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## Abstract

We introduce a novel incentive program aimed at decreasing school absenteeism based on the effect of voluntary promises in motivating desirable behaviour. In contrast to a standard program, in which students receive a reward conditional on having achieved a school attendance rate of at least 90 percent, in the promise program, they receive the reward up front, conditional on their commitment to invest their best efforts to reach the attendance target. We assess the effectiveness of the promise program through a field study involving Indigenous Australian high school students, a population who tends to have lower education achievement and socioeconomic advantage than their non-Indigenous counterparts. We find that the promise program significantly decreased unexplained absences compared to the standard program but that it did not influence overall school absences. Our findings suggest that voluntary promises coupled with small gifts are effective in influencing behaviour of disadvantaged students. At the same time, we need further research on how to best design such programs to achieve positive effects in reducing school absenteeism.

JEL-Codes: I240, I250, I280.

Keywords: school absenteeism, promises, upfront rewards, Aboriginal and Torres Strait Islander students.

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# 1 Introduction

Given the importance of education for personal development and employment opportunities, many governmental and non-governmental programs aim at encouraging high effort and achievement in school typically targeting low achieving socioeconomically disadvantaged students. Many of these programs use rewards that are conditional on achieving a specific goal.[2] We assess the impact of a novel encouragement program based on the positive motivational effect of making a voluntary promise to achieve regular school attendance, coupled with a small gift awarded just after the promise is made. In this setting, the promise is a *soft commitment* since there are no consequences, beyond the potential psychological cost, from not sticking to one's promise. Nonetheless, great emphasis is given to the fact that making the promise means making a genuine commitment to put one's best efforts to reach the school attendance target. We evaluate the effect of this novel program with a field study with Indigenous students in Australian high schools.

We compared the effectiveness of the promise program to a standard program, both introduced by the Former of Origin Greats (henceforth FOGS), a non-governmental organisation which runs incentive-based programs addressing low school attendance and providing encouragement and learning support for Aboriginal and Torres Strait Islander students.[3] In Australia there are large disparities in education outcomes between Indigenous and non-Indigenous students and many programs aim at reducing this gap (Bath and Biddle, 2011; Gray and Beresford, 2008). The gap in education outcomes is particularly evident with regards to school attendance, with Indigenous students' attendance rates consistently falling short of the target established under the Federal Government's Closing the Gap initiative (Commonwealth of Australia, 2019). On average, attendance rates for Indigenous students continue to remain far below the government's 90 percent minimum attendance benchmark throughout primary and secondary school. According to the Closing the Gap report (2019), national school attendance rate for Indigenous students was approximately 82 percent as compared to 93 percent for non-Indigenous students. Moreover, the disparity between Indigenous and non-Indigenous students' attendance rates increases throughout the educational trajectory, contributing to the large gap in high school completion rates between Indigenous

[2] For studies on financial incentives (see Angrist et al., 2002; Angrist and Lavy, 2009; Bettinger, 2012; Fryer, 2011); for studies on in kind-incentives (see Baumert and Demmrich, 2001; Jalava et al., 2015; Levitt et al., 2016); and for studies on combinations of programs and information based programs (see Angrist et al., 2009; Dulleck et al., 2016; Rodrigues-Planas, 2012).

[3] The terms Indigenous Australian and Aboriginal and Torres Strait Islander people are used interchangeably throughout this paper.

and non-Indigenous students (65 percent versus 89 percent in 2016, respectively).[4] High absenteeism rates are associated with early school dropout as well as long-term unemployment, welfare dependency and low socioeconomic standing (Beatton et al., 2018; Hjalmarsson, 2008; Rothman, 2001). Therefore, achieving regular school attendance of Indigenous students and more generally, low achieving socioeconomically disadvantaged students, is an important goal to decrease the persistent inequality in education and labour market outcomes.

This study was conducted in six schools across three districts in South-East Queensland, with one school in each district randomly assigned to the *promise program* and another to the *standard program*.[5] Students in schools randomly assigned to the promise program received a small reward at the beginning of the school term conditional on promising to try their best to achieve an attendance rate of at least 90 percent. We compare the effectiveness of the promise program in reducing school absences to a conditional "business as usual" reward scheme - the standard program -, in which students received the reward at the end of the school term upon having achieved the attendance target. All other elements of the program were as similar as possible across the two different program groups. All six schools have similar characteristics, including a low indicator of socioeconomic advantage and a large Indigenous student enrolment. In each school, the program began with students attending a beginning-of-term school assembly with the school principal teacher (or senior school representative) and FOGS staff members who explained the program goals, as well as a role model, typically an Aboriginal person encouraging students to attend school by telling them about his or her experienced challenges while in school and the importance of putting effort in school for success in life. In schools receiving the promise program, students were given the option to make the promise by signing a promissory document. Great emphasis was given to the fact that making the promise meant adhering to a commitment of attending school regularly. Students who chose to make the promise were given a small reward just after having made the promise. In schools receiving the standard program, students also received an explanation of the end-of-term goal and the reward that would be given conditional on achieving the school attendance target.

We find significantly lower *unexplained* absence rates, i.e. absences with no valid excuse, among students in the promise program than among those in the standard program. However, we find no significant difference between the two programs in their impact on overall school absences. To the best of our

[4] According to the Closing the Gap Report (2019), year 12 or equivalent attainment rates have increased for Indigenous students since the introduction of the Closing the Gap policy initiative in 2008. Even so, a lot more still needs to be done to close this critical gap between Indigenous and non-Indigenous Australian students.

[5] Both program initiatives were designed and implemented by FOGS. The role of the research team was focused on the evaluation.

knowledge, this is the unique study on the effectiveness of voluntary promises coupled with a small gift in increasing school attendance of disadvantaged students. We introduce a novel program which, unlike most existing programs, does not offer students a reward conditional on observed achievement, but conditional on the commitment to put one's best efforts towards achieving an ambitious goal. Our findings suggest that this approach was effective in influencing the behaviour of socioeconomically disadvantaged students, by making them more likely to provide a valid justification for missing school. Further research is needed on the design of such programs that are successful in decreasing school absenteeism and improving education outcomes of disadvantaged students.

The paper proceeds as follows. In Section 2 we review the economic literature on incentive-based programs in education and the effect of promises and upfront rewards to motivate desirable behaviour. In Section 3 we detail the study design. In Sections 4 and 5 we describe the data and empirical method. In Section 6 we present our results and in Section 7 we discuss the implications of our findings.

# 2 Background

We describe how our study relates and contributes to three fields of research, namely the design and evaluation of incentive-based programs in education and the effectiveness of voluntary soft commitments and upfront rewards in encouraging desirable behaviour.

*2.1 Incentive-based programs in education*

The literature on the design and evaluation of incentive-based programs to increase education outcomes of low achieving, and often socioeconomically disadvantaged students, is very large (see, for example, Angrist et al., 2002, 2006; Bettinger, 2012; Fryer, 2011; Kremer et al., 2009). Many studies evaluate programs offering financial rewards conditional on the achievement of an education target and provide a mixed assessment of their effectiveness (Gneezy et al., 2011). Some studies find that financial incentives are effective in increasing education outcomes such as high school graduation rates, school attendance, test scores and college enrolments (Angrist et al., 2009; Angrist and Lavy, 2009; Cornwell et al., 2006), while other studies find no effects (Fryer, 2011; Rodriguez-Planas, 2012). Some studies also report a positive impact from monetary incentives for specific groups of students only. For instance, several studies report that incentives are more effective among girls than boys. This is the case of a program in Colombia evaluated by Angrist et al. (2002, 2006), which offered financial vouchers for private schooling to low-

income secondary school students conditional on favourable academic grades (see also Kremer at al., 2009, for positive effects of similar financial incentives among school girls in Kenya). A study conducted in the Netherlands by Leuven et al. (2010) shows that financial incentives for academic achievement can have positive effects among high-ability university students, whereas they discourage low-ability students. With a very large field experiment in the US, Levitt et al. (2016) show that large and immediate rewards are effective, whereas small and delayed rewards are not. Finally, there is also evidence that offering financial incentives to parents is effective in increasing compliance with enrolment and regular school attendance of young children (Schultz, 2004).

Some programs have combined financial incentives with peer academic support and advice, such as the Student Achievement and Retention (STAR) project in Canada. Angrist et al. (2009) find that peer support had positive effects on academic scores of female high school students and, when combined with financial incentives, there was a long-lasting effect on academic scores one year after the program.

Like our study, other studies have looked at the impact of incentive-based programs beyond financial rewards. These include mentoring and motivational talks, as well as gifts, trophies and certificates (Jalava et al., 2015; Levitt et al., 2016). Among these is the FOGS ARTIE standard program, which forms the benchmark in our analysis of the promise program. An earlier evaluation of the standard program, which offered Indigenous Australian students learning support, strong encouragement for school achievement through role models and motivational speakers, as well as small gifts conditional on achievement, has shown that it improved behaviour and academic grades and reduced absenteeism among girls (albeit only those from intact families) whilst also improving standardised national assessment test scores among boys (Dulleck et al., 2016).

Our study contributes to the large literature on incentive-based programs in education by investigating the impact of a novel non-monetary incentive, namely voluntary promises coupled with a small upfront gift, among a population of low achieving and socioeconomically disadvantaged high school students in Australia.

*2.2. Voluntary promises and upfront rewards to motivate desirable behaviour*

Several studies have investigated the impact of voluntary promises in encouraging desirable behaviour (see, for example, Belot et al., 2010; Koessler et al., 2019). General findings from the psychology and economics literature indicate that the exchange of promises creates a sense of commitment, which can drive improved cooperation and increased trust between promise-makers and promise-takers (Charness

and Dufwenberg, 2006; Vanberg, 2008).[6] There are two leading explanations for this effect. One is based on guilt aversion whereby individuals wish to avoid the negative feelings that come from breaking promises and/or falling short of others' expectations (Battigalli and Dufwenberg, 2007).[7] The other explanation regards promises as contractual agreements to which promise-makers are bound in order to maintain consistency and fulfil their commitment (Ellingsen and Johannesson, 2004; Vanberg, 2008).

Among the studies using voluntary promises to encourage desirable behaviour, the one that is the most related to our study is a recent experiment conducted by Himmler et al. (2019). The authors in this study asked first-year students at a German university to make a voluntary, non-binding promise that they would comply with the regular exam schedule (that is, they would enrol and sit at least five exams per semester). They show that giving students the option to make this promise led to an increase in the number of exams completed as well as actual achievement, compared to a control group of students who were not given the option to make the promise. Our studies are conceptually related since in both cases students do not promise to reach a given academic performance target (such as grades). Instead they promise to adopt a specific behaviour they can control, and that is positively associated with learning outcomes. In Himmler et al. (2019), students could promise that they would sign up for at least five exams, and in our case, students promise that they will come to school regularly. However, our study is conducted in a very different context and with a very different population, as we focus on a socioeconomically disadvantaged student population at risk of dropping out of high school.

In our study, students in the promise program receive an upfront small reward, conditional on making the promise. This procedure was adopted for two reasons. The first reason is that the reward would constantly remind students of their commitment throughout the school term. The second reason is the evidence that people respond to others' actions in a reciprocal manner (Fehr and Gächter, 2000b).[8] Therefore, it was expected that giving students a gift would motivate them to put their best effort to achieve the attendance target they committed to. Falk (2007) demonstrates the powerful effect of upfront rewards in a field experiment. The author tested if giving a gift upfront to potential donors to a charitable organisation could increase donations. Some people received standard letters with information on the charitable project (the control group), whilst letters given to a second group were accompanied by a small gift, and a large gift was given with each of the letters to a third group. Results show that, compared to the

[6] See also (Ederer and Stremitzer, 2017; Ellingsen and Johannesson, 2004; Kerr and Kaufman-Gilliland, 1994; Ostrom et al., 1992).

[7] See also (Dufwenberg and Gneezy, 2000; Ellingsen et al., 2010).

[8] See also (Berg et al., 1995; Charness, 2004; Falk, 2007; Falk and Fischbacher, 2006; Fehr and Falk, 2002; Fehr and Gächter, 2000a).

control (no gift) group, the relative frequency of donations in response to the charitable appeal increased by 17 percent for the small gift group and 75 percent for the large gift group. This result demonstrates that gifts given upfront motivate desirable behaviour.[9]

# 3 Study design

## Promise program

Aboriginal and Torres Strait Islander people are among the most socioeconomically disadvantaged groups in Australia (Bath and Biddle, 2011; Gray and Beresford, 2008). Regarding school attendance, 79.3% of non-Indigenous students attain a 90% attendance rate, while this is the case for only 49% of Indigenous students (Commonwealth of Australia, 2017). To address this issue, FOGS introduced the Achieving Results Through Indigenous Education (henceforth, ARTIE) program consisting of in-school activities and reward schemes to improve the educational outcomes of Indigenous students.[10] The program provides support through tutoring in literacy and numeracy and brings to the school motivational speakers to serve as role models and stress the importance of school attendance and academic achievement. Participating schools are selected primarily for their large number of Indigenous students. Moreover, the index of socioeconomic advantage across all schools in the ARTIE program is similar and well below the national average, indicating that these schools tend to have a socioeconomically disadvantage student population.

In term 1 2015, one school in each of the three urban districts in South-East Queensland where the ARTIE program is in place was randomly selected for a new initiative, the promise program, while another school in each of the districts was randomly assigned to the ARTIE standard program. Randomization occurred at the school rather than the classroom level to avoid any spillover effects from one program to students assigned to the other program. For instance, students in the standard program could have considered it unfair that other students in the same school received the reward upfront (those in the promise program) and felt demotivated, which would have biased the results.

In all six schools, every student self-identifying as Indigenous was invited to a beginning-of-term assembly at which the school principal (or senior school representative), FOGS staff, and an invited Indigenous role model encouraged school attendance and stressed the importance of completing high school for success in life. These are standard proceedings of the ARTIE program and implemented every term in each school.

[9] See also Berry and Kanouse (1987).
[10] FOGS ARTIE program is funded by the Australian federal government.

In the three schools selected for the promise program, FOGS staff distributed the promise agreements (appendix Figure A.1) during the assembly meeting, and students had to decide whether to sign the commitment to put their best effort to achieve a school attendance rate of at least 90%. The students were told that those choosing to make the promise would have their commitment rewarded with a gift (a watch and a jumper).[11] Great emphasis was given to the fact that the promise was voluntary but that the commitment had to be adhered to.[12] Since the choice was made during an assembly with no restrictions on student discussion, the decision was individual but not private. To focus attention on both the goal and the commitment (which the reward was intended to reinforce), those choosing to promise had to hand-write the word "promise" on the agreement together with the target they were expected to achieve.[13] Students who did not attend the assembly meeting and wanted to sign the promise statement were given one week to provide a valid reason for their absence. If able to supply one within this period, they were informed by a FOGS staff member about the program's targets and expectations and allowed to participate.

A similar procedure took place at the beginning of term 2 (see Figure 1 for the study timeline and appendix Figure A.2 for the term 2 promise agreement document). All students were given the option to make the promise irrespective of whether they had done so or achieved the target in term 1. Students who made the promise were rewarded with a sports bag and a beanie. Across the entire two-term program period, 70% and 67% of all eligible students signed the promise in terms 1 and 2, respectively, while about 56% signed the promise in both terms (see Table 1). Of those attending the term 1 assembly, approximately 2% did not sign the promise because they may have doubted their ability to meet the attendance target, but another 16.40% who could not attend the assembly were allowed to sign the promise agreement. In term 2, approximately 1% of students attending the assembly did not sign the promise agreement, and 8% of the non-attendees were allowed to sign.

[11] Both gifts had a low monetary value.

[12] Evidence from social psychology shows that a commitment has a stronger impact if it is made voluntarily, expressed publicly, and/or costless to the commitment maker (Cialdini, 1987; Kiesler, 1971).

[13] See Joule and Beauvois (1997) and Koessler et al. (2019).

Figure 1: Promise program timeline

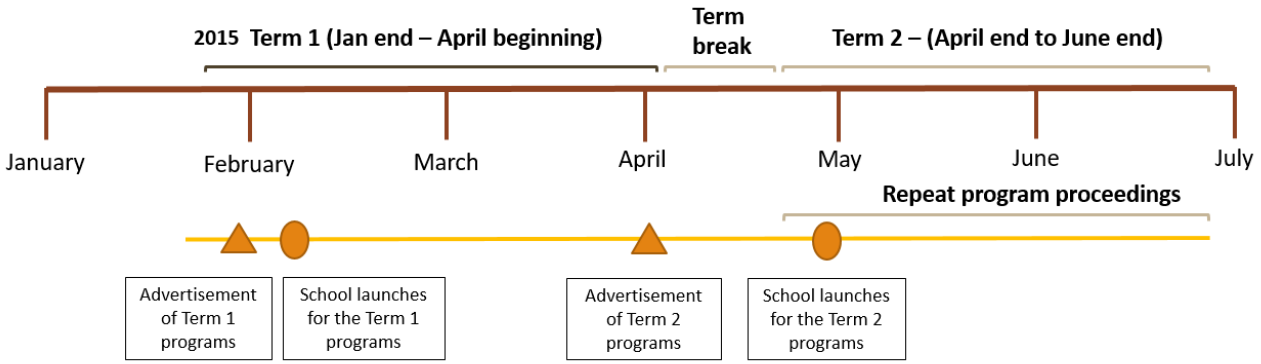



Table 1: Assembly meetings attendance an and signing promise

| | **Standard Program** | **Promise Program** | |
|---|---|---|---|
| | Attended assembly | Attended assembly | Signed promise |
| Term 1 | 61.40% | 59.67% | 69.70% |
| Term 2 | 54.10% | 62.47% | 67.13% |
| Both terms | 43.77% | 47.09% | 55.71% |
| At least one term | 71.73% | 75.06% | 81.12% |

Note: These percentages are calculated based on the 758 students from year level 7 to 12 in 2015 who were eligible to be part of the ARTIE program. All students who signed the promise agreement regardless of whether they attended or did not attend the assembly meeting have been recorded in this table. A slightly higher proportion of students signing the promise means that more students who did not attend the assembly meeting could sign the promise.

## Standard program (Baseline)

The standard program is the ARTIE program implemented in previous years (since 2011) in all six study schools. The promise and standard programs were very similar with regards to the assembly meeting, motivational speaker, attendance target and rewards. The only distinguishing feature in the standard program was that in the assembly meeting students were informed that receiving the reward was conditional on achieving an attendance rate of at least 90% and no reference to any promise was made.

The group of schools in the standard program in 2015 is the most adequate comparison group in the analysis of the effect of the promise program, since prior to 2015 all schools in the promise program received the standard program. Moreover, all six schools are selected based on the same criteria (number

of Indigenous students enrolled, low socioeconomic advantage indicators, geographical proximity) and exposed to all other components of the ARTIE program (including tutoring sessions for the lowest achieving students).

# 4 Data

## Data description

The data is provided by the Queensland Department of Education and consists of sociodemographic details at the individual level as well as education outcomes for all students enrolled in Year 9 to Year 12 (aged 14 to 18) at participating schools. The sociodemographic data includes students' gender, Indigenous status, year level, academic enrolment status (full- or part-time), disability status and their parents' level of education.[14] Seven-hundred and fifty eight Indigenous students across all six high schools in either the promise or the standard program were eligible and had the possibility to participate in the ARTIE (promise or standard) program in 2015. Among these, 275 students enrolled in the first two years of high school, Year 7 and Year 8, are excluded from our analysis. The reasons for excluding these students relate to restrictions on data availability in addition to an education policy change in Queensland schools, affecting our ability to obtain data on baseline outcomes (prior to 2015) for students who in 2015 were enrolled in Year 7 and Year 8. Prior to 2015, primary school in Queensland covered Year 1 to Year 7 and high school covered Year 8 to Year 12. Starting in 2015, Year 7 was no longer part of primary school but became part of high school. Since we could obtain data from the Department of Education on high school students only, even though we have data on school outcomes in 2015 for all students enrolled in Year 7 to Year 12, we do not have data prior to 2015 for students enrolled in Year 7 and Year 8 (in 2015) as they were in primary school. Therefore, our data on education outcomes for the baseline year (2014) covers all students who in 2015 were enrolled in Year 9 and above.

The transition from primary to high school has been found to affect education outcomes, as students need to adjust to new teachers, higher learning autonomy, more challenging learning content, new peers and social dynamics. These stressors are known to negatively affect education outcomes, including school attendance, in particular among at-risk students (Benner, 2011; Eccles et al., 1993; Goldstein et al., 2015). Therefore, even though it would have been interesting to study the impact of the promise program among students who have just experienced the transition to high school, any potential impact of the promise

[14] The education level of students' fathers is largely missing or unknown in the data, so we exclude this variable from our regression analysis.

program among these students might not generalise to high school students.

Table 2: Socio-demographic characteristics at Semester 1 2015 (Year 9 to 12)

| | Standard Program | | Promise Program | | Proportion test |
|---|---|---|---|---|---|
| | N | % | N | % | (*p*-values) |
| **Gender** | | | | | |
| Female | 96 | 45.50 | 136 | 50.00 | 0.326 |
| **Year level** | | | | | |
| Year 9 | 58 | 27.49 | 88 | 32.35 | 0.248 |
| Year 10 | 49 | 23.22 | 76 | 27.94 | 0.240 |
| Year 11 | 66 | 31.28 | 46 | 16.91 | 0.000 |
| Year 12 | 38 | 18.01 | 62 | 22.79 | 0.198 |
| **Mother education** | | | | | |
| Year 9 or equivalent or below | 33 | 15.64 | 31 | 11.40 | 0.173 |
| Year 10 or equivalent | 65 | 30.81 | 94 | 34.56 | 0.384 |
| Year 11 or equivalent | 31 | 14.69 | 37 | 13.60 | 0.733 |
| Year 12 or equivalent | 47 | 22.27 | 65 | 23.90 | 0.675 |
| Not stated/Unknown | 35 | 16.59 | 45 | 16.54 | 0.990 |
| **Mother non-school qualification** | | | | | |
| None | 43 | 20.38 | 72 | 26.47 | 0.119 |
| Certificate 1 to 4 | 65 | 30.81 | 61 | 22.43 | 0.038 |
| Advanced diploma/Diploma | 16 | 7.58 | 28 | 10.29 | 0.304 |
| University degree | 12 | 5.69 | 8 | 2.94 | 0.133 |
| Not stated/Unknown | 75 | 35.55 | 103 | 37.87 | 0.560 |
| **Districts** | | | | | |
| District 1 | 65 | 30.81 | 98 | 36.03 | 0.229 |
| District 2 | 61 | 28.91 | 99 | 36.40 | 0.083 |
| District 3 | 85 | 40.28 | 75 | 27.57 | 0.003 |
| **Total** | 211 | 100 | 272 | 100 | |

We report socio-demographic characteristics of our sample in Table 2. All students in our analysis identify

as Indigenous. Across the promise and standard program schools alike, approximately 67% of students' mothers had accomplished 10 years of schooling at most, with slightly fewer than a quarter reaching 12 years of school. Less than 6% and 3% of students' mothers had university education in the standard and promise groups respectively. These statistics are consistent with the typically low level of educational attainment among Indigenous women in Australia.[15] In addition to the socio-demographic characteristics, we have data on daily school absences with information on whether those absences are explained or unexplained (with the latter defined as a student missing school for a leisure activity or for some other reason deemed unsatisfactory by a school principal or teacher).[16]

## Pre-promise program differences

*Baseline period (Semester 1 2014)*

Even though the assignment of the promise and standard programs between the two schools in each of the three districts was random since our study comprises a very small number of schools, it is plausible that differences in relevant characteristics may exist between the two program groups in the baseline period. We examine the extent to which the schools assigned to each group are comparable prior to the introduction of the promise program, by looking at their similarity in terms of student sociodemographic characteristics and our outcomes of interest (school absenteeism).

We report in Table 3 pre-promise program differences in student sociodemographic characteristics, including gender, disability status and mother's education, using a regression analysis. Since we have a small number of clusters in our regression, the *t*-test-based cluster robust standard errors may over reject the null hypothesis (Colin Cameron et al., 2008). To address the issue of small cluster sizes, throughout the paper, we estimate the *p*-values using a subcluster bootstrapping method proposed by MacKinnon and

[15] The Year 12 or equivalent completion rate for Indigenous women between the ages of 30 and 49 in Australia is approximately 36%; for non-Indigenous women in the same age bracket, the completion rate is approximately 74% (ABS, 2016). Likewise, university completion rates for Indigenous and non-Indigenous women in Australia between the ages of 30 and 49 are approximately 9% and 35% respectively. Even though the comparison of the national statistics for Indigenous women with the data in our sample (recorded by the Department of Education) suggests that women in our sample have lower educational attainment than the national average for Indigenous women, we note that this could be influenced by a much larger non-response rate in the Department of Education data compared to the national statistics.

[16] The analysis considers student absence rates rather than attendance rates because schools record daily absences but not student attendance. Although a lack of recorded absences could mean 100% attendance, this outcome could also result from other scenarios, including withdrawal from school during the term.

Webb (2018).[17] Looking at the regression analysis in table 3, we observe no statistically significant differences in sociodemographic characteristics between the two program groups.

Table 3: Pre-promise program differences in demographics

| | Male | Mother Education | Mother non-school qualification | Disability |
|---|---|---|---|---|
| Promise program | -0.0315 | -0.1117 | -0.1072 | 0.0055 |
| *p*-value | [0.5546] | [0.3934] | [0.7958] | [0.8298] |
| N | 400 | 400 | 400 | 400 |

Note: * p>0.10; ** p>0.05; *** p>0.01; Standard errors are clustered at the school the student attended in 2014. In square brackets we report score wild cluster bootstrap *p*-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb, 2013).

We test for potential pre-promise program differences, in semester 1 2014, in our outcome variables of interest – total, explained and unexplained absences – by estimating the following model:

$$Y_{ij} = \beta_0 + \beta_1 Promise_{ij} + \beta_2 X_{ij} + \varepsilon_{ij} \qquad (1)$$

where $Y_{ij}$ is the pre-treatment outcome for student $i$ in school $j$, $X_{ij}$ are individual and school-level control variables (gender, mother education, disability status, year level and school) and $\varepsilon_{ij}$ is the student-level error term clustered at the school students attended in 2014. $Promise_{ij}$ is an indicator variable which takes on the value 1 if the student is in a promise program school and 0 if the student is in a standard program school in 2015. Our sample in this analysis consists of all students enrolled in Year 8 to Year 11 in 2014, who were part of the promise or standard program in 2015 and enrolled in Year 9 to Year 12 in that year.

As shown in Table 4, we observe no statistically significant difference between the two program groups in total, explained and unexplained absences across all periods when controlling for individual socio-demographic and school characteristics (columns 2, 4, 6). However, there is a statistically significant difference (at the 1% level) in total absence in term 1 between the two groups when we do not control for additional variables (column 1). This difference is no longer statistically significant at conventional levels

[17] In practice, this draws on the stata-based command *boottest* as developed by Roodman et al. (2019). Consistent with the author's suggestions, we do not compute the standard errors and instead only report the p-values in all our tables.

across the entire semester 1 (which includes term 1 and term 2). We prefer the full specification (with control variables) to the basic one (without control variables) given our relatively small sample size and number of schools.

Table 4: Pre-promise program differences in absence rates

| | | **Total absences** | | **Explained absences** | | **Unexplained absences** | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| ***Term 1*** | $\beta_1$ | -0.0286*** | 0.02086 | -0.0221 | 0.0200 | -0.0066 | 0.0009 |
| | *p*-value | [0.0020] | [0.6236] | [0.4004] | [0.5676] | [0.7648] | [0.9780] |
| ***Term 2*** | $\beta_1$ | -0.0202 | -0.0029 | -0.0114 | -0.0175 | -0.0087 | 0.0147 |
| | *p*-value | [0.4885] | [0.9469] | [0.6677] | [0.7768] | [0.7718] | [0.4635] |
| ***Semester 1*** | $\beta_1$ | -0.0245 | 0.0324 | -0.0168 | 0.0092 | -0.0076 | 0.0231 |
| | *p*-value | [0.1822] | [0.5405] | [0.5105] | [0.8729] | [0.7888] | [0.1311] |
| Controls | | No | Yes | No | Yes | No | Yes |
| N | | 400 | 400 | 400 | 400 | 400 | 400 |

Note: * p>0.10; ** p>0.05; *** p>0.01; Standard errors are clustered at the school students attended in 2014. In square brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb, 2013). Controls: gender, mother education, disability status and dummy variables for year level and school.

*Previous periods (Semester 1 2011 - 2014)*

We further test for different trends in absence rates over time between the standard and promise program schools. We compare the average total, explained and unexplained absence rates between the two groups in the period 2011-2014, using cross-sectional data. For each calendar (and academic) year 2011 to 2014, our sample includes all students enrolled in Year 9 to Year 12 in that year. Between 2011 and 2014, all six schools were part of the standard program. We look descriptively at average differences between the two groups over time as well as run a regression analysis, allowing us to control for student sociodemographic and school characteristics and cluster the standard errors at the school level, to account for the likely within-school correlation in the error term. We estimate the following model:

$$Y_{ijt} = \beta_0 + \beta_1(Promise_{ij} \cdot Year_t) + \beta_2 Promise_{ij} + \beta_3 Year_t + \beta_4 X_{ij} + \varepsilon_{ij} \qquad (2)$$

where $Promise_{ij}$ takes on the value 1 if the student $i$ is in a school $j$ that received the promise program in 2015 and 0 otherwise, $Year_t$ is an indicator variable for the year being analysed (2014, 2013 and 2012) relative to the baseline year (2011). $X_{ij}$ are the same student and school-level characteristics as in model (1). We are interested in the estimate and statistical significance of the coefficient $\beta_1$, indicating whether

there are important trend differences in absenteeism between the schools assigned to the promise program and the standard program in 2015, in the years prior to the program (2011 to 2014).

We show in Figure 2 the average differences in previous years in total, explained and unexplained absences, between the two program groups. We observe no statistically significant differences in any of the outcomes in 2011 and 2012 between the promise and standard program schools. In both years, the average total absence rate is high, about 25% in both groups, and the share of explained absences tends to be slightly larger than the share of unexplained absences (by 2 to 3 percentage points). In 2013, we observe a sizeable and statistically significant lower absence rate among schools in the promise program relative to those in the standard program. The difference in the total absence rate is about 5%. In 2014, the difference in the average absence rate between the two groups of schools is no longer economically or statistically significant. As it is apparent in Figure 2, this is due to an important decrease in absence rates among schools in the standard program, which brings the absence rate in these schools to the same level as in the promise program schools. The regression results in Tables 5, 6 and 7, where we control for student and school characteristics and account for the within-school correlation in the error term, do not yield any statistically significant differences at conventional levels in absence rates, including for 2013. The absence of statistical significance in the regression analysis for 2013 is driven by the clustering of the standard errors at the school level, supporting the importance of following the standard practice of accounting for the correlation of the error term across observations within schools in our main analysis (see, for example, Angrist and Pischke, 2008).

Figure 2: Absence rate over time –Pre-treatment analysis (Semester 1)

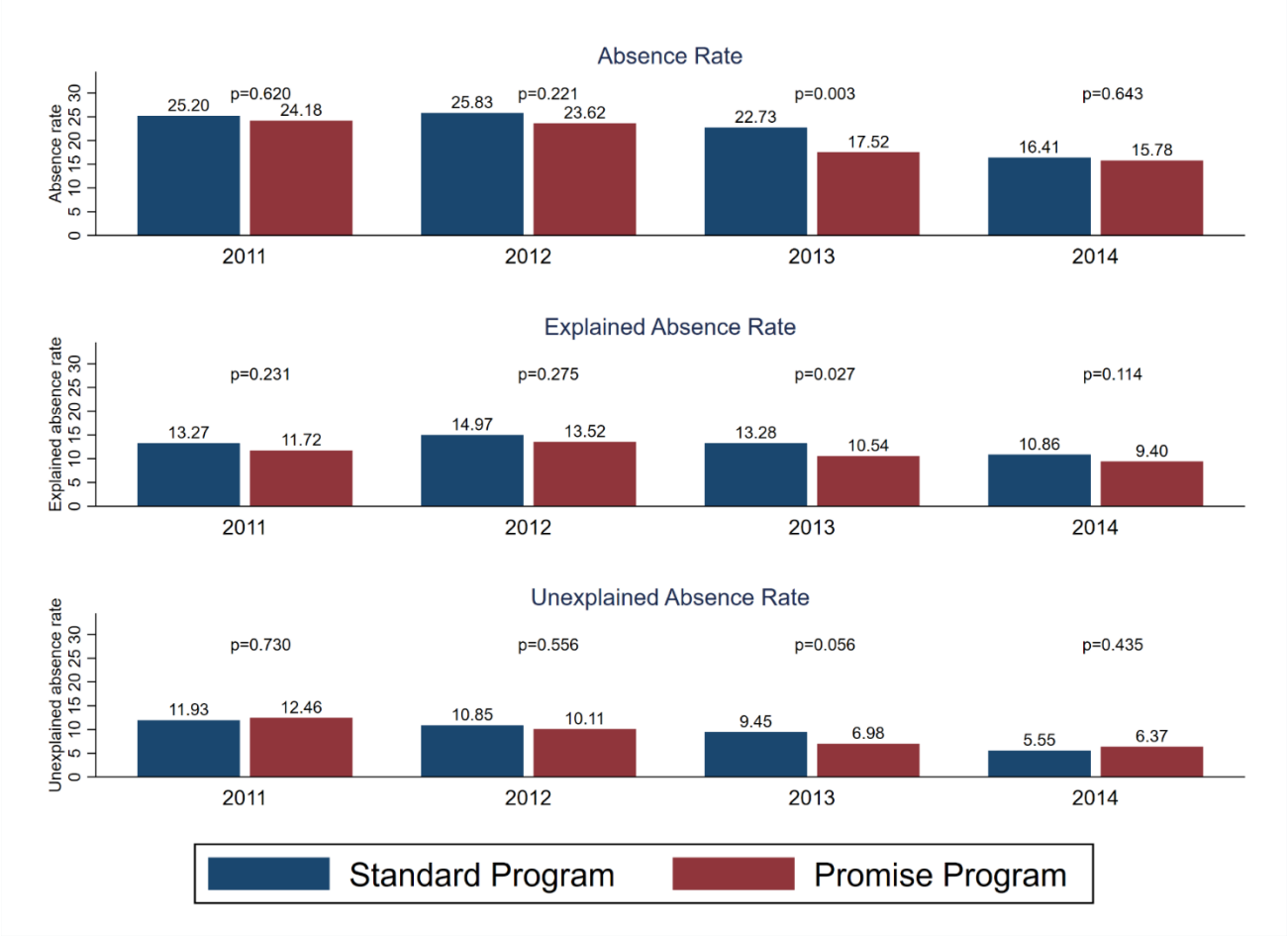



Table 5: OLS estimates on total absence rates – Semester 1 2011 as reference

| | All | | Male | | Female | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $\beta_1$ Sem 1 **2012** | -0.0118 | -0.0073 | 0.0312 | 0.0294 | -0.0473 | -0.0370 |
| | [0.7648] | [0.8559] | [0.5716] | [0.5806] | [0.3413] | [0.4344] |
| $\beta_1$ Sem 1 **2013** | -0.0419 | -0.0431 | -0.0288 | -0.0288 | -0.0548 | -0.0655 |
| | [0.5906] | [0.5916] | [0.6436] | [0.6607] | [0.5876] | [0.4845] |
| $\beta_1$ Sem 1 **2014** | 0.0039 | 0.0044 | 0.0228 | 0.0259 | -0.0161 | -0.0281 |
| | [0.9169] | [0.9179] | [0.6747] | [0.6757] | [0.8278] | [0.6747] |
| N | 1672 | 1672 | 819 | 819 | 853 | 853 |
| Controls | No | Yes | No | Yes | No | Yes |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using

999 reps and webb weights (Webb, 2013). Controls: gender, mother education, dummy for disability status, school attended during the period and year level.

Table 6: OLS estimate effects on explain absence rates – Semester 1 2011 as reference

| | All | | Male | | Female | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $\beta_1$ Sem 1 **2012** | 0.0009 | 0.0085 | 0.0140 | 0.0260 | -0.0084 | -0.0040 |
| | [0.9620] | [0.7067] | [0.6336] | [0.3924] | [0.6907] | [0.8378] |
| $\beta_1$ Sem 1 **2013** | -0.0119 | -0.0042 | -0.0229 | -0.0080 | -0.0023 | -0.0023 |
| | [0.7908] | [0.9299] | [0.6286] | [0.8589] | [0.9479] | [0.9540] |
| $\beta_1$ Sem 1 **2014** | 0.0009 | 0.0070 | -0.0114 | 0.0022 | 0.0126 | 0.0104 |
| | [0.9850] | [0.8539] | [0.7978] | [0.9459] | [0.7367] | [0.8198] |
| N | 1672 | 1672 | 819 | 819 | 853 | 853 |
| Controls | No | Yes | No | Yes | No | Yes |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb,2013). Controls: gender, mother education, dummy for disability status, school attended during the period and year level.

Table 7: OLS estimate effects on unexplained absence rates – Semester 1 2011 as reference

| | All | | Male | | Female | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $\beta_1$ Sem 1 **2012** | -0.0127 | -0.0158 | 0.0172 | 0.0034 | -0.0389 | -0.0331 |
| | [0.5746] | [0.5686] | [0.5035] | [0.9059] | [0.2292] | [0.3153] |
| $\beta_1$ Sem 1 **2013** | -0.0300 | -0.0389 | -0.0059 | -0.0208 | -0.0526 | -0.0631 |
| | [0.4434] | [0.4064] | [0.7788] | [0.5646] | [0.3664] | [0.3353] |
| $\beta_1$ Sem 1 **2014** | 0.0029 | -0.0026 | 0.0342 | 0.0238 | -0.0287 | -0.0385 |
| | [0.9449] | [0.9479] | [0.4464] | [0.6537] | [0.5666] | [0.3944] |
| N | 1672 | 1672 | 819 | 819 | 853 | 853 |
| Controls | No | Yes | No | Yes | No | Yes |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb,2013). Controls: gender, mother education, dummy for disability status, school attended during the period and year level.

# 5 Empirical Strategy

We estimate the effect of the promise program using a differences-in-differences strategy in which the standard program is the baseline condition. This strategy allows us to control for existing pre-treatment differences between the two program groups and provides us with an estimate of the differences in the progression of school attendance between the two groups before and after the introduction of the promise program. This is a standard method allowing to control for potential confounding factors in the absence of perfect randomization and/or small sample sizes (Duflo et al., 2007).

All Indigenous students in the six schools were eligible to take part in the ARTIE program. Therefore, we include in the analysis all students who identify as Indigenous, regardless of whether they actually participated in the program (i.e. attended the assembly and were aware of the program) and estimate the intention-to-treat (ITT) effect as follows:

$$Y_{ijt} = \beta_0 + \beta_1 Promise_j + \beta_2 Year_{2015} + \beta_3 \left(Promise_j \cdot Year_{2015}\right) + \beta_4 X_{ijt} + \varepsilon_{ij} \qquad (3)$$

where, $Y_{ijt}$ denotes the outcome variable of interest for student $i$ – total, explained and unexplained absence rates - in school $j$ at time $t$, $Promise_j$ is an indicator variable which takes on the value 1 if the student is in a promise program school and 0 if he or she is in a standard program school. $Year_{2015}$ is a time indicator variable which takes on the value 1 if the outcome is observed in semester 1 2015 (i.e. post promise program) and 0 if observed in semester 1 2014 (pre promise program). $X_{ijt}$ are individual level control variables and school dummies and $\varepsilon_{ij}$ is the random error clustered by the school students attended in 2015.

The coefficient $\beta_3$ is the intention-to-treat effect of the promise program in absence rates relative to the standard program. The differences-in-differences estimation method assumes that in the absence of the treatment, the average outcomes for the treated and control groups would have followed parallel trends over time (Abadie, 2005). In our setting, if the promise program would not have been introduced, all schools would have continued with the standard program. Therefore, in the absence of other factors heterogeneously affecting school attendance in a subsample of one or more schools which are part of our analysis, we would expect no differences in the trends between the two groups of schools in 2015. This assumption is reasonable since we observe no systematic differences in absenteeism between the two

program groups several periods prior to 2015, when following the standard practice of accounting for the within-school non-independence of the error term across observations (see discussion in Section 4.2).

# 6 Results

## Descriptive results

We start by presenting descriptive statistics on total, explained and unexplained absence rates in Figures 3 and 4 for terms 1 and 2, respectively, before and upon the introduction of the promise program. Looking at total absences, students in the standard program group had higher absence rates than those in the promise program group in 2014 by about 3 and 2 percentage points in term 1 and term 2, respectively. This difference is statistically significant at conventional levels for term 1 only, which is consistent with our regression results discussed in section 4.2 (Table 4). Moreover, this gap is larger for explained absences than unexplained absences. None of the pre-promise program in term 2 are statistically significant at conventional levels.

In 2015 with the introduction of the promise program, we observe sizeable and statistically significant differences between the two groups in student absences in both term 1 and term 2, with lower absence rates in the promise program schools compared to the standard program schools. The gap is about 3 percentage points in both terms 1 and 2, and statistically significant at the 5% level. This effect is mainly driven by a substantial gap in unexplained absence rates between the two groups, both in term 1 and 2. Unexplained absence rates in 2015 are almost twice as large in the standard program schools than in the promise program schools ($p$-values<0.01). This is observed among boys and girls. Moreover, we observe an increase in unexplained absences in 2015 among schools in the standard program which largely contributes to the observed gap.

The descriptive analysis suggests that the promise program may have decreased overall school absenteeism, by reducing unexplained school absences, or rather counteracting the increasing trend in unexplained absences among promise program schools. However, this analysis does not account for differences in absenteeism prior to the promise program between the two groups, heterogeneity across schools as well as relevant student characteristics. All these factors are potentially very relevant given our modest sample size. Our regression results reported in the next section, allow for a more rigorous analysis of the impact of the promise program on attendance, by taking account these potential confounding factors.

Figure 3: Total, explained and unexplained absence rates (Semester 1 term 1)

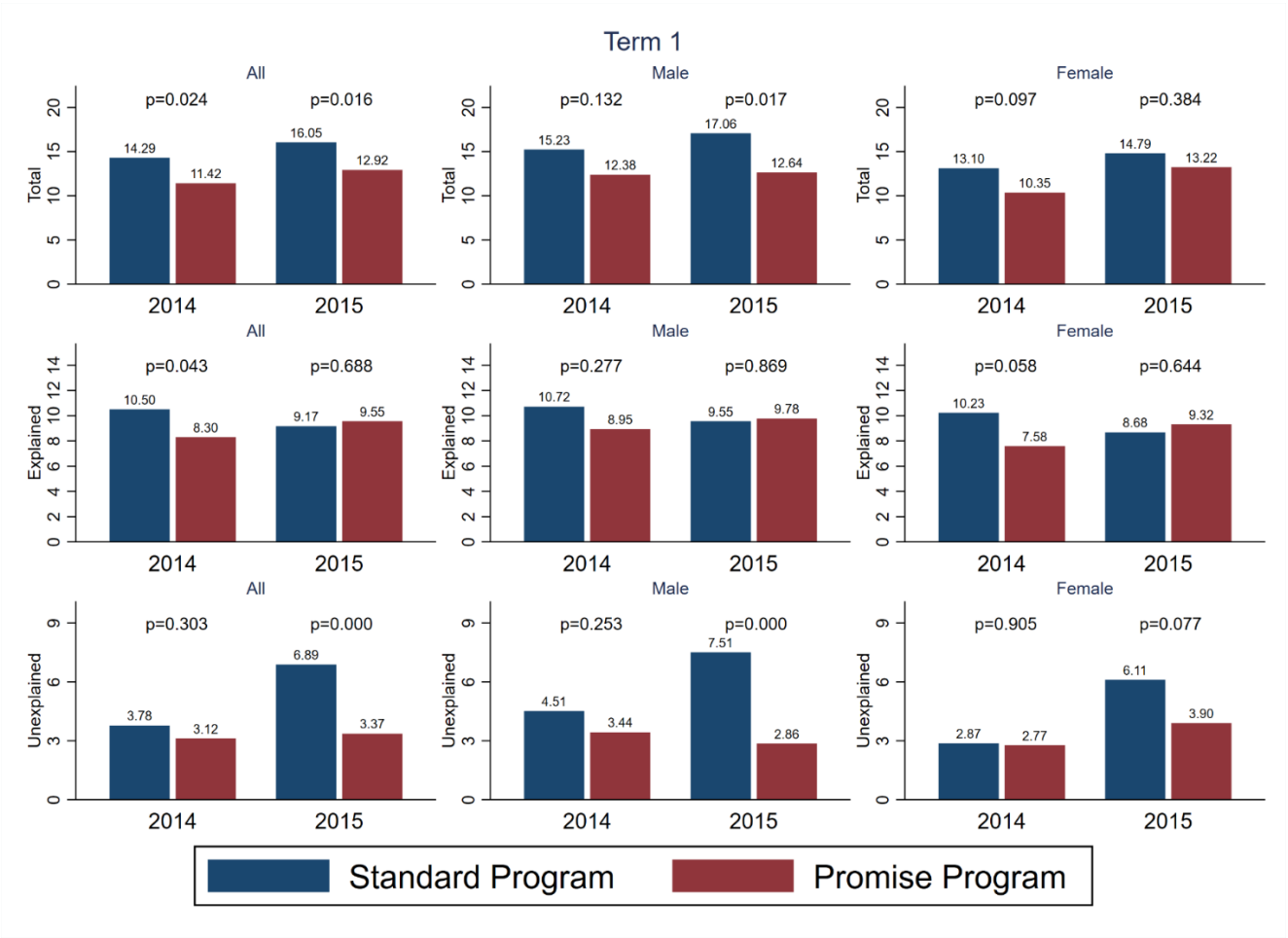
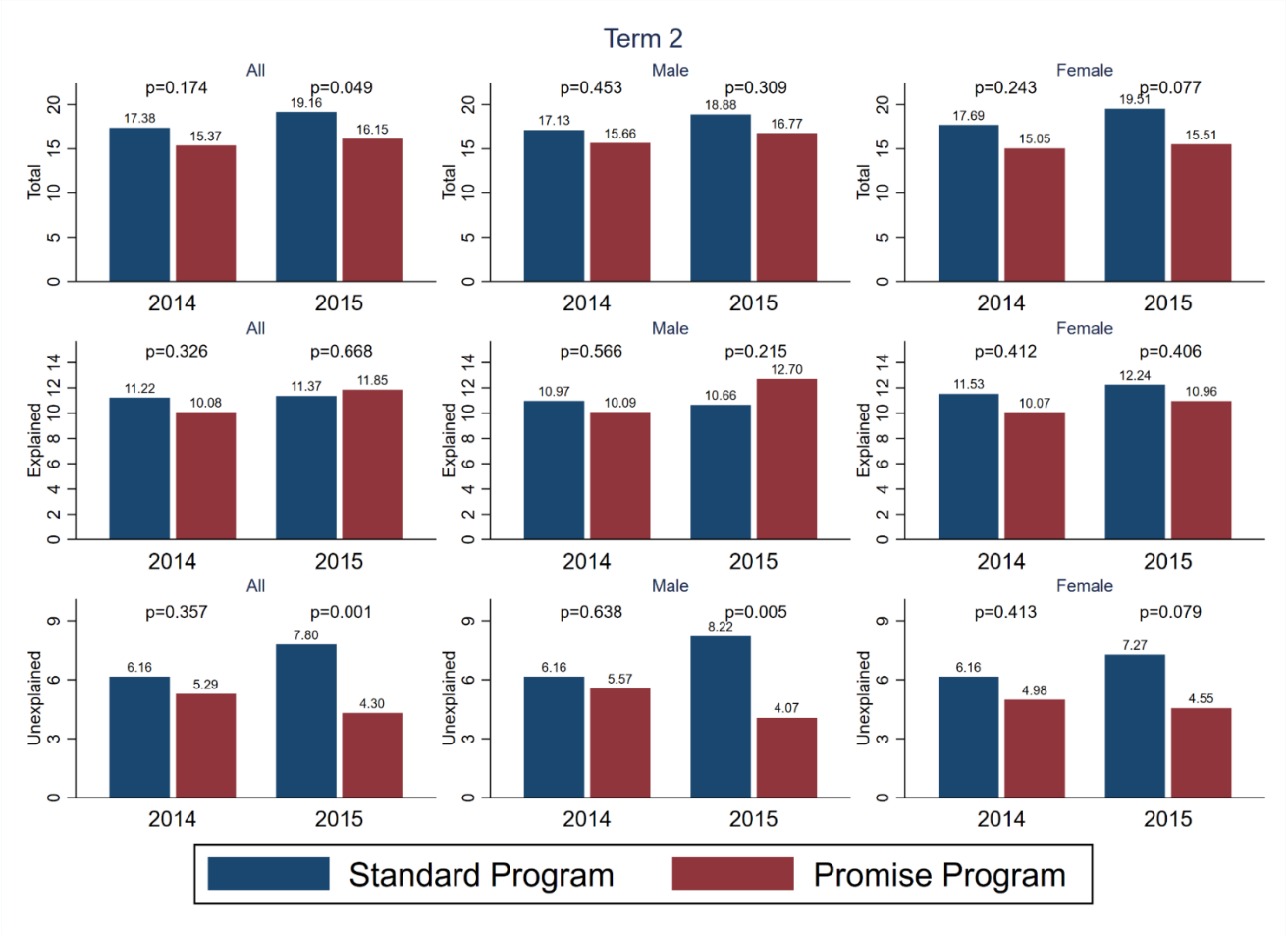


Figure 4: Total, explained and unexplained absence rates (Semester 1 term 2)



## Regression results

We present the regression results on the effect of the promise program on total, explained and unexplained school absences in Tables 8, 9 and 10, respectively. We systematically report the results for the entire sample, and for boys and girls separately. We also always report the estimates of the effect of the promise program obtained with the basic specification (without any student or school-level control variables) (in columns 1, 3 and 5) and with our preferred specification, which includes additional control variables (in columns 2, 4 and 6).

Our results show that the promise program did not differently affect total school absences compared to the standard program. Even though the estimates are consistently negative (with the exception of term 1 for female students), they are very small and never statistically significant at conventional levels (see Table 8). The estimates of the promise program effect on the explained absence rate, despite not being statistically significant at conventional levels, are consistently positive and large across the two specifications and samples (see Table 9). This is suggestive of the fact that the promise program may have increased explained absences relative to the standard program. With regards to unexplained absences, we find a systematically negative effect of the promise program compared to the standard program, which is statistically significant at conventional levels in most specifications (see Table 10). Our estimates indicate that the promise program decreased unexplained absences by about 3 percentage points, in both terms 1 and 2, an effect which is statistically significant at the 10 percent level, when looking at the effect by term, and at the 5 percent level, when looking at the overall semester effect. The coefficient estimates are slightly larger and more statistically significant among male students compared to female students, but this gender difference is not statistically significant at conventional levels (*p-value*>0.1 in all cases).

Overall, our results suggest that the promise program was not more effective than the standard program in decreasing school absences. However, it decreased unexplained absence rates. Our descriptive and regression analyses suggest that the promise program was effective in curbing an increasing trend in unexplained absences. Therefore, even though the promise program did not influence actual school absenteeism, it seems to have influenced students' behaviour by increasing the likelihood they would provide a valid justification for their absence.

Table 8: OLS estimate effects on total absence rate

| | | All | | Male | | Female | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| **Term 1** | $\beta_3$ | -0.0026 | -0.0081 | -0.0157 | -0.0222 | 0.0118 | 0.0062 |
| | *p*-value | [0.9119] | [0.7628] | [0.6907] | [0.5586] | [0.6096] | [0.7658] |
| **Term 2** | $\beta_3$ | -0.0099 | -0.0173 | -0.0064 | -0.0099 | -0.0136 | -0.0279 |
| | *p*-value | [0.7487] | [0.5576] | [0.8348] | [0.7427] | [0.5506] | [0.3243] |
| **Semester 1** | $\beta_3$ | -0.0062 | -0.0138 | -0.0108 | -0.0166 | -0.0010 | -0.0118 |
| | *p*-value | [0.6740] | [0.3694] | [0.5820] | [0.4810] | [0.9580] | [0.5880] |
| Controls | | No | Yes | No | Yes | No | Yes |
| N | | 861 | 861 | 460 | 460 | 401 | 401 |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb, 2013). Controls: gender, mother education, dummy for disability status, whether student attended a different school during the baseline, student attended at least one term launch, school attended during the treatment period and year level.

Table 9: OLS estimate effects on explained absence rate

| | | All | | Male | | Female | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| **Term 1** | $\beta_3$ | 0.0259 | 0.0225 | 0.0200 | 0.0150 | 0.0328 | 0.0305 |
| | *p*-value | [0.2152] | [0.3373] | [0.5656] | [0.6877] | [0.1241] | [0.1051] |
| **Term 2** | $\beta_3$ | 0.0163 | 0.0106 | 0.0292 | 0.0252 | 0.0018 | -0.0067 |
| | *p*-value | [0.4024] | [0.5255] | [0.3123] | [0.4444] | [0.8298] | [0.6557] |
| **Semester 1** | $\beta_3$ | 0.0212 | 0.0162 | 0.0248 | 0.0200 | 0.0173 | 0.0114 |
| | *p*-value | [0.1632] | [0.3504] | [0.3504] | [0.5375] | [0.1111] | [0.3303] |
| Controls | | No | Yes | No | Yes | No | Yes |
| N | | 861 | 861 | 460 | 460 | 401 | 401 |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb, 2013). Controls: gender, mother education, dummy for disability status, whether student attended a different school during the baseline, student attended at least one term launch, school attended during the treatment period and year level.

Table 10: OLS estimate effects on unexplained absence rate

| | | All | | Male | | Female | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| **Term 1** | $\beta_3$ | -0.0285* | -0.0311* | -0.0357 | -0.0372* | -0.0210 | -0.0242 |
| | *p*-value | (0.0881) | (0.0871) | (0.1512) | (0.0831) | (0.2032) | (0.1471) |
| **Term 2** | $\beta_3$ | -0.0262 | -0.0280* | -0.0356 | -0.0353 | -0.0154 | -0.0212* |
| | *p*-value | (0.1071) | (0.0971) | (0.2202) | (0.1932) | (0.2613) | (0.0871) |
| **Semester 1** | $\beta_3$ | -0.0274** | -0.0300** | -0.0356*** | -0.0365*** | -0.0184 | -0.0232* |
| | *p*-value | (0.0110) | (0. 0120) | (0.0050) | (0.0080) | (0.1662) | (0.0881) |
| Controls | | No | Yes | No | Yes | No | Yes |
| N | | 861 | 861 | 460 | 460 | 401 | 401 |

Note: * p>0.10; ** p>0.05; *** p>0.01. Standard errors are clustered at the school level. In brackets we report score wild cluster bootstrap p-values generated using boottest command in Stata (Roodman et al., 2019) using 999 reps and webb weights (Webb, 2013). Controls: gender, mother education, dummy for disability status, whether student attended a different school during the baseline, student attended at least one term launch, school attended during the treatment period and year level.

# 7 Discussion

In 2009 the Australian government announced its goal of reducing the school attendance gap between Indigenous and non-Indigenous Australian students.[18] In this paper, we assessed the effectiveness of a novel program based on the positive motivational effect of voluntary promises coupled with a small gift aiming at encouraging regular school attendance among Indigenous students. The promise program differs from existing in-school incentive-based programs which typically reward students upon observing their achievement. In the promise program students are rewarded up front for future effort, following their commitment to put their best efforts to achieve an ambitious goal.

We studied the effectiveness of the promise program with a differences-in-differences design, by comparing student absenteeism between schools randomly assigned to the promise program and schools assigned to a standard program, rewarding students upon their achievement of the school attendance target. Our intention-to-treat results indicate that the promise program was successful in decreasing unexplained absences among Indigenous students by 3% on average. However, we find no differential effect between the promise and the standard program on total absences.

[18] For more information on the 'Closing the Gap' policy initiative please see: http://closingthegap.pmc.gov.au/.

Our findings indicate that students in the promise program were more likely to provide a valid justification for their absence but did not miss less days of school than those in the standard program. Students in the promise program, who made a promise and received the reward up front, may have felt more compelled to provide a justification for their absence than those in the standard program who only received the reward at the end of the school term conditional on having achieved the attendance target. Our findings are encouraging since we show that the promise program was effective in influencing the behaviour of disadvantaged students, by motivating them to provide a justification for being absent from school, even though it did not influence actual school attendance. Our findings also suggest a substantial scope for further research to study how to effectively design programs using promises and upfront rewards to improve school attendance and education achievement of disadvantaged students.

We believe our study is the first to introduce promises coupled with upfront rewards as a potential effective tool to improve education outcomes of low achieving socioeconomically disadvantaged students. Therefore, we make an important contribution to the literature on the design of programs aiming at decreasing inequality in education. Our study also contributes to the emerging literature on the behavioural consequences of voluntary promises outside of the laboratory (see, for example, Himmler et al., 2019). At the same time, we acknowledge several weaknesses in our study and believe that trying to address them offers interesting avenues for future research. The first caveat is our modest sample size which may raise concerns with respect to the general validity of our findings. To try to minimise this concern, the random assignment of the programs was stratified by district, so that in each district, one school received the standard program and the other the promise program. The student population in schools in the same district share the same sociodemographic characteristics, which makes them more similar than schools in different districts. Another weakness in the generalisability of our results is that the programs are conducted by an organisation which follows unique proceedings (for instance, having a role model and a strong positive emphasis on being part of the Indigenous community). We tried to address the potential for confounding factors associated with the ARTIE program to influence our results by assessing the promise program using as a comparison group the schools in the standard program, which is administered by the same organisation and subject to the same general proceedings. This allows us to measure the impact of the promise combined with the upfront reward, net of other relevant aspects which are part of the ARTIE program.

Finally, it is also important for future research to investigate the effect of related programs targeting different student populations from Indigenous Australian students. Moreover, following the more recent trend in the literature evaluating the impact of programs in education, future research should aim at studying the sustained effects of programs based on promises, beyond their immediate effects.

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# 8 References

Abadie, A. (2005). Semiparametric difference-in-differences estimators. Review of Economic Studies, 72(1), 1–19.

Angrist, J., Bettinger, E., Bloom, E., King, E., & Kremer, M. (2002). Vouchers for private schooling in Colombia: Evidence from a randomized natural experiment. American Economic Review, 92(5), 1535–1558.

Angrist, J., Bettinger, E., & Kremer, M. (2006). Long-term educational consequences of secondary school vouchers: Evidence from administrative records in Colombia. American Economic Review, 96(3), 847–862.

Angrist, J. D., & Pischke, J. S. (2008). Mostly harmless econometrics: An empiricist's companion. Princeton university press.

Angrist, J., Lang, D., & Oreopoulos, P. (2009). Incentives and services for college achievement: Evidence from a randomized trial. American Economic Journal: Applied Economics, 1(1), 136–163.

Angrist, J., & Lavy, V. (2009). The effects of high stakes high school achievement awards: evidence from a randomized trial. American Economic Review, 99(4), 1384–1414.

Australian Bureau of Statistics (2016). 2016 Census – Employment, Income and Education, TableBuilder. Findings based on use of ABS TableBuilder data.

Bath, M. J., & Biddle, N. (2011). Measures of indigenous wellbeing and their determinants across the lifecourse. CAEPR Lecture Series, The Australian National University.

Battigalli, P., & Dufwenberg, M. (2007). Guilt in games. American Economic Review, 97(2), 170–176.

Baumert, J., & Demmrich, A. (2001). Test motivation in the assessment of student skills: The effects of incentives on motivation and performance. European Journal of Psychology of Education, 16(3), 441–462.

Beatton, T., Kidd, M. P., Machin, S., & Sarkar, D. (2018). Larrikin youth: Crime and Queensland's Earning or Learning reform. Labour Economics, 52, 149–159.

Belot, M., Bhaskar, V., & van de Ven, J. (2010). Promises and cooperation: Evidence from a TV game show. Journal of Economic Behavior & Organization, 73(3), 396–405.

Benner, A. D. (2011). The Transition to High School: Current Knowledge, Future Directions. Educational Psychology Review, 23, 299–328.

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. Games and Economic Behavior, 10(1), 122–142.

Berry, S. H., & Kanouse, D. E. (1987). Physician response to a mailed survey An experiment in timing of payment. Public Opinion Quarterly, 51(1), 102–114.

Bettinger, E. P. (2012). Paying to learn: The effect of financial incentives on elementary school test scores. Review of Economics and Statistics, 94(3), 686–698.

Charness, G. (2004). Attribution and reciprocity in an experimental labor market. Journal of Labor Economics, 22(3), 665–688.

Charness, G., & Dufwenberg, M. (2006). Promises and partnership. Econometrica, 74(6), 1579–

1601.

Cialdini, R. B. (1987). Influence (Vol. 3). A. Michel Port Harcourt.

Colin Cameron, A., Gelbach, J. B., & Miller, D. L. (2008). Bootstrap-based improvements for inference with clustered errors. Review of Economics and Statistics, 90(3), 414–427.

Commonwealth of Australia. (2017). Closing the Gap Prime Minister's Report 2017. In Department of the Prime Minister and Cabinet.

Commonwealth of Australia. (2019). Closing the Gap Prime Minister's Report 2019. In Department of the Prime Minister and Cabinet.

Cornwell, C., Mustard, D. B., & Sridhar, D. J. (2006). The Enrollment Effects of Merit-Based Financial Aid: Evidence from Georgia's HOPE Program. Journal of Labor Economics, 24(4), 761–786.

Duflo, E., Glennerster, R., and Kremer, M. (2007). Using randomization in development economics research: A toolkit. In Schultz, T. P. and Strauss, J. A., editors, Handbook of Development Economics, 4, 3895–3962.

Dufwenberg, M., & Gneezy, U. (2000). Measuring beliefs in an experimental lost wallet game. Games and Economic Behavior, 30(2), 163–182.

Dulleck, U., Silva-Goncalves, J., & Torgler, B. (2016). Evaluation of an incentive program on educational achievement of Indigenous students. Economic Record, 92(298), 329–347.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development During Adolescence: The Impact of Stage-Environment Fit on Young Adolescents' Experiences in Schools and in Families. American Psychologist, 48(2), 90–101.

Ederer, F., & Stremitzer, A. (2017). Promises and expectations. Games and Economic Behavior, 106, 161–178.

Ellingsen, T., & Johannesson, M. (2004). Promises, Threats and Fairness. Economic Journal, 114(495), 397–420.

Ellingsen, T., Johannesson, M., Tjøtta, S., & Torsvik, G. (2010). Testing guilt aversion. Games and

Economic Behavior, 68(1), 95–107.

Falk, A. (2007). Gift exchange in the field. Econometrica, 75(5), 1501–1511.

Falk, A., & Fischbacher, U. (2006). A theory of reciprocity. Games and Economic Behavior, 54(2), 293–315.

Fehr, E., & Falk, A. (2002). Psychological foundations of incentives. European Economic Review, 46(4), 687–724.

Fehr, E., & Gächter, S. (2000a). Cooperation and punishment in public goods experiments. The American Economic Review, 90(4), 980–994.

Fehr, E., & Gächter, S. (2000b). Fairness and retaliation: The economics of reciprocity. Journal of Economic Perspectives, 14(3), 159–181.

Fryer, R. G. (2011). Financial Incentives and Student Achievement: Evidence from Randomized Trials. Quarterly Journal of Economics, 126(4), 1755–1798.

Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. The Journal of Economic Perspectives, 25(4), 191–209.

Goldstein, S. E., Boxer, P., & Rudolph, E. (2015). Middle School Transition Stress: Links with Academic Performance, Motivation, and School Experiences. Contemporary School Psychology, 19(1), 21–29.

Gray, J., & Beresford, Q. (2008). A "formidable challenge": Australia's quest for equity in indigenous education. Australian Journal of Education, 52(2), 197–223.

Himmler, O., Jäckle, R., & Weinschenk, P. (2019). Soft commitments, reminders, and academic performance. American Economic Journal: Applied Economics, 11(2), 114–142.

Hjalmarsson, R. (2008). Criminal justice involvement and high school completion. Journal of Urban Economics, 63(2), 613–630.

Jalava, N., Joensen, J. S., & Pellas, E. (2015). Grades and rank: Impacts of non-financial incentives on test performance. Journal of Economic Behavior & Organization, 115, 161–196.

Joule, R.-V., & Beauvois, J.-L. (1997). Cognitive dissonance theory: a radical view. European Review of Social Psychology, 8(1), 1–32.

Kerr, N. L., & Kaufman-Gilliland, C. M. (1994). Communication, commitment, and cooperation in social dilemma. Journal of Personality and Social Psychology, 66(3), 513–529.

Kiesler, C. A. (1971). The psychology of commitment: Experiments linking behavior to belief. Academic Press.

Koessler, A. K., Torgler, B., Feld, L. P., & Frey, B. S. (2019). Commitment to pay taxes: Results from field and laboratory experiments. European Economic Review, 115, 78–98.

Kremer, M., Miguel, E., & Thornton, R. (2009). Incentives to learn. Review of Economics and Statistics, 91(3), 437–456.

Leuven, E., Oosterbeek, H., & Klaauw, B. (2010). The Effect of Financial Rewards on Student's Achievement: Evidence From a Randomized Experiment. Journal of the European Economic Association, 8(6), 1243–1265.

Levitt, S. D., List, J. A., Neckermann, S., & Sadoff, S. (2016). The behavioralist goes to school: Leveraging behavioral economics to improve educational performance. American Economic Journal: Economic Policy, 8(4), 183–219.

MacKinnon, J. G., & Webb, M. D. (2018). The wild bootstrap for few (treated) clusters. Econometrics Journal, 21(2), 114–135.

Ostrom, E., Walker, J., & Gardner, R. (1992). Covenants with and without a sword: Self-governance is possible. American Political Science Review, 86(2), 404–417.

Rodriguez-Planas, N. (2012). Longer-term impacts of mentoring, educational services, and learning incentives: Evidence from a randomized trial in the United States. American Economic Journal: Applied Economics, 4(4), 121–139.

Roodman, D., MacKinnon, J. G., Nielsen, M. Ø., & Webb, M. D. (2019). Fast and wild: Bootstrap inference in Stata using boottest. Stata Journal, 19(1), 4–60.

Rothman, S. (2001). School absence and student background factors: A multilevel analysis.

International Education Journal, 2(1), 59–68.

Schultz, T. P. (2004). School subsidies for the poor: evaluating the Mexican Progresa poverty program. Journal of Development Economics, 74(1), 199–250.

Vanberg, C. (2008). Why do people keep their promises? an experimental test of two explanations. Econometrica, 76(6), 1467–1480.

Webb, M. D. (2013). Reworking Wild Bootstrap Based Inference for Clustered Errors. Queen's Economics Department Working Paper, 1315, 1–23.

# 9 Appendix

## Figure

Figure A.1: Promise document (Term 1)

This contract has been approved by the ARTIE Academy, on the date of DD / MM / YYYY for the period of Term 1, 2015.

Conditions of Contract

For signing this promise you agree that you will achieve 90% in attendance in Term 1 in order to be rewarded with your very own ARTIE hoodie.

I ..... that I will achieve .....% Attendance in Term 1 and fully understand that this reward is only available to students who have attended the Term 1 ARTIE Challenge Launch.

Signed .....

Date: DD / MM / YYYY

School.....

Size (please circle):

| | | | |
|---|---|---|---|
| X-Sml | Sml | Med | Large. |
| XL | 2XL | 3XL | 4XL |

.....

Name.....

Size.....

**I have accepted the promise to achieve 90% in attendance in Term 1 in order to be rewarded with an ARTIE hoodie.**

***'I can, I will, I must'***

*Hold onto this slip for your own record.*




Figure A.2: Average absence rate


**PROMISE CHALLENGE AGREEMENT**

**Conditions**

By signing this **promise** you agree that **you will achieve 90% Physical Attendance plus a minimum 'B' in Effort and Behaviour in Math and English** in Term 2 in order to be rewarded with your very own ARTIE Academy Sportsbag and Beanie.

I ..... that I will achieve ..... % Physical Attendance plus a minimum ..... in Effort and Behaviour in Math and English in Term 2 and fully understand that this reward is only available to students who attended the Term 2 ARTIE Academy Promise Challenge Launch.

Full Name: .....

School: .....

Date: DD / MM / YYYY

Please retain for your record

Congratulations!

You have accepted the **promise** to achieve **90% Physical Attendance** plus a **minimum 'B' in Effort and Behaviour in Math and English** in Term 2 in order to be rewarded with an ARTIE Sportsbag and Beanie.

***GOOD LUCK IN TERM 2 AND REMEMBER YOUR PROMISE***