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# Quantifying low English literacy in Australian Aboriginal communities: a correlational study

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## Abstract

While the English literacy outcomes of Aboriginal children are constantly measured and debated, attention falls away once they leave school, leading to limited data on English literacy rates among Australia's Aboriginal adults. This paper reports on an investigation into the prevalence of low literacy in adults in eight Aboriginal communities in NSW, Australia, drawing on both self-report data from household surveys and objective professional assessments using the Australian Core Skills Framework (ACSF). The research was conducted in partnership with a national Aboriginal organisation as part of a longitudinal study of the impact of improved adult literacy on the social determinants of health and social wellbeing. Of the participants who were measured to have low or very low English-language literacy level using ACSF, 51% had completed Year 10 or higher. This casts serious doubt on the value of school completion data which is used, for example, in Close the Gap reporting, as an accurate predictor of adult literacy rates. Results further show that while self-reported low literacy was prevalent in the population studied, there was also a significant overestimation, with adults who have completed years 10–11 nearly 30 times more likely to overestimate compared to people who only complete primary school. Given the well-known associations between adult literacy and a range of other outcomes including income, employment and health, national adult literacy surveys such as the Program for International Assessment of Adult Competencies should aim to produce more comprehensive national, regional and local data on Aboriginal adult English literacy.

**Keywords** Aboriginal peoples · Adult literacy · Longitudinal research

The authors use the term 'Aboriginal' and 'Aboriginal peoples' to refer to the participants in this study. This term has been used in preference to 'Aboriginal and Torres Strait Islander/s' as our data come from New South Wales and there are no Torres Strait islander participants in our study. Furthermore, due to the widespread movement of peoples through colonisation, multiple language groups are represented in our sample and so we cannot refer to specific language groups.

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## Introduction

Robust, contemporary estimates of English literacy levels in the adult Australian population are scarce. The main source since 1997 has been the Australian component of a series of three international adult literacy surveys: the Australian Bureau of Statistics (ABS)-run Survey of Aspects of Literacy (SAL) (1996) and the Adult Literacy and Life Skills Survey (ALLS) (2006); and the Program for International Assessment of Adult Competencies (PIAAC) in 2011–2012. Each of these surveys provides national- and state-level estimates but sample size constraints mean data on a specific locality or population are unavailable. As a result, recent and reliable data on Australian Aboriginal adult rates of English literacy are not available.

The absence of detailed local level data on Aboriginal adult English literacy rates should be of major concern to policy-makers, not just in education but across a whole range of services and programs in which the literacy of potential users and beneficiaries is likely to play a significant role, for both access and effective participation. Among health professionals and providers, 'health literacy' has long been a major concern (e.g. de Leeuw 2012), but similar concerns are now common in regard to 'financial literacy', 'legal literacy', and the literacy required for effective participation in community organisation and governance. In the formal education sector, adult literacy is clearly implicated in the capacity of parents and other significant adults to engage with their children's schooling and learning, including through organisations such as Aboriginal Education Consultative Groups (Lowe et al. 2019; Ratcliffe and Boughton 2019). The lack of attention to and data on levels of adult English literacy in Australian Aboriginal communities is, therefore, a significant blind spot in Aboriginal policy.

This paper reports on an investigation into the prevalence of low literacy in adults in eight Aboriginal communities in NSW, Australia, drawing on both self-report data from household surveys and objective professional assessments using the Australian Core Skills Framework (ACSF). The research was conducted as part of a longitudinal study of the impact of improved adult literacy on the social determinants of health. The data reported on here was collected through the *Yes, I Can!* Aboriginal Adult Literacy Campaign which has been running in NSW since 2012 and more recently in the Northern Territory. The research is endorsed by a local Aboriginal community-controlled organisation in each community and approved by the University of New England Human Research Ethics Committee and the Ethics Committee of the NSW peak body for Aboriginal community-controlled health services, the Aboriginal Health and Medical Research Council (AH&MRC).

### Issues with quantifying low English literacy among Australian Aboriginal adults

Of the three international surveys of adult literacy conducted in Australia in recent years, the 1996 SAL was the only one which made any specific reference to Aboriginal and Torres Strait Islander's English literacy. It reported that 41–47% of Aboriginal adults were at 'Level 1' (defined as having very poor skills and experiencing considerable difficulties with printed material in daily life) and that approximately

another 25–30% were at 'Level 2' (defined as experiencing some difficulties in using printed material in daily life) (McLennan 1997). The more recent surveys have not reported any findings on Aboriginal peoples' English literacy. Indeed, the ABS report on 2011–2012 PIAAC said that discrete Aboriginal and Torres Strait Islander communities had been specifically excluded from the sample (ABS 2013).

In the absence of contemporary and local-level data on Aboriginal adult literacy, proxies such as completed levels of education are often used to approximate literacy levels. However, this is problematic as it assumes a direct correlation between completion of schooling and attainment of literacy competency. Using school-based assessments such as the National Assessment Program–Literacy and Numeracy (NAPLAN) and the Programme for International Student Assessment (PISA) to infer adult literacy is also fraught due to the significant variations in how these assessments define, measure and report literacy results (Tout and Mendelovits 2013).

A further potential source of data on Australian Aboriginal adult literacy competencies is administrative data collections. These include the Australian Core Skills Framework (ACSF) scores held by Vocational Education and Training (VET) providers, which were utilised in a recent study of Aboriginal peoples' English literacy in the Northern Territory (Shalley and Stewart 2017), and the English language proficiency assessments of Jobactive (formerly Job Network) and Community Development Program (CDP) participants, administered through the Jobseeker Classification Instrument (JSIC) and held by Centrelink and the National Indigenous Australians Agency. Neither of these datasets, however, are publicly available at locality level, and they apply only to specific sections of the population, such as VET students and registered jobseekers in receipt of government income support payments. As with using proxies such as school completion, relying on datasets restricted to narrow cohorts to estimate Aboriginal and Torres Strait Islander people's adult literacy levels is highly problematic and potentially misleading.

## The *Yes, I Can!* Aboriginal Adult Literacy Campaign

*Yes, I Can!* is Australia's only community-controlled adult literacy campaign for Aboriginal adults. It utilises a mass campaign model which was developed in Cuba in 2000 and deployed since then in 30 low- and middle-income countries (Boughton and Durnan 2014). The campaign in Australia is managed by the Literacy for Life Foundation (LFLF) working in partnership with local Aboriginal community-controlled organisations. The first campaign was delivered in Wilcannia in remote north-west New South Wales in 2012–2013 (Boughton et al. 2013). It was then extended to seven more remote NSW Aboriginal communities in north-west NSW. In early 2019, the campaign was delivered for the first time in an urban setting, in Campbelltown in south-west Sydney, and shortly after, also commenced in the remote community of Ltyentye Apurte in Central Australia. Campaigns have been funded from a variety of commonwealth and State government programs, and also through private and corporate donors. In this study, data from eight NSW communities have been included.

In the first phase of the campaign, local Aboriginal staff who have been selected with the assistance of a local Aboriginal organisation are trained by LFLF national staff to conduct a community household literacy survey. This survey gathers baseline demographic and education data, including self-assessed literacy, to help the local leadership of the campaign identify people in the community with the most need for literacy classes. People who have self-assessed as having low or very low literacy are then followed up and invited to join the basic literacy classes which comprise the next phase of the campaign. In some communities, several adults who self-reported as having good literacy have also participated in the classes, to support family members.

Once classes begin, the LFLF undertakes a program of assessment, monitoring and evaluation of those enrolled in the course, which includes administering a 'pre-test' and 'post-test' utilising the Australian Core Skills Framework (ACSF). The ACSF is a tool for the development and identification of core skills among adult learners across five domains: reading, writing, learning, numeracy and oral communication. As a national framework, the ACSF provides shared concepts and language for identifying, describing and discussing the core skills. It also affords a systematic approach to benchmarking, monitoring and reporting on core skills performance (DET 2012). The ACSF measures performance across six levels, from Pre-Level 1 (lowest) to Level 5 (highest). Performance across most indicators at Level 3 is generally considered the required level for skilled employment and completion of a VET course at Certificate 4 level or above on the Australian Qualifications Framework (AQF). The ACSF assessment is onerous and has potential to deter participants from continuing to attend literacy classes if conducted too early and before rapport is built with the facilitators. Therefore, the ACSF baseline assessment is normally conducted in week 4 of the basic lessons phase to limit early participant withdrawals. As with the household survey, LFLF trains the local Aboriginal staff who have been employed to facilitate the literacy class to administer the ACSF assessment, supported by a professional adult literacy educator. The principal purpose of the assessment is to establish a clearer and more detailed 'baseline' which then can be used by staff to tailor the learning activities to meet an individual's specific needs.

The ACSF does not measure literacy in the same way as the SAL, ALLS or PIAAC surveys. PIAAC combines a form of self-assessment with an objective test but does not assess writing. A 2013 study by the National Centre for Vocational Education Research (NCVER) found the correspondence between ACSF levels and the ones used in ALLS and PIAAC to be inexact:

> Equivalence between the two frameworks at the lowest skill level was found—one does equal one. However, the alignment was not as direct at the higher skills levels, with the numeracy and reading constructs of the Adult Literacy and Life Skills survey found to be generally more complex than those of the Australian Core Skills Framework. Indeed, Level 3 ALLS—the minimum aspirational target of the National Foundation Skills Strategy for Adults—was similar in complexity to exit Level 4 of the ACSF. (Circelli et al. 2013).

Self-reported literacy data is easier to collect at a population level compared to conducting ACSF assessments which can take one to two full days and requires

skilled assessors which adds to resourcing costs. However, self-reported data in general have well-known limitations including the potential for social desirability bias. The LFLF currently has self-reported literacy levels from 1171 people, 161 of whom have completed ACSF pre-assessments. Validation of the self-reported literacy data can potentially provide much needed information about the extent of low literacy among the adult Australian Aboriginal population in these communities.

## Aims and methods

As outlined earlier, the study reported in this paper is one component in a longitudinal evaluation research program which LFLF is undertaking in partnership with The Lowitja Institute and researchers from the University of New England and University of New South Wales, Sydney. The longitudinal evaluation assesses the impact of the *Yes, I Can!* literacy campaign on individual and community literacy levels and on a range of other social indicators, within a social and cultural determinants of health framework. The authors are members of this research team assembled by LFLF and The Lowitja Institute. Beetson, a Ngemba man from western NSW, led the campaign in the communities in which the study was conducted, oversighted the data collection and, as LFLF Executive Director, has final sign-off on study publications. Boughton and Williamson are adult literacy scholar/practitioners, both of whom worked in the study communities on the campaigns, and helped collect and interpret the data. Bartlett is a public health physician with a long association with the Aboriginal community-controlled health services, who is responsible to the LFLF Board for management of its Communicare data system, wherein the data are stored. Taylor and Lin are epidemiologists, recruited through Bartlett's networks, for their expertise in statistical analyses of the social determinants of health. Both have extensive experience in working with culturally and linguistically diverse populations within and outside of Australia, including Indigenous groups. The study design, including the team, was reviewed and approved by the Ethics Committee of the Aboriginal Health and Medical Research Council, the peak body for Aboriginal Medical Services in NSW.

Descriptive analysis was initially used to establish baseline literacy in our study population using both self-reported and objectively measured literacy. Then, analyses were conducted to investigate the frequency of over- or underestimation of self-assessed literacy and predictors of overestimation.

The aims of this current study are to:

1. Investigate the prevalence of low or very low literacy in adults in eight communities in NSW, Australia based on self-report and objective ACSF assessment;
2. Evaluate the concordance between self-reported literacy level and the objective ACSF assessment; and
3. Investigate the predictors of disagreement between self-reported literacy levels and the objective ACSF assessment.

### Aim 1: investigate the prevalence of low or very low literacy (less than Level 3 literacy) in adults in the *Yes, I Can!* campaign communities, based on self-report and objective ACSF assessment

The frequency of low or very low literacy was calculated in two ways. First using the participant's self-assessment of their own reading and writing skills and secondly using an ACSF assessment to obtain objective measures of literacy.

Self-reported literacy level was measured during the household survey. Participants were asked to rate their ability to read and write at one of four levels: (a) Very well. (b) OK, but some problems filling in forms etc. (c) Not very well. (d) Not at all. The local Aboriginal staff administering the survey followed the guide set out in Table 1, below. The levels are a simplified explanation of the lower level definitions in the PIAAC survey and the ACSF and were developed in consultation with the community during the first campaign in Wilcannia in 2012–2013. Individuals who nominated the latter three categories were defined as having low or very low literacy and were then invited to participate in the literacy classes. During the household survey, teenagers aged 15–17 years were included and an age range was recorded rather than exact age. Therefore, age-specific data for self-reported literacy use broader categories.

The ACSF assessment was made using three of the five ACSF domains: reading, writing and learning. 'Learning' is defined as awareness of the self as a learner and the application of strategies to facilitate the planning and management of one's learning (DET 2012). The remaining two domains (oral communication and numeracy) were excluded because of time constraints and because the *Yes, I Can!* classes do not specifically address numeracy. The assessments were administered by local Aboriginal staff in the classroom setting, with the support of a professional literacy educator, who then moderated each individual assessment to generate a specific score for each of the two indicators in each of the three domains, and a detailed narrative report for each student in relation to each domain.

For the purpose of this study, an assessment of ACSF Pre-Level 1, which indicates extremely limited literacy, was considered equivalent to a 'Not at all' response using self-report. An assessment of ACSF Level 1, which indicates minimal basic literacy, was considered equivalent to a 'Not very well' response using self-report.

**Table 1** Self-assess reading and writing

| Choose one of the following |
|---|
| (a) Very well—no problems. (e.g. Can easily write a letter; read newspaper and complete hard forms without help), or |
| (b) OK, but trouble with filling out forms, writing or reading difficult words and a long letter, bill, and medical instructions, or |
| (c) Not very well. (e.g. Can write name; read and write some familiar words. Not confident to read or write a sentence without help.), or |
| (d) Not at all. (e.g. Might be able to sign name, recognise a few letters and numbers and maybe recognise a few short words, needs help to read and write) |

Level 2 indicated moderate literacy and equivalence to 'OK, but some problems filling in forms'. Level 3 indicated "functional everyday literacy", and equivalence to 'Very well'. The LFLF national staff enter all household survey data and ACSF assessments into a purpose-built campaign database, based on the Communicare system used in many Aboriginal community-controlled health services.

### Aim 2: evaluate the concordance between self-reported literacy level and the objective ACSF assessment

To determine the concordance or agreement between the two sources of data, namely self-assessed literacy ratings and ACSF pre-test results, Cohen's kappa coefficient ($\kappa$) [Cohen 1960] was used. A total of 161 pairs of self-reported literacy level and the objective ACSF assessment were compared. Weighted kappa outcomes were used to take into account the magnitude of disagreement between self-reported and ACSF assessed literacy.

### Aim 3: investigate the predictors of disagreement between self-reported literacy levels and the objective ACSF assessment

Logistic regression models were used to identify risk factors or predictors associated with overestimation of self-assessed literacy compared to objective ACSF assessment. Overestimation of literacy ability were modelled with age, sex, community, highest level of completed schooling (primary, Years 7–9, Years 10–11, Year 12) and baseline literacy as assessed using ACSF to evaluate the best-fitting models, as assessed by the Akaike Information Criterion (AIC). The odds ratio (OR) was calculated by exponentiating the beta estimate.

## Results

Analyses of the prevalence of English literacy and the agreement between self-reported and objectively measured literacy have been organised by study objectives below.

### Aim 1: the prevalence of low English literacy

One hundred and sixty-one pairs of self-reported and ACSF assessments were identified for this study. Participants who completed the ACSF assessment were more likely to be older, female and have completed fewer years of school compared to the communities in which they reside (Table 2). Most of the ACSF-assessed participants had completed at least Years 7–9 ($n=152$, 94%) or Years 10–11 ($n=82$, 51%). Only 7% ($n=12$) completed Year 12. Table 2 below presents a demographic comparison of the eight participating communities.

In the household survey, 1177 of the 1217 respondents provided a self-reported literacy. Based on self-report, 800 of 1177 adults (68%) reported they had low or very

**Table 2** Demographic comparisons between the eight participating communities (Aboriginal residents only), adult (18 + years) participants in the household survey (self-reported literacy) and participants who completed an ACSF assessment

| | Community[a] | Household survey ($n = 1217$) | ACSF assessed ($n = 161$) |
|---|---|---|---|
| Median age (years) | 24 | 40 | 40 (range 18–70) |
| Female (%) | 53 | 56 | 59 |
| Completed Year 10 or higher (%) | 59 | 39 | 51 |

[a]Average of eight included communities. Data obtained from Community Profiles from the 2016 Census of Housing and Population (ABS 2017)

English-language literacy levels: 3% reported no literacy at all, 20% reported their literacy was 'not very well', and 45% reported literacy was 'OK but have some difficulties'. 32% of participants said they had good literacy. More men (76%) than women (62%) reported difficulties with reading and writing ($p < 0.0001$). Individuals aged 45–54 were most likely to report having low or very low literacy (73%), followed by 15–24 years (70%), ≥ 55 years (67%), 24–34 years (65%) and 35–44 years (62%). Of the participants who self-reported low or very low literacy, 31% had completed Years 10–11, 6% had completed Year 12, and 1% had post-secondary school qualifications.

All 161 participants who completed the objective ACSF assessment were found to have low or very low levels of English-language literacy: 30% had no literacy at all, 56% had very low literacy, and 14% had moderate literacy. There was no difference in objectively tested literacy between sexes ($p = 0.41$) and age groups ($p = 0.61$). Half of the participants with an ACSF assessments had completed Years 10–11 (43%) or Year 12 (7%).

### Aim 2: degree of concordance between Self-reported literacy and ACSF pre-test results

There was very poor agreement between self-reported literacy and the ACSF assessment (weighted $\kappa = 0.134$, $p = 0.248$) with nearly three-quarters of the participants ($n = 114$, 71%) self-reporting a different literacy ability compared to their ACSF assessment (Table 3). Most individuals ($n = 106$, 66%) appear to have overestimated their literacy ability as measured by the ACSF: 48% ($n = 76$) by 1 level and 19% ($n = 30$) by 2 levels. Results also show that eight participants (5%) may have underestimated their literacy ability according to their ACSF results; all but one nominated themselves as having extremely limited literacy but assessed as Level 1 (low literacy) using ACSF.

### Aim 3: predictors of disagreement between self-reported literacy levels and the objective ACSF assessment.

In bivariate logistic regression models, only completed schooling was significantly associated with overestimation of self-assessed literacy ($p = 0.02$). Compared to

**Table 3** Self-reported literacy levels compared to ACSF score constructed using six indicators (two each for reading, writing and learning)

| Self-reported literacy | ACSF outcome | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pre-level 1 | | Level 1 | | Level 2 | | Level 3 | | Total | |
| | Extremely limited | | Basic | | Moderate | | Functional/ Everyday | | | |
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| Extremely limited | **8** | **17** | 7 | 8 | 0 | 0 | 0 | 0 | 15 | 9 |
| Basic | 18 | 38 | **26** | **29** | 1 | 4 | 0 | 0 | 45 | 28 |
| Moderate | 22 | 46 | 49 | 54 | **13** | **57** | 0 | 0 | 84 | 52 |
| Functional/Everyday[a] | 0 | 0 | 8 | 9 | 9 | 39 | **0** | **0** | 17 | 11 |
| Total | 48 | 100 | 90 | 100 | 23 | 100 | 0 | 0 | 161 | 100 |

Bolding indicates concordant pairs

[a]Participants who self-reported as having low literacy were eligible to participate in literacy classes where the ACSF assessment was conducted. Some people who self-reported as having good literacy also participated to support family members

participants who had only completed primary school, those who had completed Year 10–11 were 10-times more likely to overestimate literacy (OR 10.1, $p=0.007$). After adjusting for age, sex, community and baseline literacy as assessed by ACSF, the likelihood of overestimation increased (Table 4). Individuals who had completed Years 10–11 were the most likely to overestimate (OR 30.2, $p=0.005$) followed by those who had completed Year 12 (OR 18.6, $p=0.04$).

85.5% of participants who had completed Years 10–11 reported that their literacy ability was 1 level (65.5%) and 2 levels (20.0%) higher than the ACSF assessment. The group most likely to have concordant self-reported and ACSF literacy assessments were those who had completed primary school only (62.5% of participants were concordant), followed by those who had completed Years 7–9 (32.7%) and Year 12 (27.3%).

**Table 4** Effect of completed schooling level on likelihood of overestimating literacy ability

| Completed schooling | Unadjusted model | | | Fully adjusted model[a] | | |
|---|---|---|---|---|---|---|
| | Beta estimate | *p* | OR | Beta estimate | *p* | OR |
| Primary (ref) | | | 1.0 | | | 1.0 |
| Years 7–9 | 1.50 | 0.078 | 4.5 | **2.44** | **0.032** | **11.5** |
| Years 10–11 | **2.32** | **0.007** | **10.1** | **3.41** | **0.005** | **30.2** |
| Year 12 | 1.79 | 0.079 | 6.0 | **2.92** | **0.041** | **18.6** |

Model c-statistic was 0.846

Significant results bolded

*OR* odds ratio

[a]Model adjusted for age, sex, community, and baseline literacy as assessed by ACSF

## Discussion

The results from this study highlight important issues related to the low level of English literacy in remote Aboriginal communities and its relationship to completed education levels which have serious ramifications for the development and monitoring of education policies in Australia.

This study analyses contemporary local area data on Aboriginal adult English literacy and is the first to collate data from a number of different communities across different regions, including rural, remote and urban locations. It is also the first that we are aware of to correlate self-reported literacy levels in Aboriginal adults against an objective assessment tool. This study has shown that self-reported English-language literacy ability was frequently overestimated in comparison to objective testing, with adults who have completed Years 10–11 nearly 30 times more likely to overestimate compared to people who only completed primary school.

Among the 1177 people reached by the campaign household survey teams, 800 (68%) self-identified as having English language literacy difficulties, confirming a view held by many Aboriginal community leaders, that this is a widespread problem. This figure is significantly higher than estimates in earlier work (Boughton 2009) which helped establish the need for the current campaign, and it is almost as high as was found in case-studies of remote Northern Territory communities (Kral and Schwab 2003). Moreover, due to the significant overestimation that this study demonstrates, the actual prevalence of low English literacy could be much higher.

That said, application of the findings of this study to Australian Aboriginal populations more broadly should be carefully considered, for several reasons. First, the majority of communities were in remote locations, while the majority of the Aboriginal population resides in urban and rural communities. Second, the *Yes, I Can!* campaign survey workers purposely target the most disadvantaged areas of a community, where they are more likely to find people who have difficulties with literacy. Third, the LFLF survey population is also older, more female, and has completed less schooling than the community average. The higher participation of older female adults reflects increased interest levels among this group, which also transfers into enrolments and graduations from the campaign. But it may also reflect the fact that men in these communities are more transient, more likely to be in seasonal or casual work or on work-for-the-dole schemes, and more likely to be incarcerated.

This study has not investigated the reasons for either the extent of low literacy, or why there is a significant discrepancy between literacy self-assessments and the more objective ACSF pre-test results. Nevertheless, both the prevalence and the demonstrated overestimation of literacy skills has several implications. First, this affects future planning for the LFLF literacy campaign itself, and for other organisations which aim to achieve a significant reduction in the overall rate of low literacy among adults in these communities. It suggests that the campaign may need to inflate its estimates of the time it will take to achieve its goal. Second, it is important information for Centrelink and Job Network providers who use a form of self-assessment to decide whether or not their clients need literacy support to access training and employment services. Third, a range of other

services and community organisations which rely on text-based materials to communicate with the community may need to rethink their strategies. Fourth, for the individuals concerned, their self-assessment of their need may be inhibiting their own help-seeking behaviour, reducing their effective demand for support to improve their literacy.

But perhaps a larger and more significant issue is raised by the counter-intuitive relationship which this study reveals between years of schooling and literacy levels. Currently, one of the targets in the Closing the Gap initiative is to raise the proportion of 20–24 year old Aboriginal adults who complete Year 12 or equivalent (Office of Prime Minister and Cabinet 2019). This target makes the assumption that "this education sets them up for better employment opportunities" (PMC 2019, p. 6). However, this study has found completed schooling level does not correlate with good literacy skills. The absence of correlation between completed schooling and functional reading and writing skills necessary for employment has significant implications for Aboriginal peoples' education and social policy. Using Year 12 completion as an outcome to measure progress towards reducing disadvantage in Aboriginal Australians obscures the relationship between educational attainment and literacy—a relationship that cannot be considered straightforward given the persistent and well-documented disparities in educational achievement between Aboriginal and non-Aboriginal Australians.

Literacy attainment would be a more appropriate target in monitoring education disparities between Aboriginal and non-Indigenous Australians instead of Year 12 completion because of the absence of correlation between education level and function English literacy skills. However, frequent and regular literacy surveys using objective measurement tools are highly resource intensive and alternative methods of estimating population literacy are needed. Surveys using self-reported literacy are faster and cheaper to do, but as demonstrated in this study are highly prone to overestimation. It may be possible to adjust self-reported population estimates of literacy based on algorithms constructed from regression models. However, a nationally representative, adequately sized study population is needed whereby both self-reported and objectively assessed literacy data are collected, along with a range of other known predictors and confounders. The small and non-representative sample size in this study (older, female, less-educated) prohibits such calibration of self-reported literacy levels.

In our sample of ACSF-assessed participants, 43% had completed Years 10–11. However, these participants were 30 times more likely to overestimate their reading and writing skills compared to those who completed primary school only. Previous studies have found that measures such as years of education overestimate literacy skill level by three to five reading levels (Weiss et al. 2005; Lee 1999; Wilson 1995). Our study adds further evidence that the pervasive assumption that school attainment correlates positively with literacy level is flawed. Self-assessed literacy is influenced by what is perceived as 'normal' in a particular community or section of a community. Where literacy is low, people who complete more years of schooling may expect to have better literacy than those who have fewer years of formal education which could explain higher likelihoods of overestimation in people completing more schooling.

It has been previously suggested that the overestimation of literacy ability is associated with circumstance: people with (objectively measured) lower skill levels do not have a great need to use advanced reading and writing skills in day-to-day life and therefore consider that their literacy ability is sufficient for daily living (McLennan, 1997). This hypothesis is possible in our study as unemployment in the eight communities is high (mean 27%, range 19–37%) and attendance at tertiary, technical or other further education institutions amongst adults is low (mean 4%, range 0–12%) (ABS 2017), precluding the need to exercise higher-level English literacy skills.

Finally, in the 1996 SAL, it was claimed that Level 3 literacy (defined as having the ability to cope with a varied range of material found in daily life and work) was the minimum level of literacy required for employment and post-secondary education. The Organisation for Economic Cooperation and Development (OECD) which coordinates the surveys internationally made a similar claim in 2010 (St Clair 2012). This claim has been challenged by literacy researchers (e.g. Black and Yasukawa 2014), both as being higher than is required in many occupations, but also for the way the measure was constructed. Nevertheless, it was adopted into Australian government policy, when the Council of Australian Governments (COAG) said, in relation to the most recent PIAAC survey results, that PIAAC Skill Level 3 was the minimum level required by individuals to meet the complex demands of work and life in modern economies (SCOTESE 2012, p. 4). While this remains a matter of debate, it is significant that no participant in our study achieved this level.

## Conclusion

Our study has made several important findings. Firstly, while low English literacy as ascertained through self-report among Aboriginal adults in north-western NSW is a greater problem than it is in the population as a whole, the actual extent of the problem is also being underestimated because of systematic overestimation of self-reported English literacy levels. Secondly, we found no positive correlation between school attainment, in particular completion of Year 10–11, with higher English literacy levels. This finding casts doubt on the pervasive use of school completion data as an accurate proxy for adult English literacy rates among the Australian Aboriginal population.

It is therefore clear from this small study that the absence of better measures of adult English literacy need to be addressed as a matter of urgency. Effective planning and policy development require robust estimates of how many people operate at lower levels of English literacy, especially at Level 1 and below, since these people are clearly the ones who will face most challenges dealing with the world of text. This is most urgent in the case of Aboriginal communities which must deal daily with an extensive apparatus of regulation and administration by highly literate government departments and non-government organisations. Communities in which significant numbers of adults are operating at low levels of English literacy are also likely to face difficulties across a range of domains. Low adult literacy is associated with a range of problems including reduced employment prospects, poor physical

and mental health, higher rates of incarceration and substance abuse (Reder and Bynner 2008), which all in turn, impact on families' ability to engage with education in a multitude of ways. Such outcomes are demonstrated in high levels of Aboriginal students achieving at below minimum standards on Grade 3 NAPLAN tests (32.7% compared with 6.9% for non-Indigenous students) (ACARA 2018).

In keeping with the principle of no screening without treatment, the research team on this project is committed to using this information to assist LFLF to advocate for increased funding to support the roll out of the literacy campaign across more communities. Part of this advocacy will be around Australia's participation in the next OECD PIAAC program. Given the results of this study, we believe a minimum requirement in the negotiations around the conduct of the Australian version of this national survey should be the formation of an Aboriginal and Torres Strait Islander-led committee to advise the ABS on ways to ensure that appropriate steps are taken to collect the data on the English literacy levels in Aboriginal and Torres Strait Islander communities needed to inform future policy and planning.

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