Research Article

How Personality Traits, Social Resources, and Gender May Relate to Engagement in Prosocial Behaviour

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Background: The question of why people engage in prosocial behaviour at a cost to themselves has long been at the heart of the debate between sociologists and personality psychologists. Both groups differ widely in their answers and offer divergent perspectives. Drawing on both perspectives, this study contributes to the debate on prosocial behaviour.

Methods: A sample of 972 anonymous online respondents and 1st-year psychology students aged 18 years and over at the University of New England were recruited in 2017 and 2018. Using structural equation modelling (SEM), we report the possible associations between resources, personality traits and prosocial behaviour and show that personality traits play a greater role in driving people to exhibit prosocial behaviour.

Results: In addition to their direct positive effects, personality traits mediate the effects of resources on prosocial behaviour, supporting social resource theory. We observed that age and personality traits are the most important and consistent predictors of prosocial behaviour for both men and women. Human capital was found to be positively related to prosocial behaviour in women.

Conclusion: This study reveals the mediatory role of personality in addition to its direct effect on prosocial behaviour. Through further research, gender ideologies may help explain why the effect of resources on volunteering is gender differential.

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1. Introduction

The question of why people engage in prosocial behaviour at a cost to themselves has long been at the heart of sociologists' and personality psychologists' debate [1][2][3][4], although its substantial economic contributions across the world [5] and the psychological and human capital it brings to volunteers [6][7][8] are widely acknowledged. However, both groups differ widely in their answers to this important question. While the former focuses on the effects of different types of resources on volunteering [2], the latter emphasizes individual differences in personality [1] and the relationship between aspects of the Big Five-Factor Model and prosocial behaviour. Nevertheless, Bekkers [4] argues that both groups have developed these viewpoints in relative isolation; consequently, the relative strength of resources and personality is indefinite. Drawing on both perspectives, in this study, we address the following question: are some people—due to their gender, personality type or socioeconomic background—inherently likely to exhibit prosocial behaviour more than others? To address this research question, we explore the usefulness of both perspectives for understanding the associations between prosocial behaviour and other factors, such as demographic, socioeconomic and personality traits.

The resources perspective refers to various assets that are important for people to engage in effective volunteering, whereas personality is defined as "the set of unique and persistent behaviours, cognitions, and emotional patterns characterizing an individual"[9] and affects one's behaviour across contexts [4]. Prosocial behaviour refers to "voluntary behaviour intended to benefit another, such as helping, donating, sharing and comforting"[10]. Prosocial behaviour, which is based on different underlying motivations, can be categorized into three distinct types, namely, altruism, cooperation, and fairness [11][12]. "Cooperation is [...] performed in the expectation of reciprocity [...]", while" fairness [...] is driven primarily by social norms and rules." "[A[ltruism [...] is any behaviour aimed at improving the welfare of [...]" others often at a cost to themselves[12]. Research on the link between empathy and altruism suggests that empathic concern produces altruistic motivation[13][14], which is distinct from the rest and often upheld as the most morally praiseworthy form of prosocial behaviour across contexts [12]. In this study, although we have considered all forms of prosocial behaviours, the focus is on the altruistic aspect.

1.1. The resource perspectives

The resources perspective argues that people need to have the ability to volunteer—meaning a person needs to have the required resources to give [15][2]. According to this theory, resources include assets such

as human, economic, social, and cultural resources. The human capital dimension may include personal characteristics such as training or schooling, whether formal or informal, that expand valued knowledge or skills, making people productive in labour markets [16]. Economic resources refer to income, savings, or property necessary for effective volunteering. The social resources dimension may include informal or formal networks of access and support, usually outside the family, that people need for volunteering and are mainly accessed through social networks [17]. Social capital in the form of social networks is often considered a potential resource to be mobilized by voluntary associations for prosocial activities[18][19], mainly because of its normative effect on individuals to volunteer. Cultural capital refers to morality and civic mindedness, which are considered important resources for volunteering [2].

Research has shown that human capital facilitates prosocial behaviours. Individuals with greater human capital often face the cognitive complexity required for long-term perspective taking to identify with others in need [4]. Except few exceptional findings such as Akar et al. [20] and Guo et al. [21], several studies on factors associated with volunteering indicate that the level of education is the most consistent positive predictor [22][23][24][25]. By increasing awareness of problems, education enhances empathy, and self-confidence increases volunteering. Another study has shown that verbal proficiency is positively associated with membership in voluntary associations [26]. Similarly, the stock of human capital changes positively as people age, influencing their likelihood of volunteering. Nevertheless, theories on the association between age and volunteering offer conflicting explanations. For example, rational choice theory suggests that the older people are, the more likely they are to volunteer as more free time becomes available to them at an older age [27]. Conversely, social resource theory predicts a decline in volunteering, as withdrawing from the labour force at retirement weakens social integration and thus decreases the likelihood of volunteering [28].

The relationship between employment and volunteering is mixed. While there is a negative relationship between paid work hours and volunteer hours [29], there are generally positive associations between volunteering and employed people [20]. The latter suggest that employment is a form of social capital, which encourages volunteering by boosting self-confidence and teaching organizational skills [30][16] and is often stronger for women than men [31]. Similarly, the evidence for the relationship between income and volunteering is mixed. For example, Freeman [32] reported that there is a negative relationship between wage income and volunteering, whereas Menchik & Weisbrod [33] reported a positive association between income and hours of volunteering.

Regardless of the type of volunteering, social status predicts volunteering. In studying community volunteering, Janoski & Wilson [34] reported that offspring volunteering for groups concerned with community problems is predicted by their own marital and parent status. Sundeen [35] reported that, regardless of the amount of time volunteered, married people are more likely to volunteer than single people are and that there is a positive spillover effect among spouses—participation in volunteering by one spouse increases the likelihood of volunteering by the other [32]. In general, social capital facilitates prosocial behaviour. Individuals with greater social capital are more likely to be asked to volunteer than individuals with less social capital. For example, Brady et al. [18] argued that individuals with multiple networks are more likely to engage in volunteering. Rochon [36] suggested that promoting social solidarity among community members increases the likelihood of volunteering.

Social norms also play a key role in enforcing volunteering in more prosocial and cohesive group settings because individuals often tend to avoid disapproval for a failure to give [4]. It is also well documented that norms play out differently for men and women [37][38]. The gender aspect of social norms defines relational patterns at the group level, household or community level, and determines not only the dynamics of social networks but also their outcomes [39]. This is why the literature offers mixed evidence for the relationship between gender and volunteering. Depending on the context and life cycle stage, male and female participation varies. In some countries, such as the UK, women are more likely to volunteer than their male counterparts are and vice versa in other countries [40][41][42].

1.2. Personality perspectives

Resource theorists believe that the desire to do good is common to people, but the means to fulfil that desire are not [43]. Personality psychologists disagree with these premises and offer alternative explanations for how personality influences prosocial behaviour [44][45][44]. Although they disagree with each other regarding the aspects constituting a prosocial personality, they generally believe that a prosocial personality influences prosocial behaviour in different ways [44][46]. The argument is that whenever we are faced with the choice between volunteering or not, personality characteristics regulate preferences for specific outcomes in a given context [47], meaning that people with prosocial personalities are more likely to volunteer [48] and implying that prosocial preferences are beneficial for helping behaviours with little or no material gain [44]. For example, people with altruistic personalities exhibit greater empathy and are thus more likely to engage in prosocial behaviour[12][49]. Prosocial drive is

experienced when an empathic response is coupled with a motivation to act. However, a high cost or lack of perceived ability to help can reduce motivation and prevent action, implying the importance of the resource factor in prosocial behaviour [50]. Altruism often occurs anonymously and is not driven by expected reciprocity or other self-benefits [12]. They are generally more likely to believe in the goodness of others and reflect the high end of a caring continuum [12]. Recent evidence shows that the empathic concern aspect of empathy produces altruistic motivation [14]. Although the literature does not provide the exact mechanisms, existing evidence indicates that altruistic behaviour is influenced by factors such as gender, age, mood, and empathic category [51].

The personality psychologists' perspective focuses on the relationship between personality, aspects of the Big Five factor (which observes neuroticism, extraversion, openness, agreeableness and conscientiousness), and prosocial behaviour. Aspects of the Big Five have been analysed in relation to helping behaviours by several studies [for example, [52][19]], and their link with prosocial behaviour has been demonstrated. These studies argue that personality characteristics influence prosocial behaviour through determining situations that are attractive to people where they are more likely to be asked to volunteer. For example, extroverted people are characterized as outgoing, active, sociable, friendly, and talkative; thus, volunteering is a perfect opportunity for such people to satisfy their innate desires [52][19]. This is because their high chance of getting to know more people and joining more networks increases their likelihood of volunteering. Likewise, if it is seen as a citizenship norm and the normative environment is prosocial, researchers argue that conscientiousness may promote volunteering as well [52] because people with higher levels of conscientiousness tend to adhere to norms and rules [53][54]. Hence, in prosocial supportive contexts, conscientiousness may encourage volunteering [52]. Similarly, people with high levels of openness are more likely to seek out a variety of experiences, including volunteering [54]. Since voluntary work offers the opportunity to meet new people and make new experiences, open people are more likely to engage in prosocial behaviours [52].

The presence of gender differences in personality is well documented. Research on Big Five personality factors has demonstrated that women typically score higher than men do on all [55][56][9] or most [57] [58] of the five trait factors, and these relative differences are greater in more gender-equal countries [55] [9]. A cross-cultural meta-analysis of the Big Five appears to demonstrate that across most nations, "[...] females generally have significantly higher levels of neuroticism (49/55 nations) and agreeableness (34/55 nations) [...]", whereas across "half of the countries they had "[...] higher levels of extraversion (25/55

nations) and conscientiousness (23/55 nations) [...]"[58][59]. The author concluded that gender differences in the Big Five appear to diminish as one move from Western to non-Western cultures, mainly because the collectivistic lifestyle of the East discourages the free expression of these personality traits. Recent advancements in neuroscience studies have revealed that women in Western societies are born with higher oxytocin levels, thus caring for and helping others, than those in Eastern countries such as China and Japan, where everyone has higher oxytocin levels regardless of sex [59].

The neurodevelopment approach argues that "affect" is the primary building block of personality [60]. Marengo et al. (in preparation, as cited by [59]) reported that "[...] moderate to strong positive correlations exist between Agreeableness and high CARE/low ANGER, Neuroticism and SADNESS/FEAR/ANGER, Extraversion and PLAY/SEEKING and finally Openness to Experience and SEEKING"[59]. For example, people who have higher CARE personality traits on the affective neuroscience personality scale (ANPS) have higher empathy skills, thus helping behaviour. These basic affective systems underlying personality development have both universally and culturally specific properties, which are subject to gender effects [60]. Neuroscience studies show that the affective systems on which personality is built are gender differential and broadly consistent with the gender effects reported in the Big Five personality literature [59]. Gender differences for different classes of these basic emotions are variable on the basis of geographical variation caused by genetics, cultural variation in emotion expression and regulation, and biological universals [59]. Relevant theories that attempt to explain the relationships among resources, basic emotions, personality traits, and prosocial behaviours (including altruism), as well as their limitations and disagreements, motivate our work. The present study aims to further explore the relationships among various resources, personality traits, and prosocial behaviour through structural equation modelling. In the remaining parts of the study, we present our methodology, followed by the results and discussion.

2. Methods

Participants

A total of 1169 participants were recruited in 2017 and 2018. A total of 197 participants who did not respond to questionnaires on the variables of interest were excluded. Although there were 972 participants (747 anonymous online respondents and 225 1st year psychology students at the University of New England) who were 18 years old and over, 10 participants who identified their gender as 'other'

were treated as missing since this observation was very rare. When the questionnaires were administered to the students, the principal investigator visited the classrooms and explained the research purposes to the students. Participation in the research was entirely voluntary, as only participants who consented to participate in the study were included. Thus, informed consent was obtained from all participants in the study in written form. Ethics approval was obtained from the Human Research Ethics Committee of the University of New England, with which the authors are affiliated.

Measures

The data collection protocol administered to the participants included five scales assessing prosocial behaviour and personality traits. These scales have been tested and published. The full PSB (prosocial personality battery) scale used in this study has been published in Penner [46] whereas the Big Five Inventory (BFI) has been published in John et al. [61]. The participants rated the degree to which each item was descriptive of them via a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Summary scores were calculated as the mean weighted sum of the items on each subscale. First, we assessed factor loading for each item on the basis of Comrey & Lee [62] recommendations (i.e., >.71 = excellent, >.63 = very good, >.55 = good, >.45 = fair and >.32 = poor). For the current study, factor analysis confirmed the construct validity, with all the factor loadings over 50 percent with few bellow but more than 32 percent. From the Big Five Inventory, only one item from openness did not load well (factor loading < 0.32) and was thus discarded from the model in the subsequent analyses.

Instruments

Prosocial behaviour: Prosocial behaviour factors, other-oriented empathy and helpfulness, were obtained from the 30-item version of the full PSB (Prosocial Personality Battery) scale [46], which consists of seven subscales. All the items load well (factor loading >.3.2) on their respective subscales. For this study, we aggregated these subscales into two factors, as suggested by Penner [46]. The first factor, other-oriented empathy, is the sum of scores on social responsibility, empathic concern, other-oriented reasoning, and mutual moral reasoning. The second factor is the sum of self-reported altruism and personal distress obtained after the total score on personal distress is subtracted from 18 once the negative items are reversed [46]. In the current study, the Cronbach's alpha coefficient for each subscale showed good internal consistency (Table 1) as per the classifications suggested by George [63] and [64]. However, the

social responsibility subscale items yielded low Cronbach's alpha values (α<.5) and thus were excluded from the analysis.

Prosocial behaviour	Measured aspects	Definition	No. of Items	Cronbach's alpha
Other-oriented empathy	Social Responsibility	The tendency to accept responsibility for the consequences of one's actions.	7	.452
	Empathic Concern	The tendency to experience other oriented feelings of sympathy and concern for unfortunate others.	4	.705
	Perspective Taking	The tendency to spontaneously adopt the psychological viewpoint of another person.	5	.694
	Other-oriented Moral Reasoning	The tendency to focus on the best interests of others when making moral decisions.	4	.770
	Mutual-concerns Moral Reasoning	The tendency to consider the best interests of all affected parties when making moral decisions.	3	.674
Helpfulness	Personal Distress	The tendency to experience self-oriented feelings of personal anxiety and unease intense interpersonal situations.	3	.812
	Self-reported altruism	The tendency to promote someone else's welfare, even at a risk or cost to oneself.	5	.775

Table 1. Measured aspects of prosocial behaviour, number of items and Cronbach's alpha.

Note: Definitions taken from Penner (1995) and Cronbach's alphas are our own calculations.

Personality traits: Personality traits were assessed via the Big Five Inventory (BFI; [61]) scale, which was developed to assess five major personality dimensions and consists of 44 items (extraversion and neuroticism, 8 items each; agreeableness and conscientiousness, 9 items each; and openness, 10 items). Nevertheless, since the model for the full scale did not fit the data at hand ($\chi 2$ (50, n = 972) = 900.893, p=.000, $\chi 2$/df = 118.018, (CFI = 588. and RMSEA = .133 [.125.140], $p$close =.000). All the indicators of the

goodness-of-fit indices of the model for the full scales are far below or above the recommended values per Meyers et al. [65] and Bagheri et al. [66]. Thus, we focused only on three of the subscales (extraversion, conscientiousness and openness) in this analysis, for which we observed good fits to the data. In the current study, the Cronbach's alpha coefficient for each subscale showed good internal consistency as per the classifications suggested by George [63] and Kline [64]. It is .871 for extraversion, .813 for conscientiousness, and .781 for openness.

Two models were formulated and tested structural equation modelling (SEM) in Amos SPSS version 29 to address the research questions. Prior to the analysis, all the negatively worded items were reversed. SEM was chosen because it is appropriate for analysing complex relationships between multiple variables simultaneously in one model rather than for multiple models, especially when those variables are latent (unobserved) or measured with error. SEM is particularly useful for testing mediation hypotheses, multiple independent or dependent variables, and assessing the overall fit of a theoretical model [67].

To test the models, first, the effects of demographic, social, and personality variables on prosocial behaviour were tested, followed by a test of whether the measured personality variables accounted for the effects of demographic and social characteristic variables on prosocial behaviour (Fig. 1). In the second model, we treated personality traits as mediators of the effects of age, relationships, education, employment, and income on prosocial behaviour. In the reviewed literature, it has been argued that the resource and personality perspectives on why people engage in prosocial behaviour often at a cost to themselves have been studied in relative isolation; consequently, the relative strength of resources and personality is indefinite [4], implying the importance of examining how the relationships between resources and personality relate to prosocial behaviour.

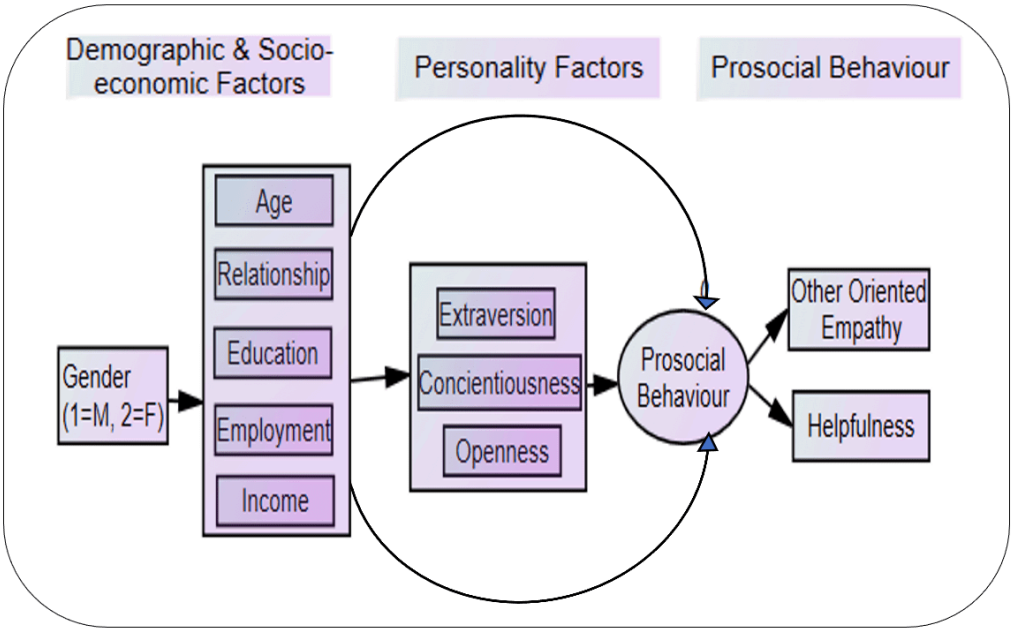

Figure 1. Proposed theoretical models.

3. Results

Participants' socioeconomic profile

The mean age for both gender groups was comparable (men: 37.4, SD=12.96; women: 37.7, SD=13.02). We observed a group difference in relationship and employment status such that the number of participants who identified themselves as women in each category was greater than that of the other gender groups (Table 2). With respect to prosocial behaviours, the descriptive results suggest that women (*M*=58.6, SD=6.57) reported higher levels of other-oriented empathy than their men (*M*=55.56, SD= 7.0) did. Similarly, there are gender differentials in the mean for conscientiousness, where women's mean (*M*= 3.63, SD= 0.60) is significantly greater than that of men (*M*=3.52, SD=0.60) (Table 3).

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Variable	Gender			Total	Pearson Chi-Square
	Men	Women	Others*		
N	195	767	10	972	
Age group					1.812
<25	38(20.8)	144(78.7)	1(0.5)	183(18.8)	
25-44	94(19.3)	392(80.3)	2(0.4)	488(50.2)	
45-64	58(20.9)	220(79.1)	0(0.0)	278(28.6)	
>64	5(21.7)	18(78.3)	0(0.0)	23(2.4)	
Relationship					
Single, never married	*57(26.5)*	155(72.1)	3(1.4)	215(22.1)	26.146***
Noncohabitating relationship (e.g. dating)	18(15.8)	95(84.2)	0(0.0)	114(11.7)	
Cohabiting relationship (e.g., married, de facto)	107(20)	427(80.0)	0(0.0)	534(54.9)	
Separated	4(12.1)	29(87.9)	0(0.0)	33(3.4)	
Divorced	6(8.8)	62(91.2)	0(0.0)	68(7)	
Widowed	3(37.5)	5(62.5)	0(0.0)	8(0.8)	
Education status					
Less High school	2(20.0)	8(80.0)	0(0.0)	10(1.0)	17.210
High school	44(25.3)	128(73.6)	2(1.1)	174(17.9)	
Vocational/trade certificate/diploma (e.g. TAFE[1])	35(15)	198(853.0)	0(0.0)	233(24)	
University degree	72(23.4)	236(76.6)	0(0.0)	308(31.7)	
Postgraduate diploma	12(14.8)	69(85.2)	0(0.0)	81(8.3)	
Postgraduate degree	30(18.1)	135(81.3)	1(0.6)	166(17.1)	
Employment status					
Student	48(21.3)	174(76)	3(1.3)	225(23.1)	25.932***
Employed[2]	126(21.3)	505(77.3)	3(0.3)	634(65.2)	

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Variable	Gender			Total	Pearson Chi-Square
	Men	Women	Others*		
Others (unemployed/seeking work/carer/retired/unable to work)	56(14.2)	338(85.8)	0(0.0)	394(40.5)	
Income status (in $)					
Less than 25,000	20(17.4)	94(81.7)	*1*(0.9)	*115*(11.8)	*17.762*
26,000 - 50,000	26(17.9)	119(82.1)	*0*(0.0)	*145*(14.9)	
51,000 - 75,000	28(20)	110(78.6)	*2*(1.4)	*140*(14.4)	
76,000 - 100,000	50(22.6)	171(77.4)	*0*(0.0)	*221*(22.7)	
101,000 - 125,000	26(23.2)	86(76.8)	*0*(0.0)	*112*(11.5)	
126,000 - 150,000	11(13.3)	72(86.7)	*0*(0.0)	*83*(8.5)	
151,000 - 175,000	15(30.6)	34(69.4)	*0*(0.0)	*49*(5)	
176,000 - 200,000	9(17)	44(83)	*0*(0.0)	*53*(5.5)	
More than 200,000	10(18.5)	44(81.5)	*0*(0.0)	*54*(5.6)	

Table 2. Participants' demographic and social characteristics.

***Note**: Values in parentheses are percentages.*

* *Agender/genderless, androgynous, transgender, gender fluid & gender nonconforming.*

** *Correlation is significant at p<0.01.*

Factorability, reliability, and normality

Factorability was assessed via Kaiser–Meyer–Olkin (KMO) sampling adequacy measures. The results show that KMO ranged from .756-- .896, along with Bartlett's test of sphericity (*p<.001*), suggesting that factor analysis was appropriate for the data at hand. In addition, both scales (personality and PSB) were found to be normally distributed and showed minimal kurtosis and skewness, with values less than the absolute values of 3 and 8 for skewness and kurtosis, respectively [68], as shown in Table 3. The results

indicated that skewness ranged from -1.04--0.20, and kurtosis ranged from -0.161--6.42, suggesting no strong deviation from normality.

Scale	KMO	Chi-Square	Sig.	Subscales/Factors	Skewness			Kurtosis	
					Statistic	S.E		Statistic	S.E
Personality Traits	.896	16694.301	*	EXTR	-.052	.078		-.468	.157
				CONS	-.145	.078		-.161	.157
				OPEN	-.145	.078		.212	.157
Prosocial behaviour	.756	1198.664	*	Other Oriented Empathy	-1.038	.078		6.426	.157
				Helpfulness	.197	.078		-.002	.157

Table 3. Factorability, skewness, kurtosis, and reliability coefficients.

Note: *Personality traits: EXTR: Extraversion, CONS: Conscientiousness, OPEN: Openness.*

* *p<.001.*

Instrument validity

To assess the construct validity of the structural model and measurement models at the item level, confirmatory factor analysis (CFA) via SPSS AMOS (version 29) was employed. Similarly, the fit of the structural model and measurement models was assessed via "Maximum likelihood estimation" procedures. All the results (Table 4) suggested adequate support for the measurement and structural validity [65][66].

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Fit Index	[a]Reported value for Model 1	[b]Reported value for Model 2	[c]Reported value for Model 3	Recommended value*
X^2	12.165(p=.144)	41.950(p=.000)	31.345(p=.005)	
X^2/df	1.52	2.996	2.24	< 5
Goodness-of-Fit Index (GFI)	.996	.992	-	> .90
Normed Fit Index (NFI)	.986	.969	.973	> .90
Tucker Lewis Index (TLI)	.973	.860	.920	> .90
Comparative Fit Index (CFI)	.995	.978	.984	> .90
Incremental Fit Index (IFI)	.995	.979	.985	> .90
Root Mean Square Error of Approximation (RMSEA)	.023	.045	.036	< .08

Table 4. Indicators of the goodness of fit indices for Models 1, 2 and 3.

Note: **Recommended value adopted from* [65][66].

[a] *gender differential effects of demographic and socioeconomic variables alone on prosocial behaviour.*

[b] *Gender differential effects of demographic, socioeconomic, and personality variables on prosocial behaviour.*

[c] *gender differential effects of demographic and socioeconomic variables on prosocial behaviour through personality.*

The PSB factors were related to the personality subscale scores according to the Pearson correlation coefficient. The intercorrelations among the study variables were weak or moderate in magnitude. These findings indicate that these variables were somehow positively related but did not overlap (Table 5).

Variables	Men	Women	t	Variables				
	M(SD)	M(SD)		1	2	3	4	5
Prosocial behaviour factors								
1. Other Oriented empathy	55.56 (6.998)	58.6 (6.57)	-5.697***					
2. Helpfulness	27.94 (4.49)	27.32 (4.71)	1.1.664	.399**				
Personality traits								
3. EXTR	3.03 (0.71)	3.15 (0.8)	-1.864	.181**	.333**			
4. CONS	3.52 (0.60)	3.63 (0.60)	-2.745**	.249**	.262**	.201**		
5. OPEN	3.60 (0.54)	3.57 (0.58)	0.640	.255**	.275**	.247**	.094**	

Table 5. Gender differences and Pearson's correlations among the study variables (N=972; *women=767).*

***Note**: Personality traits: EXTR: Extraversion, CONS: Conscientiousness, OPEN: Openness.*

M: Mean; values in parentheses are standard deviations (SDs).

**** and **: Correlation is significant at p<0.001 and p<0.01 (two-tailed test).*

Predictors of Prosocial Behaviour

Structural equation modelling (SEM)

In the first model, only the sex direct effects of demographic and socioeconomic variables on prosocial behaviour were tested. This model tested the simultaneous effects of age group, gender, relationship, education, employment, and HH (household) income on prosocial behaviour, each controlling for the other (see Fig. 1). To obtain a good model fit, we allowed all the possible correlations between the exogenous variables. This path model demonstrated an excellent fit to the data, $\chi 2$ (8, n = 972) = 12.165, p

>.05, $\chi 2/df$ = 1.52, (CFI = .995 and RMSEA = .023 [.00.048], pclose =. 965; Table 4). Thus, the model parameters confirmed that the model fit the data and that the model can be used to address the research question. Gender was coded as 1 (men) or 2 (women). When the simultaneous effects of these variables were tested, only the variable age group was found to be significantly (β = 2.514, $p < .001$) and positively related to prosocial behaviour for both genders. The results indicate that older generations are more likely to engage in prosocial behaviours than younger generations are (Table 6).

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Predictors of prosocial behaviour	Men			Women	
	Model 1	*Model 2*		*Model 1*	*Model 2*
Social resource					
Age group	.523*** (2.514)	.333*** (1.836)		.277*** (1.098)	.218*** (.999)
Relationship	-.169 (-.551)	-.063 (-.235)		-.024 (-.064)	-.031 (-.092)
Human resource					
Education	-.105 (-.288)	-.176** (-.552)		-.012 (-.026)	-.051 (-.128)
Economic resource					
Employment	-.106 (-.526)	-.096 (-.546)		-.156 (-.042)	-.041 (-.173)
HH income	.101 (.17)	.001 (.003)		.074 (.096)	.053 (.079)
Personality trait					
EXTR		.375*** (2.201)			.287*** (1.207)
CONS		.295*** (2.04)			.183*** (1.033)
OPEN		.357*** (2.774)			.230*** (1.339)

Table 6. Regression coefficients by gender from path models of demographic and socioeconomic factors and personality factors predicting prosocial behaviour (N=962, women=767).

Note: *Outcome variable: Prosocial behaviour.*

The values in parentheses are unstandardized regression coefficients.

Personality traits: EXTR: Extraversion, CONS: Conscientiousness, OPEN: Openness.

****&** indicate significant differences from zero at p< 0.01 and p<0.05 (two-tailed).*

In the second and third models (Tables 6 & 7), we added personality traits from the BFI and tested the direct and indirect effects of demographic, socioeconomic and personality variables on prosocial behaviour (see Fig. 1). In the second model, to obtain a good model fit, we allowed all the possible correlations between the exogenous variables. This path model also demonstrated a good fit to the data, $\chi 2$ (14, n = 972) = 41.95, p <.001, $\chi 2$/df = 2.996, (CFI = .978 and RMSEA = .045 [.030.062], pclose = .656; Table 4). In the third model, we tested whether the effects of demographic and socioeconomic variables on prosocial behaviour could be accounted for by other personality factors and whether the effects, if any, are gender deferential. The model included age group, relationship, education, employment, and HH income as exogenous variables; personality traits (consciousness and openness) as mediating variables; and prosocial behaviour as endogenous or outcome variables (see Fig. 1) and demonstrated good fit to the data, $\chi 2$ (14, n = 972) = 31.345, p <.05, $\chi 2$/df = 2.24 (CFI=.984 and RMSEA=.036 [.019.053], pclose = .913; Table 4). Thus, the model parameters confirmed that the models fit the data and can be used to address the research question.

The results showed that, in addition to age and education in Model 2, all the personality variables (extraversion, conscientiousness, and openness) were significantly related to prosocial behaviour. The personality variables were significantly and positively related to prosocial behaviour for both men and women, with a relatively strong effect size for men (Table 6). Age continued to be significantly and positively related to prosocial behaviour for men (β = 1.836, p < .001) and women (β = .999, p < .001) but with a slightly reduced effect size. Interestingly, education (β = -0.552, p < .05) turned significant and negatively associated with prosocial behaviour for only men (Table 6). However, this effect disappears when personality traits are entered as mediators in Model 3 (Table 7), but conversely, it tuns significant and positively associated with prosocial behaviour, implying the mediatory role of personality variables for women—the more women become educated, the more likely they are to engage in prosocial behaviour. Similarly, personality partially mediated the effects of age on prosocial behaviour in the same way for both genders.

Predictors of Personality	Men				Women		
	Demo & socioeco, Pers.		*Indirect effects through personality*[a].		*Demo & socioeco, Pers.*		*Indirect effects through personality*[a].
	CONS	*OPEN*			*CONS*	*OPEN*	
Social resource							
Age group	.359*** *(.286)*	.246*** (.174)			*.218*** (.177)*	*.177*** (.139)*	
Relationship	-.053 (-.029)	-.118 (-.057)			*.063* (.034)	*-.079* (-.041)	
Human resource							
Education	-.002 (-.001)	.048 (.019)			*.057* (.026)	*.14**** (.061)	
Economic resource							
Employment	-.054 (-.044)	-.040 (-.029)			.000 *(.000)*	*.001* (.001)	
HH income	.235*** (.066)	.021 (.005)			*.067* (.018)	*-.065* (-.017)	
Predictors of prosocial behaviour							
Resources							
Age group	.283** (1.483)				1.036*** *(.200)*		
Relationship	-.102 (-.364)				-0.074 *(-0.022)*		
Education	-.147 (-.439)				-0.119 *(-0.041)*		
Employment	-.067 (-.365)				-0.131 *(-0.027)*		

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Predictors of Personality	Men				Women		
	Demo & socioeco, Pers.		Indirect effects through personality[a].		Demo & socioeco, Pers.		Indirect effects through personality[a].
	CONS	OPEN			CONS	OPEN	
HH income	.014 (.025)				0.089 *(0.052)*		
Personality							
CONS	.412*** (2.713)				1.71*** *(0.267)*		
OPEN	.434*** (3.201)				2.232*** *(.338)*		
Resources* Personality							
Age group□OPEN			.255** *(1.334)*				.118** (.612)
Education□OPEN			.020 (.060)				.062** (.180)

Table 7. Regression coefficients (Model 3) by gender from the path model for assessing the mediating role of personality in the prediction of prosocial behaviours (N=954).

***Note**: Outcome variable: Prosocial behaviour.*

Coefficients are standardized regression coefficients.

The values in parentheses are unstandardized regression coefficients.

Demo & socioeco: Demographic and socioeconomic characteristics.

Prosoc: Prosocial behaviour.

Personality traits: CONS: conscientiousness, OPEN: openness.

****&** indicate significant differences from zero at p<0.01 and p<0.05 (two-tailed).*

[a] *Only significant variables are presented.*

4. Discussion and Conclusion

In the search for an answer to the question of why people engage in prosocial behaviour at a cost to themselves, researchers have proposed two perspectives—the resource and personality perspectives—that are relatively studied in isolation. Hence, their relative strength is underexplored. In the current study, which draws on both perspectives, we address the following question: are some people—due to their gender, personality type or socioeconomic background—inherently likely to exhibit prosocial behaviour more than others? To address this question, we explore the usefulness of both perspectives for understanding the associations between prosocial behaviour and other factors, such as demographic, socioeconomic and personality factors.

The results suggested positive and significant relationships between age and prosocial behaviour for both men and women. Earlier studies have shown that the likelihood of volunteering increases with age, mainly because as people age, their stock of human capital changes, and their social roles reconfigure, creating different outlooks and new opportunities and imposing new constraints [27]. Therefore, depending on the age group, the likelihood of volunteering may increase or decrease. For example, while some researchers suggest an increase in volunteering at retirement age [69][70], others argue that a decline in volunteering, such as withdrawing from the labour force, weakens social integration and ultimately decreases the likelihood of volunteering [28][71]. In this study, since more than 90 percent of the respondents are in the working-age group, the observed association between age and prosocial behaviour could be supported by social resource theory, which predicts an increase in volunteering because participation in the labour force strengthens social integration, ultimately increasing the likelihood of volunteering [30][16].

Similarly, three personality traits (extraversion, conscientiousness, and openness) are positively and significantly associated with prosocial behaviour for both genders. Social resource theory may help explain why extroverted people are more likely to volunteer. Because extroverted people are characterized as outgoing, active, sociable, friendly, and talkative, volunteering is a perfect opportunity for such people to satisfy their wants [52][19]. Their high chance of getting to know more people and joining more networks increases their likelihood of volunteering [72]. Likewise, if it is seen as a citizenship norm, it is argued that conscientiousness may promote volunteering [52], as individuals with high scores on conscientiousness tend to adhere to norms and rules[53][54]. From this perspective, therefore, conscientiousness may encourage volunteering [52]. Thus, cultivating a culture of prosocial behaviour

helps draw people with such personalities to volunteer. Nevertheless, some scholars argue that in the context of no immediate return from volunteering, conscientious persons may circumvent voluntary work [19] or volunteer in a conservative way if they do so at all [73]. Openness was positively and strongly associated with prosocial behaviour. This is because people with high levels of openness are more likely to seek out a variety of experiences, including volunteering [54]. Since voluntary work offers the opportunity to meet new people and make new experiences, open people are more likely to engage in prosocial behaviours [52].

Personality variables appeared to mediate the effect of education on prosocial behaviour for women. Although a handful of evidence shows a strong positive correlation between educational attainment and prosocial behaviour [4][22][23], the results are mixed in some contexts and gender differentials. For example, Akar et al. [20] reported a negative effect of education on the prosocial behaviour of men but no effect for women. On the other hand, Schlozman et al. [74] suggested that education has a greater effect on prosocial behaviour for men than women. Nevertheless, we argue that if these studies take into account the mediating role of personality, they would have come to different conclusions. This implies that when personality variables were not entered as a mediating variable along with education in Model 2, we observed that education was negatively associated with prosocial behaviour for men.

Based on social resource theory, we suggest that the more women become educated, the more likely they are to engage in prosocial behaviours because of their increased labour market outcomes and social networks through expanded employment opportunities. Moreover, gender ideologies may help explain why volunteering fits into the social lives of women and men differently, but this requires further research. One of the unique contributions of this study is that personality, apart from its direct role, helps in understanding the effects of resources on prosocial behaviour. We conclude that while age and personality traits are the most important and consistent predictors of prosocial behaviour, personality helps to substantiate the effects of resources on prosocial behaviour through its mediatory roles.

This study has limitations that can also offer interesting lines for future research. First, limited by the nature of the dataset, only a few biographic characteristics were considered to analyse the relationships among certain demographic and socioeconomic factors, personality and prosocial behaviour. Hence, it would be interesting to include other variables, such as context, religion and other intersectionalities, along with all the Big Five traits. Second, as is the case in many studies, we have used broad personality traits to study how personality traits are related to prosocial behaviour for men and women. These broad domains can be divided into facets that can in turn show divergent gender differences. Therefore, it

would be interesting to replicate this study and validate the results at the level of the aspects of the domains considered in the analysis. Gender differences can emerge when multiple variables are considered. Third, in this study, prosocial behaviour was analysed in relation to the Big Five personality traits. However, as Özkarar-Gradwohl and Turnbull [59] and Özkarar-Gradwohl et al. [75] pointed out, the Big Five has been criticized for its lack of affective personality traits and nonuniversality, thus suggesting that prosocial behaviour needs to be observed in relation to affective personality traits, as it is strongly related to empathy. A further study in which the affective neuroscience personality scale (ANPS) is used to observe whether individuals with higher scores of CARE and spirituality engage in more prosocial behaviours is recommended. As women usually score higher on CARE and spirituality, at least in the West [76][77] these affective personality traits can be associated with greater altruism in women, regardless of age or income. Finally, how gender ideologies help explain the results observed on the gendered effects of education on prosocial behaviour warrant further investigation.

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Conflicts of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.

Data Availability

The dataset used for the current study is available from the corresponding author upon reasonable request.

Author Contributions

ET conceptualized the idea. WK wrote the draft manuscript. ET reviewed and contributed to the final analysis and wrote the manuscript. WK and ET agreed on the final appearance of the manuscript after careful review. All the authors contributed to the article and approved the submitted version.

Ethics Approval and Consent to Participate

Written informed consent was obtained from all the participants in the study. Ethics approval, in accordance with the Declaration of Helsinki, was obtained from the Human Research Ethics Committee of the University of New England, with which the authors are affiliated.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

Consent for publication

Not Applicable.

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Footnotes

[1] Technical and Further Education, Australia's largest vocational education and training provider.

[2] Employed: full-time, defined as 30 or more hours of paid employment per week.

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