Self-Control and Risk Aversion in the Australian Gender Wage Gap

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March 2022

Abstract

We examine the effects of self-control and risk aversion on the gender wage gap in Australia. We find that both self-control and risk aversion play a significantly greater role in predicting the Australian gender wage gap. We also find that self-control affects both the explained and unexplained parts of the wage decomposition whereas risk aversion impacts only the explained part. Furthermore, our results show that self-control retains its importance despite inclusion of the Big Five personality traits. Finally, the results also suggest that the omission of risk aversion has a greater impact on the measurement of the gender wage gap compared to the other two as its inclusion leads to the overall unexplained wage gap falling to about half of the unexplained wage gap measured without it.

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1. Introduction

This paper investigates how self-control and risk aversion are related to the gender wage gap in a sample of Australian households. Present economic literature has increasingly begun to acknowledge that factors other than traditional human capital variables, such as personality and preferences, play a key role in determining wages (Ahn 2015, Cobb-Clark et al. 2019, de Araujo and Lagos 2013). Understandably, an influx of papers has either studied the relationship between the Big Five personality traits (i.e., neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) and the gender wage gap (e.g., Risse, Farrell, and Fry 2018, Cobb-Clark and Tan 2011, Nyhus and Pons 2012, Gensowski 2018, Nordman, Sarr, and Sharma 2019, Lesner 2020, Heineck and Anger 2010), or evaluated if there are male-female differences in risk-aversion (e.g., Jung, Choe, and Oaxaca 2018, Reuben, Wiswall, and Zafar 2017, Laury, Lee, and Schnier 2019, Dreber, Essen, and Ranehill 2014). However, although the importance of self-control in explaining a variety of behavioural and life outcomes goes above and beyond the Big Five (Hirsh, DeYoung, and Peterson 2009, Cobb-Clark et al. 2019, Kulig et al. 2019), it has never been tested to see if it adds to the explanatory power of wage decompositions. On the other hand, despite the acknowledgement that gender differences in risk aversion may contribute to observed gender wage gaps (Jung, Choe, and Oaxaca 2018), there has been a lack of empirical work to identify its potential impact on the overall male-female wage gap.

Such an attempt, however, is important for two reasons. First, as is explained by Friehe and Schildberg-Hörisch (2014), a combination of factors like self-control, risk aversion, and the Big Five personality traits can be extremely useful in developing an understanding of individual behaviours and their consequences. Second, research has shown that interventions in the form of education and training can improve an individual's self-control (Oaten and Cheng 2007,

Mrazek et al. 2020), while risk aversion is found to be malleable to knowledge, information, and other environmental factors (Taylor 2016, He and Hong 2018, Mengel, Tsakas, and Vostroknutov 2016). Any significant relationship between self-control and risk aversion on one hand and the male-female wage difference on the other would mean that appropriate policy interventions through these variables could be a way to reduce the remaining gender wage gap, which has remarkably remained quite persistent. Since some of the Big Five traits (e.g., conscientiousness) are theoretically linked to the propensity for self-control Tangney, Baumeister, and Boone 2004), it is important to consider the simultaneous influence of both types of variables to determine if any intervention through self-control can have a separate impact on the outcome independent of the other (Tangney, Baumeister, and Boone 2004).

The paper shows that self-control and risk aversion, when used alone or together, indeed improve the explanatory power of gender wage decompositions. Furthermore, this effect is still observed despite the inclusion of the Big Five personality traits into the wage equations. The results also show that the inclusion of risk aversion has a larger impact on the measurement of the gender wage gap than the inclusion of either the Big Five traits or self-control. However, the highest explanatory power in our models has been achieved when the Big Five traits, self-control and risk aversion are simultaneously included in the wage decomposition.

This paper is structured as follows. Section II discusses the methodology. Section IV describes the data. It also discusses the calculation of self-control and risk aversion variables. Section V presents the empirical results while Section VI makes the concluding remarks.

2. Methodology

To study the effect of self-control and risk aversion on the gender wage gap, we first estimate a wage equation for females (1), for males (2), and for males and females pooled together (3), as specified below:

$$\ln w_{fi} = \beta_f X_{fi} + u_{fi} \tag{1}$$

$$\ln w_{mi} = \beta_m X_{mi} + u_{mi} \tag{2}$$

$$\ln w_i = \beta^* X_i + u_i \tag{3}$$

where $\ln w_{fi}$, $\ln w_{mi}$ and $\ln w_i$ are the log of the hourly wage for females, males and both males and females combined; X_{fi}, X_{mi} and X_i are the same vector of explanatory variables for females, males, and males and females combined; and u_{mi}, u_{fi} and and u_{fi} are the errors terms that are uncorrelated with the regressors. Following Jann (2008), we then use the female, male and pooled wage structure in the following form to produce a detailed decomposition of the male-female wage difference:

$$\overline{lnw}_m - \overline{lnw}_f = (\bar{X}_m - \bar{X}_f)\hat{\beta}^* + (\hat{\beta}_m - \hat{\beta}^*)\bar{X}_m + (\hat{\beta}^* - \hat{\beta}_f)\bar{X}_f \tag{4}$$

where $\overline{lnw}_m$ and $\overline{lnw}_f$ are respectively the mean log hourly wages for males and females, and $\bar{X}_m$ and $\bar{X}_f$ are their mean characteristics. The $\hat{\beta}_m$, $\hat{\beta}_f$ and $\hat{\beta}^*$ are respectively the estimated return to characteristics for males, females and the whole population. While the first term in the right-hand side of the equation is the explained effect, the second and third terms together represent the unexplained or the wage structure effect, or when measured after controlling for all productivity-related characteristics, the discriminatory component.

The purging of the effect of group membership from the pooled equation is achieved by incorporating the gender dummy in the pooled equation (see Jann 2008, Fortin, Lemieux, and Firpo 2011). Finally, the self-selection into employment is accounted for by including two

additional variables: the number of children between 0 and 4 of age and the presence of children between 5 and 9. The selection equation also controls for age, the presence of children between 0 and 4 years of age, marital status, health status, educational qualification, place of birth, and state and geographic remoteness of the respondents.

3. Data and Summary Statistics

This paper uses the Household, Income and Labour Dynamics in Australia (HILDA) Survey of the Department of Social Services and Melbourne Institute of Applied Economic and Social Research (2020). The HILDA survey is conducted every year since 2001. It is a rich source of demographic, economic, social, and personal information of Australian households and individual household members. For this study, we use the 19th wave of the HILDA data that are collected in 2019. However, as described in the following text, some of the data also comes from the 17th and 18th waves of the same survey.

In this study, we focus on only the employee category who were 25 to 64 years of age in 2019. Previous research has shown that people's non-cognitive and cognitive skills remain quite stable for this age group (Cobb-Clark and Schurer 2012, Cobb-Clark and Schurer 2013). Observations for which data were unknown, refused or not provided on employment status or working hours are also excluded from the sample. The final sample consists of 7,720 individuals (3,399 males and 4,321 females). The dependent variable is the logarithm of the hourly wage earned in the main job. Among the independent variables, risk aversion is measured as the respondents' answers to the question "Are you generally a person who is willing to take risks or are you unwilling to take risks," as is done in Clark and Lisowski (2017). The values of the variable range between 0 (Unwilling to take risks) and 10 (Very willing to take risks). In the present study, the values are used in reversed order. Self-assessment, on the

other hand, is measured according to the Brief Self-Control Scale developed by Tangney, Baumeister, and Boone (2004). The scale consists of 13 items in which values vary between 1 (not at all) and 5 (very well) with some in reversed form, where higher scores indicate a greater level of self-control. In this study, individual items are aggregated together to produce the final score for each respondent. See Appendix Table A2 for the individual item scores of the Brief Self-Control Scale for both males and females.

As the data on risk aversion and the big five traits are not available for 2019, we have used their latest available values in our analysis (i.e., the lag values from 2018 for risk aversion and the lag values from 2017 for the Big Five traits). In addition to solving our missing data problem, this approach has the advantage of reducing the concern for reverse causality, and therefore, are widely used in the economic literature (e.g., Green, Malpezzi, and Mayo 2005, Hayo, Kutan, and Neuenkirch 2010, Clemens et al. 2012, Curzi and Pacca 2015, Jetter and Parmeter 2018). The other independent variables include the Big Five personality traits and a range of standard demographic (e.g., age and children) and labour market-related variables (e.g., tenure and occupation). Table 1 presents the summary statistics of the variables while their definitions are provided in Appendix Table A1.

Table 1. Summary statistics of the variables

Variable	Male		Female		Male-female difference
	Mean	Std. dev.	Mean	Std. dev.	
Log of the hourly wage rate	3.65	0.45	3.53	0.40	0.125***
Age	43.61	11.66	44.11	11.77	-0.503*
Birth: Australia	0.80	0.40	0.81	0.39	-0.007
Married	0.75	0.43	0.72	0.45	0.030***
Children 0–4 years	0.19	0.39	0.19	0.39	0.000
Children 5–9 years	0.19	0.39	0.20	0.40	-0.009
Number of children aged 0–4 years	0.24	0.55	0.25	0.56	-0.003
Geographic remoteness	0.11	0.31	0.11	0.32	-0.006
New South Wales	0.29	0.45	0.28	0.45	0.007
Victoria	0.25	0.43	0.26	0.44	-0.006
Queensland	0.22	0.41	0.22	0.41	-0.002
South Australia	0.08	0.28	0.08	0.28	-0.001

Western Australia	0.08	0.28	0.08	0.28	0.001
Tasmania	0.04	0.18	0.04	0.19	-0.002
Northern Territory	0.01	0.09	0.01	0.10	-0.002
Australian Capital Territory	0.03	0.16	0.02	0.15	0.004
University	0.31	0.46	0.39	0.49	-0.083***
Advanced diploma/diploma	0.10	0.30	0.12	0.33	-0.019***
Certificate III and IV	0.31	0.46	0.21	0.41	0.103***
Year 12	0.13	0.33	0.12	0.33	0.005
Year 11 and below	0.15	0.36	0.16	0.36	-0.006
Health status	0.24	0.43	0.25	0.43	-0.016
Employed	0.83	0.37	0.73	0.44	0.106***
Tenure: occupation	10.97	10.05	10.01	9.68	0.959***
Tenure: current employer	8.02	8.30	7.54	7.84	0.475**
Full-time employment	0.76	0.43	0.43	0.49	0.334***
Casual employment	0.11	0.31	0.17	0.37	-0.057***
Private sector employment	0.70	0.46	0.50	0.50	0.203***
Union membership	0.25	0.43	0.29	0.45	-0.042***
Firm size 1-4	0.08	0.27	0.07	0.25	0.007
Firm size 5-19	0.22	0.41	0.22	0.41	-0.001
Firm size 20-99	0.30	0.46	0.30	0.46	-0.004
Firm size 100 or more	0.41	0.49	0.41	0.49	-0.001
Manager	0.18	0.39	0.12	0.32	0.068***
Professional	0.24	0.43	0.35	0.48	-0.106***
Technician and trades	0.19	0.39	0.03	0.18	0.151***
Community and personal	0.07	0.26	0.16	0.36	-0.085***
Clerical and administrative	0.07	0.26	0.22	0.41	-0.144***
Sales	0.04	0.19	0.07	0.25	-0.026***
Machinery operators and drivers	0.12	0.32	0.01	0.10	0.110***
Labourers	0.08	0.27	0.05	0.22	0.032***
Occupational status	51.97	24.73	58.05	22.60	-6.081***
Agriculture, Forestry and Fishing	0.02	0.13	0.01	0.08	0.010***
Mining	0.04	0.20	0.01	0.08	0.035***
Manufacturing	0.12	0.33	0.04	0.19	0.088***
Electricity, Gas, Water and Waste	0.02	0.15	0.01	0.08	0.017***
Construction	0.11	0.31	0.02	0.12	0.093***
Wholesale Trade	0.05	0.22	0.02	0.14	0.034***
Retail Trade	0.06	0.24	0.09	0.28	-0.024***
Accommodation and Food	0.02	0.15	0.04	0.20	-0.018***
Transport, Postal and Warehousing	0.07	0.26	0.02	0.14	0.050***
Information Media and Telecommunications	0.01	0.12	0.01	0.11	0.002
Financial and Insurance	0.04	0.19	0.04	0.21	-0.008
Rental, Hiring and Real Estate Services	0.02	0.13	0.01	0.12	-0.001
Professional, Scientific and Technical	0.08	0.27	0.07	0.26	0.008
Administrative and Support	0.02	0.14	0.02	0.15	-0.001
Public Administration and Safety	0.10	0.31	0.08	0.28	0.021***
Education and Training	0.07	0.26	0.19	0.39	-0.114***
Health Care and Social Assistance	0.08	0.27	0.30	0.46	-0.220***
Arts and Recreation	0.02	0.14	0.01	0.11	0.008**
Other Services	0.04	0.18	0.02	0.13	0.017***
Conscientiousness	5.00	0.98	5.19	1.03	-0.196***
Openness to Experience	4.28	1.04	4.18	1.08	0.105***
Extraversion	4.24	1.04	4.50	1.15	-0.259***
Agreeableness	5.14	0.91	5.65	0.86	-0.516***
Neuroticism/Emotional Stability	5.11	1.04	5.12	1.06	-0.004
Self-Control	44.01	8.41	45.41	8.29	-1.398***
Risk Aversion	5.90	2.13	6.54	2.11	-0.636***

Notes: *** and **, and * indicate that the male-female difference is statistically significant at the 1 percent level, 5 percent level, and 10 percent level, respectively. Source: Authors' calculation based on HILDA survey data.

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4. Results

We use equation (4) to estimate five models in which Models 1 to 4 are nested in model 5. Model (1) is the base model that includes all the independent variables other than the Big Five personality traits, self-control, and risk aversion. Models (2), Model (3), and Model (4) introduce the Big Five traits, self-control, and risk aversion, respectively into the base model. Finally, Model (5) includes all three of the Big Five personality traits, self-control, and risk aversion simultaneously in the wage regressions. For the convenience of presentation, we divide the results of our models into two tables, Table 2 and Table 3.

Table 2 reports the overall gender wage gap of our estimates. The table shows that the overall selectivity corrected gender wage gap stood at between 24.2–25.7 per cent in 2019 in the base model (Model 1) or in the models that are estimated by including either the Big Five traits (Model 2) or self-control in the base model (Model 3).

Table 2. Decomposing the gender wage gap

Variables	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted
Male wage	3.655***	3.799***	3.662***	3.799***	3.655***	3.800***	3.661***	3.725***	3.666***	3.730***
	(0.013)	(0.065)	(0.013)	(0.066)	(0.013)	(0.065)	(0.013)	(0.049)	(0.013)	(0.051)
Female wage	3.526***	3.544***	3.525***	3.557***	3.526***	3.543***	3.533***	3.563***	3.533***	3.563***
	(0.010)	(0.040)	(0.010)	(0.039)	(0.010)	(0.040)	(0.010)	(0.040)	(0.010)	(0.039)
Total difference	0.128***	0.255***	0.137***	0.242***	0.128***	0.257***	0.128***	0.162***	0.133***	0.167***
	(0.015)	(0.072)	(0.015)	(0.074)	(0.015)	(0.073)	(0.015)	(0.060)	(0.015)	(0.061)
Explained difference		0.027**		0.038***		0.025**		0.037***		0.043***
		(0.013)		(0.012)		(0.013)		(0.012)		(0.013)
Unexplained difference		0.228***		0.204***		0.232***		0.124**		0.124**
		(0.073)		(0.076)		(0.073)		(0.058)		(0.061)
R^2	0.4194		0.4331		0.4206		0.4349		0.4501	
N	7,720		7,720		7,720		7,720		7,720	

Note: *** and **, and * indicate that the difference is statistically significant at the 1 percent level, 5 percent level, and 10 percent level, respectively. Linearised standard errors are in parentheses (corrected for clusters and strata). Population weights are used in the calculations. R^2 values are from the pooled models. Model (1) is the base model without the Big Five traits, self-control, and risk aversion. Model (2) includes the Big Five traits but no self-control or risk aversion, model (3) includes self-control but not the Big Five traits and risk aversion, model (4) includes risk aversion without the Big Five traits and self-control while model (5) incorporates the Big Five traits with both self-control and risk aversion. Source: Authors' calculation based on HILDA survey data.

This gap showed a sizeable decline to about 16.2–16.7 per cent when risk aversion is introduced in the base model, whether alone (Model 4) or with both self-control and the Big Five

personality traits (Model 5). Due to the inclusion of risk aversion, the selectivity adjusted wage gap in the unexplained part of the decomposition has similarly seen a large fall from about 20.4–23.2 per cent to about 12.4 per cent between these two groups of models while the explained wage gap has observed a slight movement in the opposite direction from 3.0 per cent to 4.0 per cent on average.

Table 3 displays the contribution of each covariate to the overall gender wage gap. Among our main variables of interest, women's higher self-control in our sample can be said to help them reduce the gender wage gap as the coefficients of self-control variable are always significant and negative in the explained part (Models 3 and 5). On the other hand, men's greater willingness to take risks are reflected in the significant and positive coefficients of the risk aversion variable, implying an opposite impact on the male-female wage gap (Models 4 and 5). Furthermore, self-control is found to be statistically significant in the unexplained part in Model 5. The sign in this latter case is positive, which means that the display of the same level of self-control gives men an average wage advantage over their female counterparts. In the case of personality traits, some of the Big Five traits play a significant role in reducing the male-female wage gap, e.g., conscientiousness in the explained part and neuroticism/emotional stability in the unexplained one (Models 2 and 5). On the other hand, some other traits, such as agreeableness, worsen the gender wage gap in both parts of the wage decomposition. It is also noticeable that the impact of conscientiousness disappears from the unexplained part of the wage gap when self-control is also included in the model (i.e., Model 5), supporting the conclusion of Tangney, Baumeister, and Boone (2004).

Table 3. Decomposing the gender wage gap: contributions of the predictors

Variables	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)	
	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted	Overall	Adjusted
Age	-0.005	0.396**	-0.004	0.469**	-0.005	0.390**	0.000	0.422**	0.000	0.470**
	(0.003)	(0.190)	(0.003)	(0.199)	(0.003)	(0.190)	(0.003)	(0.207)	(0.003)	(0.209)
Tenure	0.003*	0.013	0.004**	0.012	0.003*	0.012	0.004**	0.010	0.004**	0.011
	(0.002)	(0.021)	(0.002)	(0.020)	(0.002)	(0.021)	(0.002)	(0.021)	(0.002)	(0.021)
Birth: Australia	0.000	0.005	0.000	0.010	0.000	0.006	-0.001	0.025	-0.001	0.019
	(0.000)	(0.020)	(0.000)	(0.021)	(0.000)	(0.020)	(0.001)	(0.020)	(0.001)	(0.021)
Married	0.001	0.052**	0.001	0.049**	0.001	0.050**	0.002	0.068***	0.002	0.060**
	(0.001)	(0.024)	(0.001)	(0.024)	(0.001)	(0.024)	(0.001)	(0.026)	(0.001)	(0.026)
Children 0-4 years	0.003*	0.003	0.004**	-0.001	0.003*	0.003	0.003*	-0.005	0.003**	-0.008
	(0.002)	(0.010)	(0.002)	(0.010)	(0.002)	(0.011)	(0.001)	(0.010)	(0.002)	(0.010)
Location	0.001	0.102**	0.000	0.105**	0.001	0.102**	0.000	0.093*	0.000	0.101**
	(0.001)	(0.045)	(0.001)	(0.044)	(0.001)	(0.044)	(0.001)	(0.051)	(0.001)	(0.049)
Education	-0.004	-0.007	-0.003	-0.007	-0.004	-0.011	-0.007**	0.050	-0.005*	0.027
	(0.003)	(0.047)	(0.003)	(0.049)	(0.003)	(0.047)	(0.003)	(0.048)	(0.003)	(0.051)
Health status	0.000	0.020	-0.001	0.016	0.000	0.021	0.000	0.002	0.000	0.003
	(0.001)	(0.015)	(0.001)	(0.015)	(0.001)	(0.015)	(0.000)	(0.013)	(0.000)	(0.013)
Employment characteristics	0.029**	0.072	0.036***	0.035	0.030**	0.082	0.033***	-0.067	0.032***	-0.068
	(0.012)	(0.119)	(0.011)	(0.119)	(0.012)	(0.119)	(0.011)	(0.111)	(0.011)	(0.114)
Conscientiousness			-0.004***	0.117**					-0.004***	0.055
			(0.001)	(0.056)					(0.001)	(0.058)
Openness to Experience			0.001	-0.011					0.000	-0.018
			(0.001)	(0.050)					(0.001)	(0.049)
Extraversion			-0.002	0.121**					-0.001	0.101**
			(0.002)	(0.052)					(0.001)	(0.045)
Agreeableness			0.006*	0.141*					0.009***	0.129*
			(0.003)	(0.075)					(0.003)	(0.075)
Neuroticism/Emotional Stability			0.000	-0.147**					0.000	-0.178***
			(0.000)	(0.068)					(0.000)	(0.057)
Self-control					-0.002**	0.075			-0.002*	0.135**
					(0.001)	(0.062)			(0.001)	(0.067)
Risk aversion							0.004**	-0.015	0.004**	0.010
							(0.002)	(0.031)	(0.002)	(0.032)
Constant		-0.428*		-0.704***		-0.499**		-0.459**		-0.723***
		(0.222)		(0.250)		(0.227)		(0.229)		(0.255)

Note: *** and **, and * indicate that the difference is statistically significant at the 1 percent level, 5 percent level, and 10 percent level, respectively. Linearised standard errors are in parentheses (corrected for clusters and strata). Population weights are used in the calculations. Age and tenure contain squared terms. Location includes geographic remoteness and state. Employment characteristics include full-time employment, casual employment, private sector employment, union membership, firm size, occupation, occupational status, and industry. Model (1) is the base model without the Big Five traits, self-control, and risk aversion. Model (2) includes the Big Five traits but no self-control or risk aversion, model (3) includes self-control but not the Big Five traits and risk aversion, model (4) includes risk aversion without the Big Five traits and self-control while model (5) incorporates the Big Five traits with both self-control and risk aversion. Source: Authors' calculation based on HILDA survey data.

We also test for the full set of variables in Model 5 with that of Models 1–4 in pooled wage regressions. The results are presented in Table 4. The rejection of the null hypothesis in each case indicates that the inclusion of the Big Five traits, self-control and risk aversion

simultaneously is justified according to statistical reasoning. Previously, we have seen that this Model (5) produces the best R^2 values among all, followed by Model (4) when risk aversion is included in the base model (see Table 2). We also went on to perform the Wald tests to determine if the coefficients of the Big Five traits are jointly zero in Models 2 and 5. Our tests show that the coefficients are jointly significant at the 1 per cent level with F-statistics of 7.48 and 5.70, respectively.

Table 4. LR test for testing restricted models nested in the unrestricted model

Assumption	χ^2
Model (1) nested in Model (5)	46.72***
Model (2) nested in Model (5)	10.32***
Model (3) nested in Model (5)	38.66***
Model (4) nested in Model (5)	37.37***

Note: *** indicates that the difference is statistically significant at the 1 percent level. For testing purposes, the LR tests are carried out here on the pooled regressions from the same sample, but without the population weights and robust standard errors. Model (1) is the base model without the Big Five traits, self-control, and risk aversion. Model (2) includes the Big Five traits but no self-control or risk aversion, model (3) includes self-control but not the Big Five traits and risk aversion, model (4) includes risk aversion without the Big Five traits and self-control while model (5) incorporates the Big Five traits with both self-control and risk aversion. Source: Authors' calculation based on HILDA survey data.

Overall, the results suggest that self-control and risk aversion are important predictors of the gender wage gap, the former in both the explained and unexplained part and the latter in the explained part. It is also clear that the impact of self-control on the gender wage gap is not merely a reflection of the Big Five personality traits as the inclusion of the latter in the wage decompositions does not lead to the insignificant coefficient of the former. Our result also suggests that the consequence of the omission of risk aversion appears to be significant for the measurement of the gender wage gap compared to the omission of self-control or the Big Five personality traits. Finally, the paper shows that the best measurement of the male-female wage gap is found when both self-control and risk-aversion appear in the wage regressions along with the Big Five personality traits.

5. Conclusion

The key contributions of the paper are mainly twofold. First, to our knowledge, this is the first study to simultaneously explore the relationship between the Big Five personality traits, self-control, and the gender wage gap. Second, it establishes the importance of self-control and risk aversion along with the Big Five traits in explaining the gender wage gap, although the latter appears more frequently in the literature. Since self-control and risk aversion can be changed through training and education, the findings have important policy implications when it comes to the elimination of the gender wage gap.

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Appendix

Table A1 Definition of variables and descriptive statistics

Variable	Definition
Female	1 = Female; 0 = Male
Hourly wage rate	Log of the hourly wage earned in the main job
Age	Age in years
Birth: Australia	1 = Yes; 0 = No
Married	1 = Married or de facto; 0 = Never married and not de facto, Separated, Divorced or Widowed
Children 0–4 years	1 = Yes; 0 = No
Children 5–9 years	1 = Yes; 0 = No
Number of children aged 0–4 years	Number of own resident children and resident step/foster/grand children without parent in household, aged 0–4 years
Geographic remoteness	1 = Outer regional, remote, or very remote Australia; 0 = Major city or inner regional Australia
State[a]:	
New South Wales	1 = Yes; 0 = No
Victoria	1 = Yes; 0 = No
Queensland	1 = Yes; 0 = No
South Australia	1 = Yes; 0 = No
Western Australia	1 = Yes; 0 = No
Tasmania	1 = Yes; 0 = No
Norther Territory	1 = Yes; 0 = No
Australian Capital Territory	1 = Yes; 0 = No
Education[b]:	
University	1 = Yes; 0 = No
Advanced diploma/diploma	1 = Yes; 0 = No
Certificate III and IV	1 = Yes; 0 = No
Year 12	1 = Yes; 0 = No
Year 11 and below	1 = Yes; 0 = No
Health status	1 = Long term health condition; 0 = No
Employed	1 = Yes; 0 = No
Tenure: occupation	Tenure in current occupation in years
Tenure: current employer	Tenure with the current employer in years
Full-time employment	1 = Yes; 0 = No
Casual employment	1 = Casual; 0 = Permanent
Private sector employment	1 = Private sector for-profit organisation; 0 = Not private sector for-profit organisation
Union membership	1 = Yes; 0 = No
Firm size[c]:	
Firm size 1-4	1 = Yes; 0 = No
Firm size 5-19	1 = Yes; 0 = No
Firm size 20-99	1 = Yes; 0 = No
Firm size 100 or more	1 = Yes; 0 = No
Occupation[d]:	
Agriculture, Forestry and Fishing	1 = Yes; 0 = No
Manager	1 = Yes; 0 = No
Professional	1 = Yes; 0 = No
Technician and trades	1 = Yes; 0 = No
Community and personal	1 = Yes; 0 = No
Clerical and administrative	1 = Yes; 0 = No
Sales	1 = Yes; 0 = No
Machinery operators and drivers	1 = Yes; 0 = No
Labourers	1 = Yes; 0 = No

Occupational status	Occupational status scale of the current main job at the ANZSCO 4-digit level; range from zero to 100 (see McMillan, Beavis, and Jones 2009)
Industry[e]:	
Mining	1 = Yes; 0 = No
Manufacturing	1 = Yes; 0 = No
Electricity, Gas, Water and Waste	1 = Yes; 0 = No
Construction	1 = Yes; 0 = No
Wholesale Trade	1 = Yes; 0 = No
Retail Trade	1 = Yes; 0 = No
Accommodation and Food	1 = Yes; 0 = No
Transport, Postal and Warehousing	1 = Yes; 0 = No
Information Media and Telecommunications	1 = Yes; 0 = No
Financial and Insurance	1 = Yes; 0 = No
Rental, Hiring and Real Estate Services	1 = Yes; 0 = No
Professional, Scientific and Technical	1 = Yes; 0 = No
Administrative and Support	1 = Yes; 0 = No
Public Administration and Safety	1 = Yes; 0 = No
Education and Training	1 = Yes; 0 = No
Health Care and Social Assistance	1 = Yes; 0 = No
Arts and Recreation	1 = Yes; 0 = No
Other Services	1 = Yes; 0 = No
Big Five traits:	
Conscientiousness	7 = Describes very well; 1 = Does not describe at all
Openness to Experience	7 = Describes very well; 1 = Does not describe at all
Extraversion	7 = Describes very well; 1 = Does not describe at all
Agreeableness	7 = Describes very well; 1 = Does not describe at all
Neuroticism/Emotional Stability	7 = Describes very well; 1 = Does not describe at all
Self-Control	Consists of the aggregate value of 13 items with some in reversed form; individual items range between 1 (not at all) and 5 (very well), higher scores indicate a greater level of self-control (see Tangney, Baumeister, and Boone 2004 for detail)
Risk Aversion	1 = Very willing to take risks; 10 = Unwilling to take risks

Notes: *** and ** indicate the male-female difference is statistically significant at the 1 percent level and 5 percent level, respectively.

The wage rate is calculated for people who have at least one hour of work history per week and earned at least $1 in that period. Base categories for estimation include [a]Tasmania, [b]year 11 and below, [c]firm size less than 5, [d]labourers, and [e]agriculture, forestry and fishing.

Table A2. Self-control scale

Question	Male		Female		Male-female difference
	Mean	Std. dev.	Mean	Std. dev.	
a. I am good at resisting temptation	3.35	1.04	3.24	1.07	0.11***
b. I have a hard time breaking bad habits[r]	3.08	1.07	3.08	1.09	0.00
c. I am lazy[r]	3.78	1.06	3.95	1.05	-0.17***
d. I say inappropriate things[r]	3.44	1.12	3.75	1.06	-0.31***
e. I do certain things that are bad for me, if they are fun[r]	3.27	1.14	3.68	1.15	-0.41***
f. I refuse things that are bad for me	3.26	1.14	3.39	1.19	-0.13***
g. I wish I had more self-discipline[r]	3.01	1.21	2.85	1.25	0.16***
h. People would say I have iron self-discipline	2.66	1.10	2.56	1.15	0.10***
i. Pleasure and fun sometimes keep me from getting work done[r]	3.47	1.12	3.69	1.12	-0.22***
j. I have trouble concentrating[r]	3.54	1.09	3.62	1.11	-0.08***
k. I can work effectively towards long-term goals	3.64	0.98	3.69	1.00	-0.05**
l. Sometimes I cannot stop myself from doing something, even if I know it is wrong[r]	3.71	1.12	3.95	1.10	-0.23***
m. I often act without thinking through all the alternatives[r]	3.80	1.05	3.97	1.02	-0.16***

Notes: *** and ** indicates that the male-female difference is statistically significant at the 1 percent level and 5 percent level, respectively. [r] This indicates that the score has been reversed for the respective items. Source: Authors' calculation based on HILDA survey data.