those who did not ever join the workforce or who were not seeking employment or those who were staying home with an infant?

AR: Correct. As noted above (Reviewer 1 Comment 9) the NEET category is a encompassing definition aimed to capture "a broad range of vulnerabilities." This definition has now been clarified:

> 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.

RC: **Comment 24.**

P. 20: Authors discuss findings that Indigenous Youth had higher sense of belonging when controlling for SES but had low belonging overall. Have the authors considered testing this interaction to account for these potential nuances in the findings?

AR: We tested the reviewers suggestion and found that there was not a reliable interaction between Indigenous status and SES (β = -.012 [-.088, .064]). However, we are not sure that an interaction would tease apart our findings in any case. An interaction would test whether SES was associated with belonging differently for Indigenous and non-Indigenous youth. Our findings don't address this point. What our models show is that, on average, Indigenous youth report lower levels of school belonging. However, we know that SES is also positively related to belonging. Thus, the model we test that includes both Indigenous status and SES provides a test of the association between Indigenous and non-Indigenous youth with the same levels of SES. It is in this comparison that Indigenous youth have higher levels of school belonging that non-Indigenous youth who have the same level of SES. This may suggest that, for example, Indigenous youth have particular strengths that provide them some protection against the influence of SES on school belonging.

RC: **Comment 25.**

There are some hints throughout the manuscript that the authors may have some interest in equity issues. However, the primary sense that the authors give is that people who are NEET are mainly just an economic burden and that a lowered belonging or identification with school is a personal character flaw rather than a result of systemic issues of oppression and inequity. For example, p. 21, "Given that about 10% of Australian youth aged 15-24 are NEET, costing the economy over $16 billion a year, this is a notable effect." Also on p. 21, "may signal that a particular youth lacks the identity capital required to…". Is this the authors' intended framing? If not, I would suggest that the authors incorporate their DEI efforts more completely throughout the manuscript and tone down the deficit approach and the negative framing.

AR: The paper specifically set out to challenge deficit orientation and our focus on the politics of belonging aimed specifically to frame school belonging in relation to systemic issues (see details in Reviewer 2 Comment 2).

We agree that our framing could use some work and we could center an anti-deficit position earlier and more clearly. We have made changes throughout the manuscript including removing reference to the economic costs of NEET. For example, the introductory paragraph reads:

> 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)

and the conclusion reads;

> 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.

RC: **Comment 26.**

P. 21, "social costs of belonging": What does this mean?

AR: Apologies. This was badly written. We have corrected this section:

> 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.

RC: **Comment 27.**

P. 21, "be due to the politics of belonging where some identities are placed at the margins of society". Are the authors suggesting school identity is at the margin of society? Clearer language and more concrete examples to support these explanations is needed.

AR: Other reviewers noted that our use of the term margins of society was poorly chosen. We agree and have now removed this section as part of the revision. As noted above (Reviewer 2 Comment 2), we have significantly streamlined the section on the politics of belonging.

RC: **Comment 28.**

P. 22, "accumulation of disadvantage": It seems that the authors may be referring to indigenous youth who are low SES here. But earlier they make the point to say that after controlling for SES indigenous youth actually had higher sense of belonging along with girls, "urban" youth, and immigrants. So is it truly an "accumulation" of disadvantage or does it all boil down to SES? The authors may wish to reassess what characteristics they are considering a disadvantage and what could potentially be strengths. Some interaction terms can help their interpretation of the findings to assess the intersections of these factors. Did the authors truly not have the power to detect any interactions?

AR: No the 'accumulation of disadvantage' section is not specifically about Indigenous children (or other axes of disadvantage) but about children who experience low levels of school belonging and the impact this may have on their pathways from high-school. What we mean is that feeling isolated at school is a negative experience. This negative experience can be made worse if feeling of isolation lead an individual to be vulnerable to other negative outcomes. For example, a student who feels isolated at school may be excluded from school ties (with teachers and other peers for example) that can assist them in the adjustment to university. This may make this transition more difficult and increase the chance of dropping out. We have tried to clarify this in the discussion to read:

> 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.

RC: **Comment 29.**

P. 22, "those raised on the fringes of society." What exactly does this mean and who are the authors referring to?

AR: This language has now been removed from the paper.

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