



## Note

# Are male teachers headed for extinction? The 50-year decline of male teachers in Australia



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## ABSTRACT

Whilst an international shortage of male teachers has received much research attention, to date, no study has tracked the trajectory of male teachers in any country. Drawing on annual workplace data, we calculated the proportion of male teachers in Australia from 1965 to 2016. We separate the data for Government and non-Government (Independent and Catholic) schools, and for primary and secondary schools. Findings indicate a strong decline in male representation in the Government sector. A similar rate of decline is observed in both primary and secondary schools. Of significance to educators, policy makers, and the public - no current Australian workforce diversity policies aim to redress this decline. This strong decline is not matched in the Catholic sector, however.

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## 1. Introduction

A shortage of men in the teaching workforce has raised international concern (Organisation for Economic Co-operation and Development [OECD], 2005; 2011), generating research interest in numerous countries, including: Germany, England, New Zealand, Ireland, the Netherlands, Finland, Canada, Australia, South Africa, Cyprus, Scotland, and the United States (e.g. Basten, 1997; Brownhill, 2014; Cushman, 2008; Drudy, 2008; Geerdink, Bergen, & Dekkers, 2011; Lahelma, 2000; Martino & Kehler, 2006; Mills, Martino, & Lingard, 2004; Moosa & Bhana, 2017; Rentzou, 2016; Ridell & Tett, 2010; Stroud, Smith, Ealy, & Hurst, 2000). Notably, literature concerning a perceived need for more male school teachers has been clouded by 'recuperative masculinity politics' (i.e. reasserting masculine dominance to counteract the 'feminisation' of schools) (Lingard, 2003; Martino & Kehler, 2006) and a 'competing victim syndrome' (i.e. contesting which gender is currently disadvantaged by the education system) (Mills, 2003). Nevertheless, a resurfacing supposition within this discourse over the past 20 years is that the teaching workforce should reflect the diversity of the student population and broader community (Cushman, 2007; Farquhar, 1998; Foster & Newman, 2005; Froese-Germain, 2006; Martin, 2002). Several factors may limit male representation however, including the low salary and status of the teaching profession (Cushman, 2005; P. 2007; Pollitt & Oldfield, 2017), and

negative perceptions of men who choose to teach young children (Bhana & Moosa, 2016; Cushman, 2005; 2012; Foster & Newman, 2005; Mistry & Sood, 2015). Whilst the shortage of male teachers is typically researched by drawing on the perspectives of teachers, principals and students, to date no study has examined the trajectory of the teaching workforce's gender composition. It is therefore, not known if a decline in male teachers is likely to plateau, continue, increase or reverse without intervention. The present study addresses this omission; drawing on 50 years of national census data in Australia to provide an empirical examination of what the gender diversity of the teaching workforce might look like in Australia's future.

While longitudinal data on the representation of men in the teaching profession is scarcely reported in scholarly literature, data available from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics suggests a global decline in the proportion of male school teachers (UNESCO, 2016; 2011). Particular attention has been given to primary schools, where men currently constitute 19% of the workforce internationally (OECD, 2016). Recent OECD data reported in Table 1 shows that the proportion of male primary school teachers is close to or above 40% in some countries (China, Indonesia, Saudi Arabia, and Turkey), yet less than 5% in others (Hungary, Italy, Lithuania, Russia, and Slovenia). In all countries except Norway, the proportion of male teachers in high schools, where it is typically possible to earn a higher salary (OECD, 2016), is greater than the proportion of male teachers in primary schools.

In isolation, these statistics may not be cause for alarm in all countries: particularly when the ratio of male to female teachers is

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**Table 1**  
Percentage of male teaching staff in public and private schools in 2016, organised by country and level of education.

Country <sup>a</sup>	Primary school % Male	Primary school ranking by % Male	High school <sup>b</sup> % Male	High school ranking by % Male
Austria	8.56	33	27.98	27
Belgium	18.29	20	36.78	15
Brazil	10.36	31	30.62	24
Chile	19.03	19	31.76	22
China	39.02	3	48.09	4
Colombia	22.50	13	46.00	8
Costa Rica	20.42	17	42.63	11
Czech Republic	7.17	35	23.06	31
Denmark	30.86	7	35.72	16
Estonia	8.45	34	17.89	38
Finland	20.51	16	27.58	28
France	16.87	22	35.44	17
Germany	13.23	28	33.91	20
Greece	29.83	8	34.00	19
Hungary	3.05	39	22.40	33
Indonesia	37.91	4	45.94	9
Ireland	13.09	29	29.00	25
Israel	14.71	25	21.06	36
Italy	4.12	37	22.12	35
Japan	35.21	5	57.56	1
Korea	21.42	15	30.79	23
Latvia	7.17	36	15.73	41
Lithuania	2.91	40	17.64	39
Luxembourg	25.50	9	41.52	12
Mexico	32.37	6	47.59	5
Netherlands	14.07	27	48.67	3
New Zealand	16.16	23	34.35	18
Norway <sup>c</sup>	25.21	10	25.21	30
Poland	14.66	26	26.25	29
Portugal	20.16	18	28.42	26
Russian Federation	1.19	41	17.14	40
Saudi Arabia	48.39	1	50.46	2
Slovak Republic	10.00	32	22.20	34
Slovenia	3.06	38	20.53	37
South Africa	21.54	14	44.00	10
Spain	24.01	11	40.83	14
Sweden	22.83	12	22.88	32
Switzerland	18.01	21	46.12	7
Turkey	41.83	2	46.83	6
United Kingdom	15.88	24	41.15	13
United States	12.84	30	33.24	21
International <i>M</i>	18.84		33.44	
<i>SD</i>	11.20		10.82	

Note. Data source: "Table D5.3: Gender distribution of teachers (2014)," Organisation for Economic Co-operation and Development, 2016. <sup>a</sup> There was incomplete or missing data for Argentina, Australia, Canada, Iceland, and India. These countries are therefore excluded. <sup>b</sup> Indicates teachers in the 'lower secondary' grades and may not be representative of all high school teachers. <sup>c</sup> Results for Norway may be erroneous: these percentages are identical to twelve decimal places.

closer to parity. In addition, cultural, historical and systemic explanations for differences between countries must be considered. For example, the accessibility of schooling and tertiary education for girls and women and the requirement of mandatory military service for young men may each impact career trajectories. Nonetheless, attempts in several countries have been made, with limited success, to increase the number of male teachers. These include advertising campaigns and a Men's Club in England, special training for men in New Zealand, and quota systems in both Sweden and Scotland (see Cushman, 2007).

Notably, the data available from the OECD and UNESCO Institute for Statistics is not separated by education providers (e.g. Government or Independent), includes periods of missing data for numerous countries, and data reporting the proportion of male teachers in some countries, including Australia, is not available. Additionally, to date, no study has used available census data to track the trajectory of male teachers in any country. Determining this trajectory is critically important for policy makers and school leaders interested in enhancing the gender diversity of the teaching profession.

### 1.1. The need for male (and female) teachers

While calls for more male teachers to improve the academic outcomes of boys or to act as role models may be misplaced (see Ashley, 2003; Bricheno & Thornton, 2007; Cho, 2012; Holmlund & Sund, 2008; Winters, Haight, Swaim, & Pickering, 2013), there remains important social and psychological reasons for schools to include both male and female teachers (Farquhar, 1998; McGrath & Sinclair, 2013). Schools have long been sites where children's gendered identities are developed, negotiated, and confirmed (Francis & Skelton, 2001), and lessons about gender typically manifest as part of a hidden curriculum in which teachers' own gender may play an important role (Basow, 2004). Whilst a de-gendered approach to teaching has become more common (e.g. addressing a class as 'children' as opposed to 'boys and girls') (Vickers, 2007), gender schema theory suggests that young students will most likely distinguish between male and female teachers and peers based on physical appearance, and will in turn use that gender knowledge to make generalisations about others (Martin, Ruble, & Szkrybalo, 2002). A potential implication therefore is that limited observations and interactions with men who are caring, nurtur-

ing, or concerned about education may lead children to assume that only women behave in such ways, or that such traits are atypical in men. Furthermore, increasing observable gender performances of men in schools may be particularly important for students with risky home lives. The presence of male teachers, for example, may allow particularly vulnerable children to see men as caring and non-threatening, and to witness men and women interacting in positive, equal, and non-violent ways (Bhana & Moosa, 2016; Bhana, de Lange, & Mitchell, 2009; Moosa & Bhana, 2017).

In addition to these social and psychological reasons, there also exist organisational reasons for schools to include both male and female teachers. In the corporate sector, diversity of gender, age, ethnicity and religion in the workforce is encouraged because it facilitates multiple perspectives and creates an inclusive workplace that reflects the broader community (McCuston, Ross Woodridge, & Pierce, 2004). These efforts are not solely altruistic: rather, there are noted links to job satisfaction and improved performance too (Pitts, 2009). In a similar vein, representative bureaucracy theory describes how the demographic composition of a workforce drives policy outcomes (Grissom, Rodriguez, & Kern, 2017). A diverse workplace that is reflective of the broader population ensures that all groups are considered in decision-making processes relating to, for example, policy and administration (Bradbury & Kellogg, 2011). According to Grissom, Kern, and Rodriguez (2015), applying representative bureaucracy theory to education "...suggests that meeting the needs of a diverse student population requires a diverse teacher and principal workforce" (p. 186). Notably, our review of education department policies and plans referring to workforce diversity in each of Australia's states and territories (see supplementary material) finds no recommendations that the representation of male teachers be increased. Instead, current diversity policies and recommendations focus exclusively on Aboriginal people, racial and religious minority groups, people under the age of 25, people with a disability, and women in leadership positions.

## 1.2. Research questions

Given the persistent concern about the shortage of male teachers in education literature, the present study uses annual Australian workplace data to track the incidence and trajectory of this shortage over time. Although an under-representation of male teachers has been identified in various international jurisdictions, including Australia, it is not clear whether this under-representation is consistent, or if it has accelerated or decelerated. Considering that the Australian education system also differs between public and private schooling, the present study further aimed to identify any differing patterns in this reported decline. The present study therefore addresses three research questions:

1. Has the representation of male teachers in Australia changed over time?
2. Does the representation of male teachers in Australia differ by education level (primary, secondary) or sector (Government, Catholic, Independent) over time?
3. Where a change in male teacher representation is observed, is the change consistent over time (a linear trend) or does it indicate an acceleration or deceleration (a quadratic trend)?

## 2. Method

This study used 50 years of teacher workforce data collected by each Australian state and territory and published by the Australian Bureau of Statistics (ABS). The data published annually by the ABS includes the total number of teachers in each state or territory (including classroom teachers, head teachers, and principals); the total number of males within that group; and the total number of

females within that group. Because the total number of teachers varies both between education sectors and across different years, however, it was not possible to directly compare the numbers of male teachers over time. We therefore calculated the annual percentage of teachers who were male in each education level and sector using the following formula ( $n$  = total number of teachers):

$$\% = \frac{\text{Male } n}{\text{Male } n + \text{Female } n} \times 100$$

Note that the total number of male and female teachers each year is given by the ABS in full-time-equivalent (FTE) units, which some state and territories calculate slightly differently from one another. Because the percentage of part-time workers is low, however, these minor differences in FTE between states and territories do not affect our calculations. However, because women are more likely than men to work part time (OECD, 2016), calculations based on FTE may produce higher estimates of male participation in the workforce than do calculations using raw numbers. Thus, our findings may over-estimate male participation in the teaching workforce. Additionally, and unavoidably, ABS census data reflects a dimorphic view of gender that is not necessarily the view of the authors. While we present a detailed account of this national census data, we also acknowledge that investigations of masculinity and femininity typologies within each gender are also needed.

### 2.1. Context and years in consideration

We begin our analyses of the representation of male teachers in 1965, when records of the relative numbers of male and female teachers in Australian schools were first kept. Note that although ABS data on the teaching workforce is provided from 1959, teacher numbers were not initially broken down by gender. Moreover, because comprehensive data on school settings were not kept until 1977, our initial analysis is of the representation of male teachers in all Australian schools combined. From 1977 onwards, when more comprehensive records on school settings were first kept, we provide additional analyses of the representation of male teachers in which we split the data according to educational level and sector.

In our second set of analyses we consider the representation of male teachers at different educational levels. In Australia there are two levels of compulsory education: primary and secondary. Primary (elementary) schools in Australia enrol students from approximately age 5 to 12, while secondary (high) schools enrol students from approximately age 13 to 18.

In our third set of analyses we consider the representation of male teachers within different school sectors. In Australia there are three school sectors: Government, Catholic and Independent (see Table 2 for an overview of the teacher population in each sector). The Government sector is governed by the state government and draws on the federal and state governments for funding. The Catholic and Independent sectors, in contrast, are independently governed. The Catholic school system is the largest non-government schooling sector in Australia, with a central coordinating office in each state and a wide network of schools across all states and territories. The Independent schools sector includes all "other" non-government schools in Australia. It includes private Anglican, Baptist, and non-religious Independent schools. Both sectors draw on a mix of government funding, school fees and investments.

To ensure our presentation of results is not exhaustive, we do not report analyses of the representation of male teachers for individual states and territories within Australia. To assist researchers and policy-makers within these jurisdictions, however, we have included an analysis for each state and territory as supplementary material.

**Table 2**  
Summary of Australian school teacher populations in 1977 and 2016.

	Australia-wide	Government sector	Catholic sector	Independent sector
1977				
Primary school				
Teachers (N)	85,856	71,334	12,027	2495
Male teachers (%)	28.49	31.29	12.21	27.25
Secondary school				
Teachers (N)	80,978	64,597	10,325	6056
Male teachers (%)	53.92	55.16	46.54	53.37
2016				
Primary school				
Teachers (N)	143,418	101,099	24,438	17,881
Male teachers (%)	18.25	18.01	16.57	21.99
Secondary school				
Teachers (N)	132,912	75,720	28,716	28,476
Male teachers (%)	39.96	38.56	40.35	43.28

Note. Data source: “4221.0 – Schools” Australian Bureau of Statistics, 1978; “Table 51a in-school staff (FTE), 2001–2016” Australian Bureau of Statistics, 2017.

## 2.2. Empirical strategy

To determine whether the percentage of male teachers in different settings (i.e. between each educational level and sector) has changed across time, we used IBM SPSS version 24 to conduct a series of curve analyses with time as the independent variable. Our aim was to test the fit of either a linear trend or a quadratic trend to each curve. A significant linear trend would indicate a steady increase or decrease in the total percentage of teachers in that setting who are male, whereas a significant quadratic trend could indicate one of several relationships including an accelerating increase or decrease across time; a decelerating increase or decrease across time, or a change in the direction of a trend (i.e. a “U shape or an “inverse U” shape).

For linear trends, where the increase or decrease in the percentage of male teachers was consistent across time – that is, represented by a straight line – we also conducted follow-up *t*-tests to determine whether the trajectory of the trends were the same or different across settings (e.g. across primary and secondary schools, or across Government and Independent schools), noting that this analysis was only possible when comparing two linear trends to one another: quadratic trends, by definition, change trajectory across time. We did this by comparing the slope of each linear trend-line produced in our curve analyses to the slope of each other linear trend-line, using the following formula (see Sweller, Graham, & Van Bergen, 2012, for a more detailed explanation):

$$t = \frac{b_1 - b_2}{\sqrt{s_{b_1}^2 + s_{b_2}^2}}$$

This analysis allowed us to see if the percentage of male teachers was increasing or decreasing more sharply in one setting than another; increasing in one setting and decreasing in another; or staying stable in one setting but changing in another. Because there were multiple linear trends, and therefore multiple comparisons planned, we adjusted all alpha levels using a Bonferroni adjustment. Our comparisons were organised using a hierarchical cascading approach. First, we compared the percentage of male teachers over time at each school level: primary or secondary. Next, within each school level, we compared the percentage of male teachers over time in each sector: Government, Catholic and Independent.

## 3. Results

### 3.1. Australia-wide trends in teacher gender

In our first analysis, we tested for trends in the representation of male teachers in all Australian schools, averaged across both education level and sector and drawing on data from 1965 onwards. Because both the linear model and the quadratic model were significant, to determine which model best predicted the data, we compared the amount of variance in the data accounted for by each model. The linear model accounted for 89% of the variance,  $F(2,48) = 399.67$ ,  $p < .001$ ,  $R^2 = .89$ , whereas the quadratic model accounted for 94% of the variance,  $F(2,48) = 389.67$ ,  $p < .001$ ,  $R^2 = .94$ . Hence, we adopted the quadratic model as the best fit; showing that the percentage of males in Australian schools has declined across time, and that the speed of this decline has gradually increased across time.

To enable direct comparisons with our analyses for education level and sector, presented below, we also conducted a supplementary analysis in which we restricted our dataset to 1977 onwards. In this supplementary 40-year dataset there was a significant linear trend (but not quadratic trend), showing a steady decline in the percentage of male teachers in Australian schools,  $F(1,38) = 903.24$ ,  $p < .001$ ,  $R^2 = .96$ .

Taken together with our finding of a significant quadratic trend in the full 52-year dataset, our findings of a significant linear trend using the supplementary 40-year dataset suggest an initial period where the percentage of male teachers in the 1960s–1970s fluctuated, followed by a long period from the 1980s to present in which the decline in the percentage of male teachers has been steady and stable (see Fig. 1).

### 3.2. Trends in teacher gender by education level

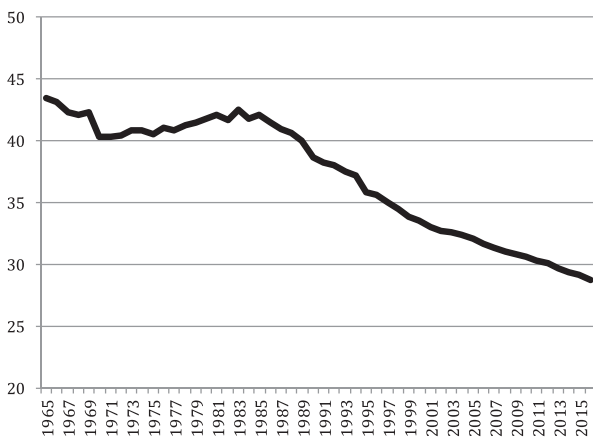
In our second set of analyses we compared the trends in teacher gender between Australian primary schools and Australian secondary schools, drawing on data from 1977 onwards. Negative linear trends significantly predicted the percentage of male teachers in both primary schools,  $F(2,37) = 342.20$ ,  $p < .001$ ;  $R^2 = .95$ , and secondary schools,  $F(2,37) = 2485.56$ ,  $p < .001$ ;  $R^2 = .99$  (see Table 3). Quadratic trends were not significant in either case, both  $ps > .18$ . This suggests that at the national level, and across the 40 years in question, the decline in male teachers in both primary and secondary schools is consistent across time.

To determine whether the speed of decline over time was equivalent in Australian primary and Australian secondary schools,

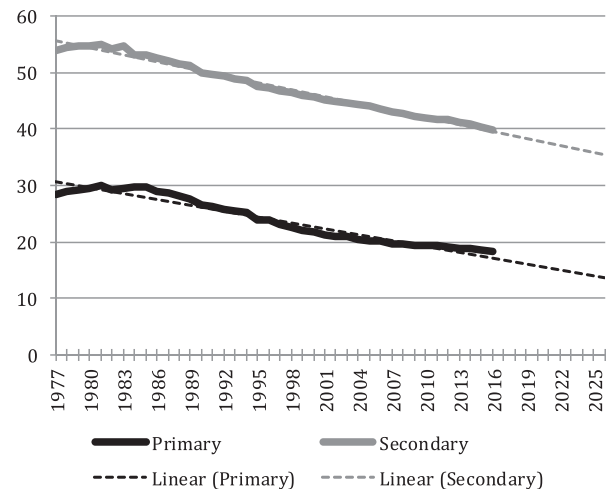
**Table 3**  
Linear and quadratic models predicting the percentage of male teachers in each setting over time.

	Linear model only		Combined linear and quadratic model	
	Coefficient	SE	Coefficient	SE
Australia-wide				
Overall				
Linear decline	-.300***	.015	-.019	.045
Quadratic change	-	-	-.005***	.001
Primary				
Linear decline	-.347***	.013	-.388***	.054
Quadratic change	-	-	.001	.001
Secondary				
Linear decline	-.413***	.008	-.457***	.034
Quadratic change	-	-	.001	.001
Government Sector				
Primary				
Linear decline	-.433***	.015	-.528***	.061
Quadratic change	-	-	.002	.001
Secondary				
Linear decline	-.494***	.010	-.461***	.043
Quadratic change	-	-	-.001	.001
Catholic Sector				
Primary				
Linear decline	.006 <sup>a</sup>	.023	.441***	.059
Quadratic change	-	-	-.011***	.001
Secondary				
Linear decline	-.196***	.006	-.149***	.022
Quadratic change	-	-	-.001*	.001
Independent Sector				
Primary				
Linear decline	-.229***	.015	-.147*	.061
Quadratic change	-	-	-.002	.001
Secondary				
Linear decline	-.270***	.009	-.408***	.030
Quadratic change	-	-	.003***	.001

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . The overall Australia-wide data is from 1965–2016; all other data is from 1977–2016. <sup>a</sup> Indicates an increase in the proportion of male teachers.



**Fig. 1.** Decline in the percentage of male teachers in Australian schools (across all settings) from 1965 to 2016.

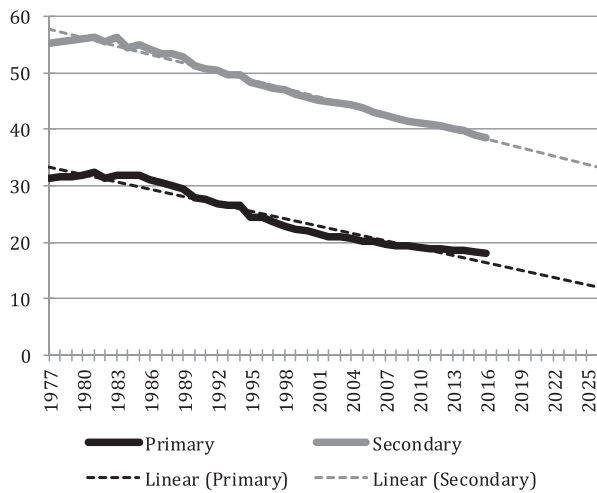


**Fig. 2.** Percentage of male teachers in Australian primary and secondary schools (across all sectors) from 1977 to 2016. Although secondary schools have a greater percentage of male teachers than primary schools, the rate of decline is not statistically different. Linear trend lines are extended to 2026.

we conducted a follow-up *t*-test. The linear trend line predicting the percentage of male teachers in primary schools did not differ significantly in trajectory from the linear trend-line predicting the percentage of male teachers in secondary schools,  $t = .89$ ,  $p = .38$ . Thus, although the percentage of male teachers is always greater in Australian secondary schools than in Australian primary schools, the speed of decline is the same in each setting (see Fig. 2).

### 3.3. Trends in teacher gender by sector

In our third set of analyses we compared the trends in teacher gender between different school sectors, drawing on data from 1977 onwards. We present these trends first for Government



**Fig. 3.** Percentage of male teachers in Australian primary and secondary schools, Government sector, from 1977 to 2016. Although secondary schools have a greater percentage of male teachers than primary schools, the rate of decline is not statistically different. Linear trend lines are extended to 2026.

schools, then Catholic schools, and finally Independent schools. In each sector we also provide a comparison of primary and secondary schools.

### 3.3.1. Government schools

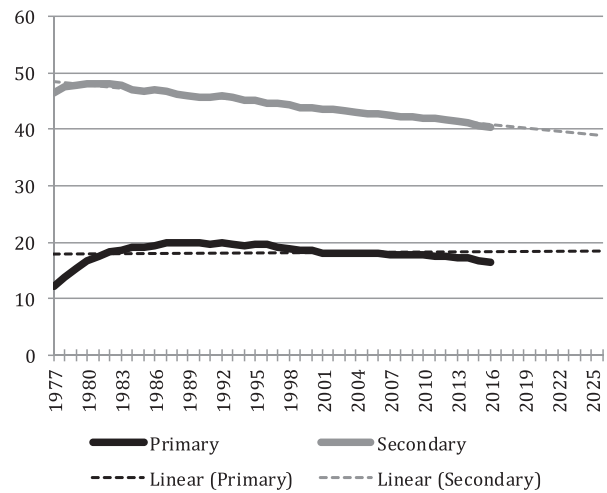
In the Government school sector, negative linear trends significantly predicted the percentage of male teachers across time in both primary schools,  $F(2,37) = 418.86, p < .001; R^2 = .96$ , and secondary schools,  $F(2,37) = 1131.68, p < .001; R^2 = .98$ . Quadratic trends were not significant in either case, both  $ps > .12$ . This means that the pattern of findings for male teachers in Government primary and secondary schools mirrored the pattern of findings Australia-wide (that is, with all sectors combined). As for Australian schools more broadly, the decline in the percentage of Government school teachers who are male was steady and consistent across time.

To determine whether the speed of decline in male teachers was equivalent in primary and secondary schools, we again conducted a follow-up  $t$ -test. As for the data Australia-wide, the linear trend line predicting the percentage of male teachers in Government primary schools did not differ in trajectory significantly from the linear trend-line predicting the percentage of male teachers in Government secondary schools,  $t = .90, p = .38$ . Thus, the relative rate of decline was the same (see Fig. 3).

### 3.3.2. Catholic schools

In Catholic primary schools, the percentage of male teachers across time was predicted by both linear and quadratic trends,  $F(2,37) = 802.79, p < .001; R^2 = .96$ . The data roughly represents an inverse “U” shape, with the percentage of male teachers rising rapidly to a peak in 1989, then falling gradually and linearly from 1989 to present. In Catholic secondary schools, the percentage of male teachers across time was also predicted by both linear and quadratic trends,  $F(2,37) = 698.60, p < .001; R^2 = .97$ . The data again represents an inverse “U” shape, but with a somewhat different linear trend line. The percentage of male teachers rises briefly to a peak in 1981, and then falls rapidly and linearly from 1981 to present (see Fig. 4).

While it was not possible to statistically compare the trajectory of the quadratic trends emerging in the Catholic school data for primary and secondary schools, we nonetheless compared the linear components of these quadratic models using our follow-up  $t$ -tests. Our first comparison was between Catholic primary and sec-



**Fig. 4.** Percentage of male teachers in Australian primary and secondary schools, Catholic sector, from 1977 to 2016. Secondary schools have a greater percentage of male teachers than primary schools: however, the percentage of male teachers is declining more sharply in secondary schools. Linear trend lines are extended to 2026.

ondary schools, and our second group of comparisons were between Government and Catholic Schools within each school level.

In our first comparison, we found a significant difference between Catholic primary and secondary schools,  $t = 9.37, p < .001$ . While the linear trend line predicting the percentage of male teachers in Catholic secondary schools declined steadily over the 40-year period of study (1977–2016), the percentage of male teachers in Catholic primary schools instead rose over this same period. Catholic primary schools initially had the lowest percentage of male teachers within any sector or school level, so this rise may indicate a levelling process whereby the profile of Catholic school teaching staff begins to look more similar to the profile of the teaching staff in other school systems.

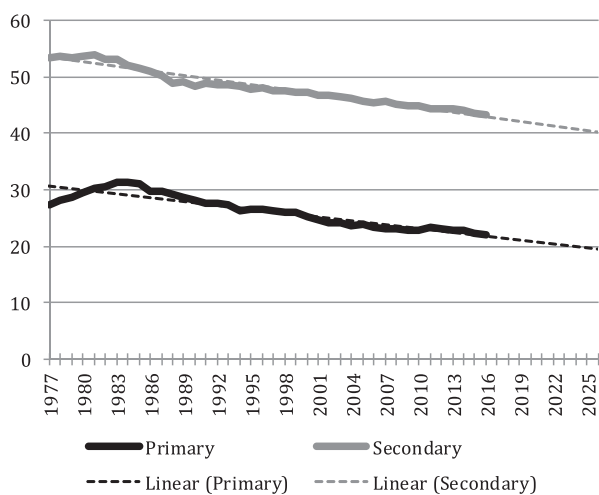
In our second group of comparisons, we found significant differences in the linear trends for Catholic and Government primary schools,  $t = 11.42, p < .001$ , and for Catholic and Government secondary schools,  $t = 6.58, p < .001$ . In both cases, the tests revealed that the decline in the percentage of male teachers is significantly sharper in Government schools than in Catholic schools (see Figs. 2 and 3).

### 3.3.3. Independent schools

In Independent primary schools, a negative linear trend significantly predicted the percentage of male teachers over time,  $F(2,37) = 120.19, p < .001; R^2 = .87$ . There was no significant quadratic trend,  $p = .17$ . Thus, the speed of decline in the percentage of male primary teachers was consistent across time.

In Independent secondary schools, the percentage of male teachers over time was significantly predicted by both a negative linear trend and a quadratic trend,  $F(2,37) = 708.07, p < .001; R^2 = .98$ . These linear and quadratic trends combined showed that although the number of male teachers in Independent secondary schools declined each year – unlike the Catholic school data, there was no evidence of a “U” or “inverse U” shape – the rate of change varied across time. There was a slight acceleration in the decline of male teachers from 1977 to 1987 and a slight deceleration in the decline of male teachers from 2006 to 2016 (see Fig. 5).

We again conducted follow-up  $t$ -tests to determine whether the trajectory of change for each linear trend differed from the trajectory of each other linear trend. Our first comparison was between Independent primary and secondary schools, and our sec-



**Fig. 5.** Percentage of male teachers in Australian primary and secondary schools, Independent sector, from 1977 to 2016. Secondary schools have a greater percentage of male teachers than primary schools: however, the percentage of male teachers is declining more sharply in secondary schools. Linear trend lines are extended to 2026.

ond group of comparisons were of Independent, Government, and Catholic schools at each school level.

In our first comparison, we found a significant difference between Independent primary and secondary schools,  $t=3.84$ ,  $p < .001$ . The percentage of male teachers in Independent secondary schools declined more sharply than the percentage of male teachers in Independent primary schools.

In our second group of comparisons, we found significant differences between Independent and Government primary schools,  $t=4.42$ ,  $p < .001$ , and between Independent and Catholic primary schools,  $t=6.93$ ,  $p < .001$ . The percentage of male teachers declined more sharply in Government primary schools than in Independent primary schools, and rose in Catholic primary schools. We found no significant differences between Independent and Government secondary schools,  $t=1.01$ ,  $p = .32$ , or between Independent and Catholic secondary schools,  $t = .26$ ,  $p = .80$ .

#### 4. Conclusion

Situated within enduring discourse about the role of teacher gender in education, the present study provides the first empirical look at the trajectory of male teacher representation at a national level. In addition to confirming a decline in the representation of male school teachers in Australia, our results further extend extant knowledge in two key ways. First, whilst attention in Australia and internationally is often given to the representation of male primary school teachers, the present study finds an equivalent decline in Australian secondary schools. Moreover, the speed of decline is matched in secondary schools. Second, separating our analyses by education sectors, our results reveal a more nuanced view of male representation in schools. For example, while the percentage of male teachers has decreased faster in Independent secondary schools than in Independent primary schools, the rate of decline is nonetheless slower than in other sectors. Catholic primary schools have also experienced a slow decline in the proportion of male teachers, following an initial increase in male representation. Notably, the sharpest decline in the percentage of male teachers is observed in the largest of the three sectors; Australian Government schools.

Given that none of the three school sectors (Government, Catholic, or Independent) have developed national policies to attract or retain male teachers across our 50 years of analysis (see also Mills et al., 2004; 2007), the causes of the differential rates

of decline between sectors requires further investigation. Nonetheless, these findings provide a useful foundation for policy makers who are interested in pursuing workforce gender diversity in each of these sectors. By identifying the trajectory of this decline, we hope the data presented in this publication will empower education providers to critically evaluate their own policies. Whilst our findings may not generalize to all countries, the present study provides a model for similar research to be completed elsewhere. Given that male teachers are similarly underrepresented in other countries (see Table 1), it is important for future research to compare the rate of decline across international settings. Indeed, although the representation of male teachers is currently greater in Australian primary schools than in the United States, the United Kingdom, or New Zealand, for example, it is not clear if the rate of decline is faster in Australia than in these other settings.

Looking forward, it is not possible to determine whether the decreasing representation of male teachers in Australia will continue unabated. If so, however, the situation is dire. In primary schools Australia-wide, for example, male teachers were 28.49% of the teaching staff in 1977. Taking the negative linear trend observed in male primary teaching staff and extrapolating forward, it is possible to determine that Australian male primary teachers will reach an 'extinction point' in the year 2067. In Government primary schools, where this decline is sharpest, this 'extinction point' comes much sooner – in the year 2054. Given that the speed of decline is matched in secondary schools Australia-wide, and that the available data includes classroom teachers, head teachers, and principals, our findings suggests that it will become increasingly unlikely that Australian students will be taught by both female and male teachers. Given these findings, we call for a review of workforce diversity policies in Australian school systems to redress this imbalance.

To further examine the implications of these findings for policy, we return to the theory framing the present study. Drawing on gender schema theory, the decline in male teacher representation is likely to limit the construction of children's gender knowledge (see Martin et al., 2002). Broadening children's understandings of men may be particularly important for young children who have frequently witnessed men behaving in aggressive and dominating ways towards others (e.g. Bhana & Moosa, 2016). In cases of particularly vulnerable children, such as those who have witnessed domestic violence, male teachers may provide an overlooked source of reassurance. Unfortunately, through a lack of teacher gender diversity, schools may unintentionally restrict opportunities to model a range of gender identities and to challenge inappropriate conceptions of what men and women can and cannot do. No Australian government policies are currently in place to redress this teacher gender imbalance (see supplementary material).

Interpreting the present findings through a representative bureaucracy lens offers a potential explanation for this absence of government policy. It is possible that the lack of attention given to male teacher representation in Australian government workforce diversity policies is itself a product of current representation. Indeed, where these policies instead focus on the representation of female principals, they remain open to criticism about upholding the interests of a dominant group rather than diversifying the representation of different groups, at different levels. The application of representative bureaucracy theory also offers a rich vein for future research to examine how the declining representation of male teachers, reported here, effects implicit teacher bias and student representation in gifted programs and special education settings (see Grissom et al., 2015).

Whilst a review of education workforce diversity policies in Australia to redress the present findings may acknowledge the plight of the male teacher, we highlight two factors that could continue to prevent gender diversity in the teacher workforce. First, as

noted by McCuiston et al. (2004), organisations may only pursue workforce diversity if it results in financial or other gains; which, in the education sector, is likely to translate to gains in students' academic performance. Given findings showing teacher gender has little effect on students' academic outcomes (e.g. Cho, 2012), it is perhaps not surprising that the lack of male teachers is rarely considered by Australian education bodies to be problematic. Change in this instance, is only likely to occur when policy makers consider the intricacies of children's schooling experiences more holistically, and when the advantages of teacher gender diversity extend beyond simplistic notions of gender-specific role models.

Second, there may be a social stigma attached to advocating for male representation whilst women face greater adversity in employment more broadly; being under-represented in numerous industries and receiving lower annual income (OECD, 2016; World Economic Forum, 2015). Contrary to this perception, however, advocacy for greater balance across industries is of benefit to men and women alike. Within the educational sphere specifically, there are also advantages for students themselves who report benefiting when they are able to interact with a mix of male and female teachers and who may develop healthier conceptions of gender when both males and females are represented in the teaching workforce (Bhana & Moosa, 2016; Lingard, Martino, Mills, & Bahr, 2002; Martin, 2002; McGrath & Sinclair, 2013). Such moves can only result in a more equitable society, and not a less equitable one.

Based on our analysis of more than 50 years of data, it is clear that the representation of male and female teachers in Australian schools has become increasingly discrepant. The proportion of male teachers has declined across both primary and secondary settings, with a particularly sharp decline in the Government school sector. If it is the goal of the Australian federal government to enhance workforce diversity, and of state education providers to ensure schools are reflective of the broader community and student populations they serve (e.g. Commonwealth of Australia, 2016; Department of Education and Training, 2014; Fair Work Ombudsman, 2013), then there exists a definitive need for policy makers to revisit teacher gender diversity in Australian education systems. As the representation of male teachers in Australia declines to a level that may be described as 'token' (Kanter, 1977), it may become increasingly more difficult to reverse this 50-year trend. Indeed, if the present trajectory remains unabated, then we can conclude that Australia's male teacher representation will never again be as high as it is at the time of this publication. If a diverse teaching workforce that reflects the broader community is desired, for the sake of students and teachers alike, urgent policy action must be taken to engage men in the education of our youth.

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## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.econedurev.2017.08.003.

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