

# Personality in New Zealand: Scale Norms and Demographic Differences in the Mini-IPIP6

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This paper presents normative data on the Big-Six factors of personality in the New Zealand population using the Mini-IPIP6 (N = 5981). The Mini-IPIP6 is a public domain short-form instrument which provides internally reliable and extensively validated four-item markers of the six broad-bandwidth dimensions of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience and Honesty-Humility. Mini-IPIP6 scale scores were reasonably normally distributed. Regression models including a broad range of different demographic variables explained a relatively small proportion of variance in each Mini-IPIP6 scale score (3%-12%), although there were reliable and consistent gender and age (cohort) effects. This study provides the most representative and extensive analysis of the distribution of broad-bandwidth personality traits and demographic differences to be conducted in New Zealand using a public domain personality inventory to date. The norms reported here provide a baseline comparison useful for determining the extent to which subsequent samples depart from the population average on a given dimension of personality or may change over time. The analyses also address possible common misconceptions about what people who belong to a given group or demographic are like and how they might differ: aside from gender and age, systematic group-based differences in personality were non-existent or trivial in size across the broad majority of the population. A copy of the Mini-IPIP6 is included.

There have been many studies examining how various isolated demographic factors predict various specific aspects of personality (Goldberg, Sweeney, Merenda, & Hughes, 1998). These studies generally seek to answer questions about differences in some specific personality trait, such as: do men and women differ in their level of Extraversion? Do older and younger people differ in their level Narcissism? Does poverty predict lower levels of emotional stability or conversely, higher levels of personality vulnerability (as indexed by Neuroticism)? Research examining personality differences in the New Zealand population is sparse and fairly fragmented, however (see Cox, 2008; Guenole, & Chernyshenko, 2005; Packman, Brown, Englert, Sisarich, & Bauer, 2005; Roberts, Caspi, & Moffitt, 2001; Wilson & Sibley, 2011). McCrae et al. (2005), for example,

compared the personality scores of undergraduate students from 51 cultures and reported that, generally speaking, New Zealand undergraduates were among the most extraverted; and of the cultures examined, the most similar to Australian, North American, English and Irish undergraduates. However, we know little about demographic differences in personality in the New Zealand population more generally—outside of the study of undergraduates. What then does the personality of New Zealanders look like?

Extant research, both the small amount conducted in New Zealand, and much of that conducted overseas, has focused on small isolated sets of demographic factors and a select few personality traits using non-representative samples. This is problematic because such analyses do

not take into account possible overlap with other demographic factors (young adults and older adults may, for example, earn less than middle ages adults, and income might hence contribute to the apparent age effect). In addition, many of these differences may be culturally specific, or at least the size of the relative effects might be shaped by national-level factors. For example, men tend to be more socially dominant than women on average, but the size of this gender difference depends upon the level of gender inequality in society (Lee, Pratto, & Johnson, 2011). This example highlights the risks of generalizing demographic differences in personality across nations.

In this paper we present a comprehensive analysis of demographic differences in the Big-Six factors of personality in the New Zealand population using the Mini-IPIP6 (Sibley et al., 2011). The Mini-IPIP6 is a public domain short-form personality instrument based on the original five-factor Mini-IPIP presented by Donnellan, Frederick, Oswald, and Lucas (2006) derived in turn from the broader item pool developed by Goldberg (1999). The Mini-IPIP6 provides four-item markers of six broad-bandwidth dimensions of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience and Honesty-Humility. Definitions and example traits for each of these six personality dimensions are presented in Table 1 (see also Sibley et al., 2011, for further details). Table 1 further outlines the proposed evolutionary costs and benefits of high and low levels of each trait. As far as we are aware this study constitutes the most comprehensive,

Table 1.  
Interpretation of each Mini-IPIP6 factor, including example traits, and likely adaptive benefit and costs resulting from high levels of each personality dimension (from Sibley et al., 2011).

<b>Factor</b>	<b>Interpretation</b>	<b>Example Traits</b>	<b>Likely adaptive benefits of high levels (in evolutionary history)</b>	<b>Likely costs of high level (in evolutionary history)</b>
Extraversion	Engagement in social endeavours	Sociability, leadership, exhibition	Social gains (friends, mates, allies)	Energy and time; risks from social environment
Agreeableness	Ingroup co-operation and tolerance; reciprocal altruism in HEXACO model	Tolerance, forgiveness, (low) quarrelsomeness	Gains from cooperation, primarily with ingroup (mutual help and non-aggression)	Losses due to increased risk of exploitation in short-term exchange
Conscientiousness	Engagement in task-related endeavours	Diligence, organization, attention to detail	Material gains (improved use of resources), reduced risk	Energy and time; risks from social environment
Neuroticism (low Emotional Stability)	Monitoring of inclusionary status and attachment relations; kin altruism in HEXACO model.	Anxiety, insecurity, (low) calmness	Maintenance of attachment relations; survival of kin in HEXACO model	Loss of potential gains associated with risks to attachment relations.
Openness to Experience	Engagement in ideas-related endeavours	Curiosity, imaginativeness, (low) need for cognitive closure and (low) need for certainty	Material and social gains (resulting from discover)	Energy and time; risks from social and natural environment
Honesty-Humility	Reciprocal altruism (fairness)	Fairness, sincerity, (low) entitlement and (low) narcissism	Gains from co-operation (mutual help and non-aggression)	Loss of potential gains that would result from the exploitation of others (and in particular outgroup members)

representative, and extensive analysis of demographic differences and the distribution of personality traits in the New Zealand population conducted to date. Here we analyse Mini-IPIP6 scores from the first wave of the New Zealand Attitudes and Values Study (NZAVS). This is a nationally representative longitudinal study of around 6000 New Zealanders collected in 2009.

This study answers a swathe of questions about differences and similarities in the personality of New Zealanders about which we have had only tentative data based on relatively small and largely non-representative samples. The study thus aims to provide comprehensive baseline information about the distribution of personality in the New Zealand population and resolve debate about differences and similarities in personality across demographics. This study also contributes to the international literature in two distinct ways: First, by providing baseline information on the extent to which different aspects of personality are reliably predicted by various demographic factors in New Zealand, which can be of use for further cross-cultural comparison. Second, by documenting the extent to which different dimensions of personality can be reliably explained by demographic factors more generally in a cultural context outside those of North America and Europe.

### *Demographic differences in personality: The New Zealand context*

Research on demographic differences in personality in the New Zealand population has tended to focus on isolated traits and demographic factors. The available research in this area has tended to examine (atheoretical and non-predicted) differences in ethnic groups (Cox, 2008; Packman et al., 2005), gender differences (Cox, 2008; Guenole, & Chernyshenko, 2005; Roberts et al., 2001; Wilson & Sibley, 2011) and specific predicted age or cohort effects (Roberts et al., 2001; Wilson & Sibley, 2011). We briefly review New Zealand research and related international findings on each of these three demographic factors below.

### *Personality and ethnicity*

In an unpublished master's thesis,

Cox (2008) examined ethnic group differences using data from nearly 1000 applicants who had completed officer training for the New Zealand Army. Cox (2008) examined personality differences in the Eysenck Personality Questionnaire, which measures Psychoticism, Extraversion and Neuroticism. Cox's (2008) findings indicated that there was a striking degree of consistency in these dimensions of personality across ethnic groups, with most comparisons non-significant, and those few that were reliably different being small in magnitude. Similarly, Packman et al. (2005) examined differences in Big-Five personality across Māori, Pacific Nations and European New Zealanders using data compiled from a company who had administered these measures to participants as part of their work in personality consulting.

The central finding to emerge from the work of both Cox (2008) and Packman et al. (2005) is, in our view, the striking similarity in personality across ethnic groups in New Zealand. Taken together, the results of these two studies highlight that any apparent ethnic group differences seem to be largely unsystematic and very small in size. This is also highly consistent with research on ethnicity in North America. Goldberg et al. (1998), for instance, analysed ethnic group differences in a large nationally representative North American sample and identified strikingly similar patterns across African and White Americans, with only trivial differences between the two groups.

### *Personality and gender*

There is also a small body of research examining gender differences in personality in New Zealand. Such differences are generally assumed to result primarily (if not entirely) from differences in the way that males and females are socialized into and constrained by specific gender roles within society. Key evidence for such socialization effects and socio-structural constraints stems from the observation of systematic and reliable cross-cultural differences in the size of the relative difference between men and women in various traits and attitudes (Eagly & Wood, 1999; cf. Schmitt, Realo, Voarcek, & Allik, 2008). Studies documenting gender differences and

similarities in personality and related traits in nationally representative data, such as that reported here, are thus exceedingly important as they can directly contribute to the comparative analysis of socio-structural factors that might exacerbate or inhibit observed gender differences and changes in them over time.

In terms of gender differences in personality in New Zealand, Wilson and Sibley (2011), for example, reported data from two large national samples showing that men consistently scored higher in Narcissism (akin to low Honesty-Humility) relative to women. This is consistent with other international research and that of Cox (2008), who reported that men tended to be higher than women in Psychoticism (akin to Narcissism). According to Cox (2008) women also tended to be higher than men in Neuroticism, which is also consistent with the international literature on gender differences in personality. Guenole and Chernyshenko (2005) examined gender differences in personality based on a sample of around 500 call centre workers and management staff in New Zealand. They reported similar findings, with women being higher than men in Neuroticism (low Emotional Stability). Women were also higher than men in Agreeableness and Conscientiousness, although these differences were small overall. Roberts et al. (2001) analysed data from the New Zealand Dunedin longitudinal study and reported similar cross-sectional gender differences in personality. They reported that women were higher in constraint, stress reaction and social closeness (which reflect aspects of high Neuroticism and high Agreeableness), whereas men were higher in aggression, alienation, achievement and social potency (which reflect aspects of low Honesty-Humility and low Agreeableness, and possibly also aspects of high Extraversion).

The available New Zealand data mirror gender differences in personality observed in other Western nations, and more specific related traits subsumed within the Big-Six personality model (Feingold, 1994). Feingold's (1994) seminal meta-analysis of gender differences in personality indicated that men and women were far more

similar in personality than they were different, with gender accounting for relatively little variation in most aspects of personality. The most pronounced differences between men and women observed in Feingold's (1994) meta-analysis were that men tended to be more assertive, whereas women tended to be higher in tender-mindedness (a trait indicative of Agreeableness) and also higher in anxiety (a trait indicative of high personality vulnerability, as indexed by Neuroticism in the Big-Six model of personality structure). Similarly, a cross-cultural comparison of undergraduate/college students in 55 nations (including New Zealand university students) indicated that the most pronounced differences between undergraduate men and women were in their levels of Neuroticism and Agreeableness (Schmitt et al., 2008). In both cases, women tended to be higher than men in these traits, and these differences were most pronounced among undergraduates in more developed nations. In sum, the available data indicate that there do seem to be reliable and replicable, but fairly small, differences in personality for men and women, and the available evidence would seem to support that these small but reliable differences between men and women hold in New Zealand.

#### *Personality and age (cohort and lifespan effects)*

Research on age differences in personality in New Zealand is also scarce (Roberts et al., 2001; Wilson & Sibley, 2011). Research in this area is interesting because in conjunction with other national samples, such analyses can help to determine whether there are developmental and cultural differences in personality across nations, or whether such processes are more universal phenomena. There is promising initial evidence for systematic change in numerous aspects of personality across the lifespan, with some data from the Dunedin longitudinal study examining this issue in New Zealand (Roberts et al., 2001). Roberts et al. (2001) examined change in personality traits measured using the Multidimensional Personality Questionnaire in New Zealanders from ages 18 to 26. Their findings generally indicated that across this developmental period, people became more socially

confident, and less angry and alienated. However, despite these small changes, the key message from their study was one of marked consistency in most aspects of personality from adolescence to adulthood: people tended to remain remarkably stable in most aspects of their personality across this period of their lives. In a study of cohort effects, Wilson and Sibley (2011) examined differences specifically in Narcissism across age groups. In data from two large New Zealand samples, they reported that younger people tended to be more narcissistic, and that this trait was lower in older cohorts. Wilson and Sibley (2011) cautioned that their analyses were based on cross-sectional data, so the effects likely represent a combination of cohort differences (young people today differing from young people in previous generations), and possible developmental processes (people become less narcissistic as they age).

The available international data indicates that certain aspects of personality change systematically across the life-span. Roberts, Walton, and Viechtbauer (2006) conducted an extensive meta-analysis examining change in personality across the lifespan in 92 studies. They did so by combining estimates of the average predicted change in different personality traits across different longitudinal studies assessing change in different portions of the age range to generate overall estimates of the average course or trajectory of the Big-Five personality traits as one ages. For the most part, the patterns of change they observed were non-linear, and different aspects of personality showed markedly different patterns of stability and change.

The meta-analysis conducted by Roberts et al. (2006) indicated, first, that Extraversion (as indexed by measures relating to social vitality) tended to be highest for people in their 20s and to then decrease and remain reasonably stable from about 30-50 years of age, before decreasing further in old age. Agreeableness, in contrast, tended to increase with age, but in a non-linear fashion, increasing most in old age, and remaining reasonably stable in young and middle-aged groups. Of note here is that many of the measures of

Agreeableness examined in this context might also overlap with the Mini-IPIP6 measure of Honesty-Humility (low Narcissism), suggesting that perhaps this sixth dimension of personality might show a similar trajectory and increase with age. This trend would also be consistent with the analyses of cohort effects in Narcissism reported by Wilson and Sibley (2011).

Roberts et al. (2006) further reported that Neuroticism (low Emotional Stability in their study) decreased over the life span, with a marked decrease in Neuroticism occurring in 20 to 30 year olds. People become more emotionally stable and less anxious, on average, as they come out of their 20s and 30s. Roberts et al. (2006) argued that these personality changes represent naturally occurring developmental shifts in response to common changes in life circumstance that tend to happen to most people (in the Western world) at around the same age, such as raising a family, getting one's first job, experiencing changes in health and independence, etc. As Roberts et al. (2006) emphasized, however, given all of the changes people experience over the life course, it is startling that systematic changes in personality over the life span are so small.

#### *Summary comment on demographic differences in personality*

To sum up, the scant available evidence indicates that demographic factors are only weakly predictive of personality in New Zealand. While there do seem to be reliable and consistent differences in personality, particularly for age and gender, these effects are weak in their overall size. Knowing someone's gender or age would seem to allow only a crude ability to predict their personality, and knowing their ethnicity less so still. This general conclusion, while based primarily on non-representative samples and focusing on select isolated personality traits, is also consistent with research conducted in other nations. In their analysis of demographic differences using representative North American data, Goldberg et al. (1998, p. 402), for instance, concluded that "the vast majority of relations between demographic and self-reported

personality variables are quite small, when both sets of variables are assessed in a large and reasonably representative sample of working adults.”

### Overview of the Present Study

This paper presents a comprehensive assessment of demographic differences in personality in the New Zealand population using the Mini-IPIP6. To do so, we first present an analysis of the distribution of each of the six broad-bandwidth dimension of personality in the New Zealand population. The data we present here are drawn from the nationally representative 2009 New Zealand Attitudes and Values Study. As such, the data reported here provide a window into the personality of New Zealanders in 2009.

We document a series of regression equations that outline the extent to which each aspect of personality is predicted by the combined set of demographic factors. These regression equations provide two broad domains of information about personality in the New Zealand context. The equations (a) identify the extent to which different dimensions of personality can be predicted by knowing about the demographic characteristics of a person, and (b) identify the extent to which a given demographic factor uniquely predicts personality when controlling for other characteristics. We included the following demographic factors in the model: gender, age, the square of age (thus allowing estimation of a quadratic cohort effect), ethnicity (with codes representing identification as Māori or not, Pacific or not, and Asian or not, which thus allowed multiple ethnic group identifications per participant), the level of deprivation of each participant's neighbourhood, religious status, parental status, romantic relationship status, employment status, level of education (ordinal ranked), and immigrant status.

Following previous North American research by Goldberg et al. (1998), we expected that the demographic models would explain relatively little of the variation in the personality of New Zealanders, say around 5-10% of the variance. If found, this would emphasize that the majority of individual variation in personality is independent of demographic factors such as ethnicity,

age, gender, education, deprivation, etc. We did predict some specific differences. Following previous international and New Zealand research, we expected that women would be higher than men in Agreeableness, Honesty-Humility, and Neuroticism. We also predicted age (cohort) effects, with Honesty-Humility, Agreeableness and Conscientiousness being higher in older age groups, and Neuroticism and Extraversion being lower in older age groups.

## Method

### Sampling procedure

The NZAVS-2009 questionnaire was posted to 40,500 participants from the 2009 NZ electoral roll. The publicly available version of the roll contained 2,986,546 registered voters. This represented all citizens over 18 years of age who were eligible to vote regardless of whether or not they chose to vote, barring people who had their contact details removed due to specific case-by-case concerns about privacy. In sum, roughly 1.36% of all people registered to vote in New Zealand were contacted and invited to participate. The NZAVS-2009 sampled a total of 6,518 participants. The overall response rate (adjusting for address accuracy of the electoral roll and including anonymous responses) was 16.6%.

### Participant details

Complete information for the exogenous factors measured here was provided by 5,981 participants (3,576 women, 2,405 men). The majority of missing data occurred because people did not provide contact details and thus the deprivation index for their residential area could not be identified. Of the 5,981 participants analysed here, there was a very small percentage of randomly missing individual item responses for the Mini-IPIP6 (roughly 1 or 2 items of the total 24 with no discernible pattern) for roughly 5% of participants. Mini-IPIP6 scores were estimated by calculating the scale mean using all available responses for each participant, and the residual association between personality scores was estimated using Full Information Maximum Likelihood to allow for missing data in personality scores.

The mean age of participants was

47.64 ( $SD = 15.47$ ). In terms of ethnicity, 1052 (17.6%) of the sample identified as Māori, 254 (4.2%) identified as Pacific, 289 (4.8%) identified as Asian, and 4936 (82.5%) identified as European. Note that these categories were not mutually exclusive, as people could identify with more than one ethnic group. Education was coded as an ordinal-ranked variable with the following five categories: 1337 (22.4%) had no formal qualification, 1750 (29.3%) had a secondary school qualification, 977 (16.3%) had a tertiary diploma or trade certificate, 1362 (22.8%) had an undergraduate university degree or were studying toward one and 555 (9.3%) had a post-graduate qualification or were studying toward one.

In terms of relationship status, 4298 (71.9%) of participants were in a romantic relationship or married. In terms of parental status, 4516 (75.5%) of the sample were parents. In terms of employment, 4488 (75.0%) of participants were in full or part-time employment. With regard to religion, 2655 (44.4%) of participants identified with a religion or spiritual group. In terms of immigrant status, 4699 (78.6%) of participants were born in New Zealand.

Participants provided their postal address and we used this information to identify the level of economic deprivation (NZDep2006) of the immediate area in which each participant resided. The NZDep2006 allocates a deprivation score to each meshblock based on a Principal Components Analysis of nine variables using census data. These are (in weighted order): proportion of adults who received a means-tested Government supplied welfare benefit, household income, proportion not owning their own home, proportion of single-parent families, proportion unemployed, proportion lacking qualifications, proportion household crowding, proportion with no telephone access, and proportion with no car access. The NZDep2006 thus reflects the average level of deprivation of different small neighbourhoods or community areas across the country (White, Gunston, Salmond, Atkinson, & Crampton, 2008). We used the percentile deprivation index, which gives an ordinal score from 1 (most affluent) to

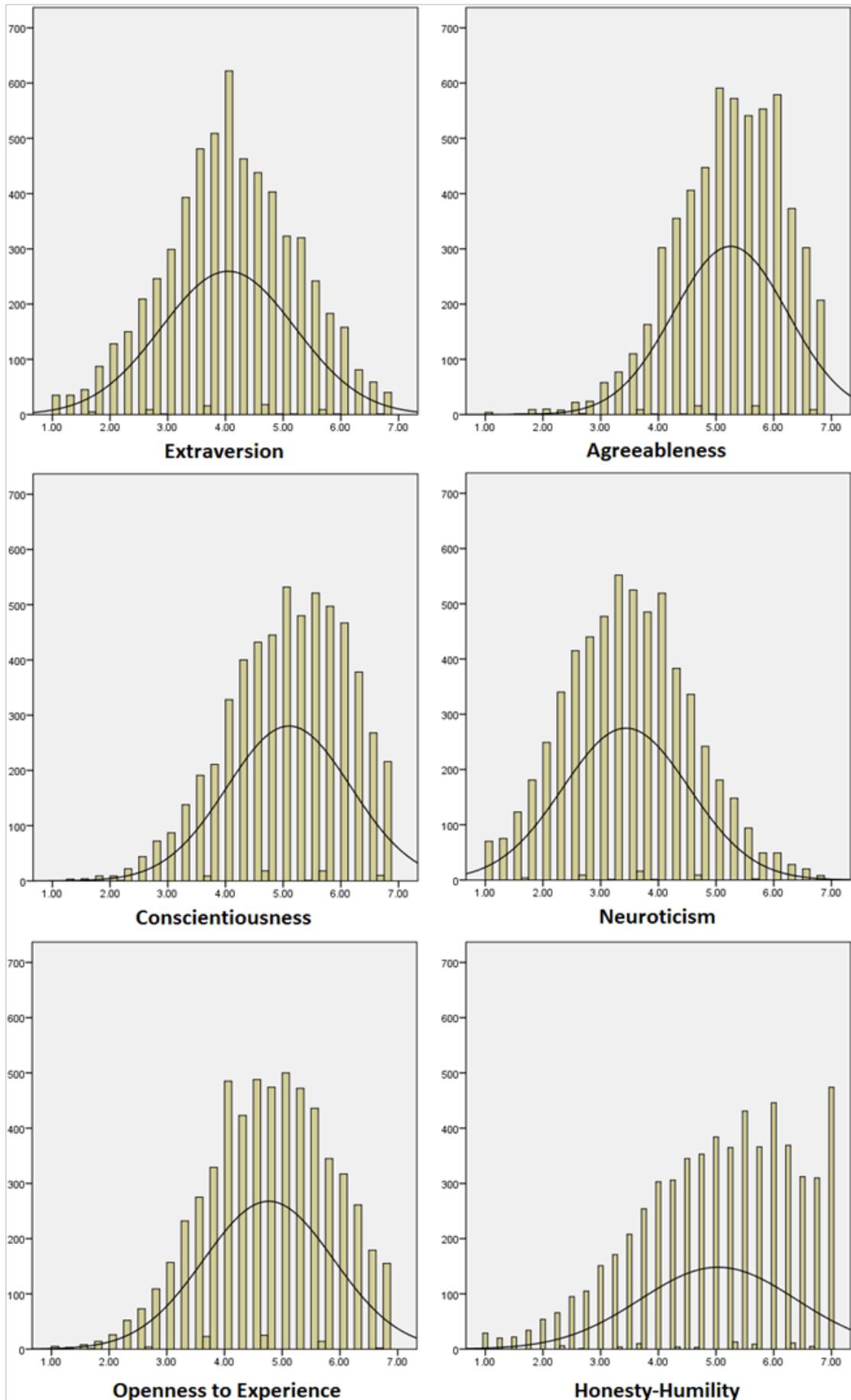


Figure 1. Distribution of responses for each Mini-IPIP6 scale score in the New Zealand population.

10 (most deprived) for each mesh block area unit based on 2006 census data. The mean percentile NZDep2006 score for our sample was 5.00 ( $SD = 2.84$ ).

**Materials**

Administration of the Mini-IPIP6 is described in Sibley et al. (2011). The 24 items in the scale were rated on a 7-point scale following the standard IPIP format developed by Goldberg (1999). This format asks participants to rate how well each statement describes them personally from 1 (very inaccurate) to 7 (very accurate). A copy of the Mini-IPIP6 inventory is presented in the Appendix. Definitions of the Mini-IPIP6 scales are presented in Table 1.

**Results**

Histograms showing the distribution of each Mini-IPIP6 trait in the New Zealand population are presented in Figure 1. Mean scale scores, and other distributional statistics are presented in Table 2. As shown in Table 2, the Mini-IPIP6 scales all had a reasonable level of internal reliability and fairly low levels of skewness and kurtosis (see also Sibley, 2012, for item response properties of the scale). Bivariate correlations between all demographic variables and the Mini-IPIP6 scale scores are presented in Table 3.

We constructed a model in which demographic variables predicted observed (mean) scale scores for each of the six Mini-IPIP6 dimensions. We allowed the residual variance of each personality dimension to correlate, and used Maximum Likelihood Estimation with Robust Standard Errors (or MLR). The model therefore identified (a) the variance in each Mini-IPIP6 scale score predicted by the combined set of demographic predictors, and (b) also provided specific information about the unique association of each demographic predictor with each personality dimension when statistically adjusting for all other demographic factors included in the model and controlling for the residual association between the different personality factors.

Significance tests for the regression models and the proportion of variance in each Mini-IPIP6 scale score examined by the models are presented in Table 4. As predicted, the demographic regression

Table 2. Distributional properties and scale characteristics of the Mini-IPIP6 scores in the New Zealand population.

	<i>M</i>	<i>SD</i>	95% Confidence Interval		Skewness	Kurtosis	Quartiles			Cronbach's alpha
			Lower	Upper			25%	50%	75%	
Extraversion	4.050	1.160	4.021	4.080	-.028	-.242	3.250	4.000	4.750	.712
Agreeableness	5.251	.992	5.226	5.276	-.417	.094	4.500	5.250	6.000	.664
Conscientiousness	5.107	1.071	5.079	5.134	-.359	-.270	4.333	5.250	6.000	.651
Neuroticism	3.442	1.095	3.414	3.470	.200	-.155	2.750	3.500	4.250	.644
Openness to Experience	4.771	1.123	4.742	4.799	-.150	-.367	4.000	4.750	5.500	.674
Honesty-Humility	5.037	1.354	5.003	5.071	-.513	-.346	4.000	5.250	6.000	.778

Table 3.  
Bivariate correlations between all demographic variables and Mini-PIP6 personality scale scores.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	1.	11.	12.	13.	14.	15.	16.	17.	18.	19.	
1. Extraversion																				
2. Agreeableness	.207																			
3. Conscientiousness	.008	.148																		
4. Neuroticism	-.078	-.021	-.107																	
5. Openness to Experience	.250	.237	.009	-.014																
6. Honesty-Humility	-.099	.150	.094	-.189	.020															
7. NZ Dep Index (0-10)	-.024	-.061	-.057	.067	-.019	-.096														
8. Education (-2 low to 2 high).	.034	.123	.012	-.020	.213	.094	-.183													
9. Gender (0 women, 1 men)	-.057	-.303	-.116	-.124	.020	-.123	.002	-.089												
10. Māori (0 no, 1 yes)	.037	-.051	-.004	.014	-.013	-.088	.213	-.149	-.017											
11. Pacific (0 no, 1 yes)	.032	-.053	-.026	.018	-.013	-.124	.198	-.095	.020	.001										
12. Asian (0 no, 1 yes)	-.037	-.036	.016	.016	.014	-.116	.036	.100	-.005	-.084	-.017									
13. Religion (0 no, 1 yes)	.001	.092	.055	-.035	-.062	.049	.037	-.013	-.044	.019	.112	.069								
14. Parent (0 no, 1 yes)	-.026	-.002	.087	-.089	-.149	.100	-.009	-.086	.010	.025	-.009	-.066	.093							
15. Relationship (0 no, 1 yes)	-.002	-.040	.061	-.036	-.054	.057	-.160	.064	.101	-.062	-.019	.007	-.019	.313						
16. Employment (0 no, 1 yes)	.069	-.001	-.008	-.006	.101	-.076	-.091	.204	.053	-.001	-.024	.022	-.082	-.127	.069					
17. Born in NZ (0 no, 1 yes)	.010	.011	-.025	-.013	-.034	.026	.015	-.094	-.022	.218	-.143	-.329	-.065	-.014	-.055	.003				
18. Age (years)	-.130	-.009	.096	-.170	-.182	.256	-.060	-.135	.095	-.110	-.091	-.085	.187	.439	.114	-.342	-.046			
19. Age Squared (Age - $M_{age}$ ) <sup>2</sup>	.027	.011	-.069	-.025	-.009	.010	.033	-.143	.015	-.064	-.009	-.004	.061	-.219	-.217	-.351	.030	.100		

$N = 5981$ ,  $r$ -values > .026 significant at  $p < .05$ .

models performed fairly poorly overall, and explained only a small proportion of the variance in Mini-IPIP6 scores. For instance the combined demographic variables included in the model explained only 3.1% of the variance in Extraversion, and 5.1% of the variance in Neuroticism. Demographic factors were more predictive of Agreeableness and Honesty-Humility, respectively explaining 11.6% and 12.5% of the variance in these two dimensions of personality.

Results from the regression models predicting each of the six Mini-IPIP6 scale scores are reported in Tables 5, 6 and 7. The parameters reported in these models provide information about the unique association of each demographic factor with a given dimension of personality when statistically adjusting (controlling) for the shared association of all other demographics in the model.

The *b* values are unstandardized regression coefficients, where a one-unit change in the predictor represents a *b*-unit change in the personality dimension being predicted. The  $\beta$  values represent these same effects in standard deviation units. Because  $\beta$  values are standardized, they can thus be informally compared with one another within a model and across models to get an idea of relative differences in the extent to which each predictor was uniquely associated with each dimension of personality. For example,

as shown in Table 5, age was the single strongest predictor of Extraversion ( $\beta = -.143$ ), whereas gender was the single strongest predictor of Agreeableness ( $\beta = -.289$ ).

Of the broad range of demographic factors included in the model, gender and age were consistently the two strongest predictors for all six personality dimensions. Contrast coded variables representing ethnicity were consistently non-significant or very weak predictors of personality. The variation in personality predicted by knowing someone's ethnicity was non-significant in most cases, and trivial in size relative to knowing their gender, age, or in some cases other pertinent demographics.

In terms of other noteworthy effects, the deprivation index of participant's residential area was significantly predictive of Neuroticism ( $\beta = .054$ ). This indicates that adjusting for all other factors, people who lived in more deprived regions of the country tended to be slightly higher in Neuroticism. This indicates that deprivation is reliably linked with concurrent levels of global or broad-bandwidth psychological distress and anxiety (as indexed by global levels of Neuroticism). Living in a more deprived region of the country was not, however, significantly associated with the personality dimension of Honesty-Humility. Deprivation does seem to be associated with poorer psychological

outcomes at the global personality level (higher Neuroticism); but being affluent or deprived seems unrelated to one's level of humility, for instance.

Given that gender and age were consistently the strongest predictors of personality, we presented more detailed analyses of these differences. Figure 2 summarizes differences between New Zealand men and women in each of the Mini-IPIP6 scale scores. The means in this figure represent the level of each personality trait estimated using the gender parameter from the regression equations presented in Tables 5-7 and therefore adjust for all other demographic covariates included in the equations. The significance test for the gender difference in each personality trait is thus provided by the regression parameter for gender in each regression model. As can be seen in Figure 2, women were significantly higher than men in Extraversion, Agreeableness, Conscientiousness, Neuroticism and Honesty-Humility. Men were higher in Openness to Experience.

Figure 3 presents regression slopes representing the line of best fit for the association between age and each Mini-IPIP6 personality scale score. The slopes integrate both the linear and quadratic age parameters from the regression equations presented in Tables 5-7, and thus model cohort effects adjusting for all other demographic covariates in the equation. Extraversion decreased over the 20-50 year old age range, and then plateaued. Agreeableness was highly consistent across different age groups. Conscientiousness increased over the 20-50 year old age range, and then plateaued. Neuroticism decreased continually across the age range, with the most pronounced reduction among middle to older age adults. Openness to Experience decreased in a relatively linear fashion across the age range. Honesty-Humility showed the most pronounced effect, and was higher in older age groups.

## Discussion

This study presented data on the distribution of personality in New Zealand. This is the first study to present detailed information on personality and demographics in New Zealand using a large probability sample

Table 4.

Variance in each Mini-IPIP6 personality scale explained by demographic regression models.

	<i>R</i> <sup>2</sup>
Extraversion	.031*
Agreeableness	.116*
Conscientiousness	.037*
Neuroticism	.051*
Openness to Experience	.081*
Honesty-Humility	.125*

Note. Regression models predicting each Mini-IPIP6 scale are presented in Tables 5, 6 and 7. \* *p* < .05.

Table 5.

Regression models predicting MINI-IP6 Extraversion and Agreeableness in the New Zealand population.

	Model predicting Extraversion			Model predicting Agreeableness		
	<i>b</i>	<i>se(b)</i>	<i>t-value</i>	<i>b</i>	<i>se(b)</i>	<i>t-value</i>
Constant	4.369	0.092		5.501	.076	
Gender (0 women, 1 men)	-.112	.031	-3.618*	-.585	.026	-22.738*
Age	-.011	.001	-8.915*	.000	.001	-.121
Age Squared ( $Age - M_{age}$ ) <sup>2</sup>	.000	.000	5.546*	.000	.000	1.522
Māori (0 no, 1 yes)	.107	.040	2.635*	-.112	.033	-3.359*
Pacific (0 no, 1 yes)	.154	.077	1.997*	-.210	.068	-3.095*
Asian (0 no, 1 yes)	-.273	.080	-3.424*	-.253	.063	-4.015*
NZ Dep Index (0-10)	-.015	.006	-2.645*	-.011	.005	-2.326*
Religion (0 no, 1 yes)	.049	.031	1.594	.178	.025	7.166*
Parent (0 no, 1 yes)	.145	.042	3.446*	.026	.035	.748
Relationship (0 no, 1 yes)	.030	.037	.830	-.047	.030	-1.581
Employment (0 no, 1 yes)	.143	.040	3.557*	.024	.033	.733
Education (-2 low to 2 high).	.018	.012	1.488	.070	.010	7.092*
Born in NZ (0 no, 1 yes)	-.045	.041	-1.079	.007	.033	.198

Notes. Sample mean age was ( $M_{age} = 47.64$  years), the NZ Dep Index was coded from 1 (most affluent regions) to 10 (most deprived regions) using the estimates for each meshblock area unit reported in White et al. (2008). Education was ordinal-coded as: -2 (none/unreported), -1 (a secondary-school qualification), 0 (a post-secondary school diploma or trade-certificate), 1 (an undergraduate degree), 2 (a post-graduate degree). \*  $p < .05$ .

Table 6.  
Regression models predicting MINI-IPIP6 Conscientiousness and Neuroticism in the New Zealand population.

	Model predicting Conscientiousness			Model predicting Neuroticism		
	<i>b</i>	<i>se(b)</i>	<i>t-value</i>	<i>b</i>	<i>se(b)</i>	<i>t-value</i>
Constant	4.917	.083		4.301	.085	
Gender (0 women, 1 men)	-.278	.028	-9.803*	-.244	.029	-8.533*
Age	.007	.001	5.836*	-.012	.001	-1.796
Age Squared ( $Age - M_{age}$ ) <sup>2</sup>	.000	.000	-4.137*	.000	.000	-3.003*
Māori (0 no, 1 yes)	.042	.039	1.073	-.060	.038	-1.567
Pacific (0 no, 1 yes)	-.062	.075	-.822	-.087	.071	-1.218
Asian (0 no, 1 yes)	.101	.070	1.441	-.043	.066	-.659
NZ Dep Index (0-10)	-.018	.005	-3.407*	.021	.005	3.884*
Religion (0 no, 1 yes)	.076	.028	2.687*	-.019	.029	-.674
Parent (0 no, 1 yes)	.045	.040	1.119	-.095	.041	-2.350*
Relationship (0 no, 1 yes)	.088	.034	2.587*	.024	.034	.701
Employment (0 no, 1 yes)	.022	.037	.584	-.167	.038	-4.437*
Education (-2 low to 2 high)	-.007	.011	-.642	-.039	.011	-3.483*
Born in NZ (0 no, 1 yes)	-.039	.037	-1.058	-.074	.038	-1.918

Notes. Sample mean age was ( $M_{age} = 47.64$  years), the NZ Dep Index was coded from 1 (most affluent regions) to 10 (most deprived regions) using the estimates for each meshblock area unit reported in White et al. (2008). Education was ordinal-coded as: -2 (none/unreported), -1 (a secondary-school qualification), 0 (a post-secondary school diploma or trade-certificate), 1 (an undergraduate degree), 2 (a post-graduate degree). \*  $p < .05$ .

Table 7.  
Regression models predicting MINI-PIP6 Openness to Experience and Honesty-Humility in the New Zealand population.

	Model predicting Openness to Experience			Model predicting Honesty-Humility		
	<i>b</i>	<i>se(b)</i>	<i>t-value</i>	<i>b</i>	<i>se(b)</i>	<i>t-value</i>
Constant	5.450	.086		4.248	.100	
Gender (0 women, 1 men)	.115	.029	3.987*	-.386	.034	-11.216*
Age	-.009	.001	-8.071*	.023	.001	17.130*
Age Squared ( $Age - M_{age}$ ) <sup>2</sup>	.000	.000	1.224	.000	.000	-.384
Māori (0 no, 1 yes)	.028	.039	.713	-.177	.048	-3.692*
Pacific (0 no, 1 yes)	-.066	.076	-.867	-.567	.097	-5.852*
Asian (0 no, 1 yes)	-.158	.071	-2.245*	-.688	.082	-8.359*
NZ Dep Index (0-10)	.003	.005	.557	-.012	.006	-1.922
Religion (0 no, 1 yes)	-.065	.029	-2.230*	.047	.034	1.381
Parent (0 no, 1 yes)	-.158	.041	-3.899*	-.082	.048	-1.729
Relationship (0 no, 1 yes)	-.091	.035	-2.603*	.106	.041	2.554*
Employment (0 no, 1 yes)	.040	.038	1.039	-.029	.045	-.642
Education (-2 low to 2 high)	.171	.011	15.059*	.110	.013	8.388*
Born in NZ (0 no, 1 yes)	-.107	.038	-2.821*	.038	.044	.867

Notes. Sample mean age was ( $M_{age} = 47.64$  years), the NZ Dep Index was coded from 1 (most affluent regions) to 10 (most deprived regions) using the estimates for each meshblock area unit reported in White et al. (2008). Education was ordinal-coded as: -2 (none/unreported), -1 (a secondary-school qualification), 0 (a post-secondary school diploma or trade-certificate), 1 (an undergraduate degree), 2 (a post-graduate degree). \*  $p < .05$ .

Figure 2.

Gender differences in the Mini-IPIP6 scale scores in the New Zealand population. (Means represent gender differences in personality estimated using the gender parameter from the regression equations presented in Tables 5 - 7 and therefore adjust for all other demographic covariates included in the equations; error bars represent 95% confidence intervals around the mean).

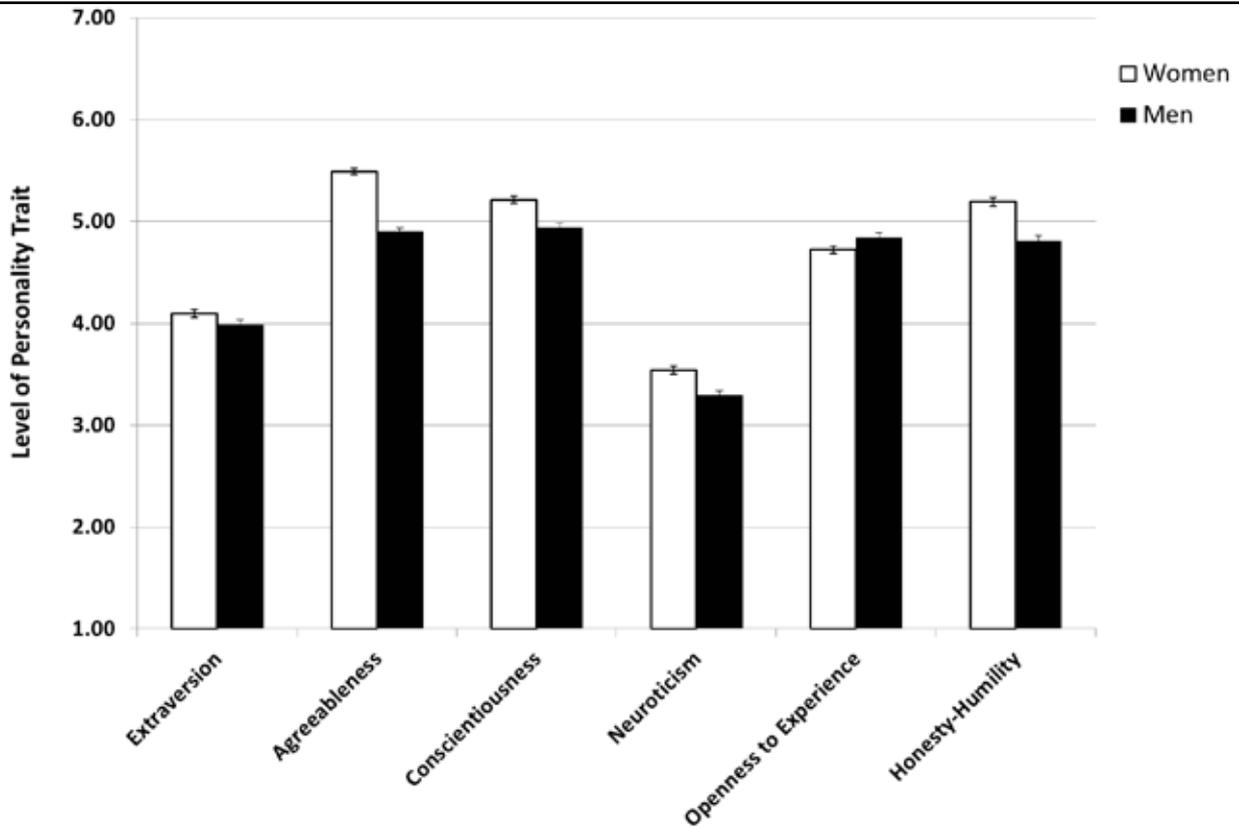
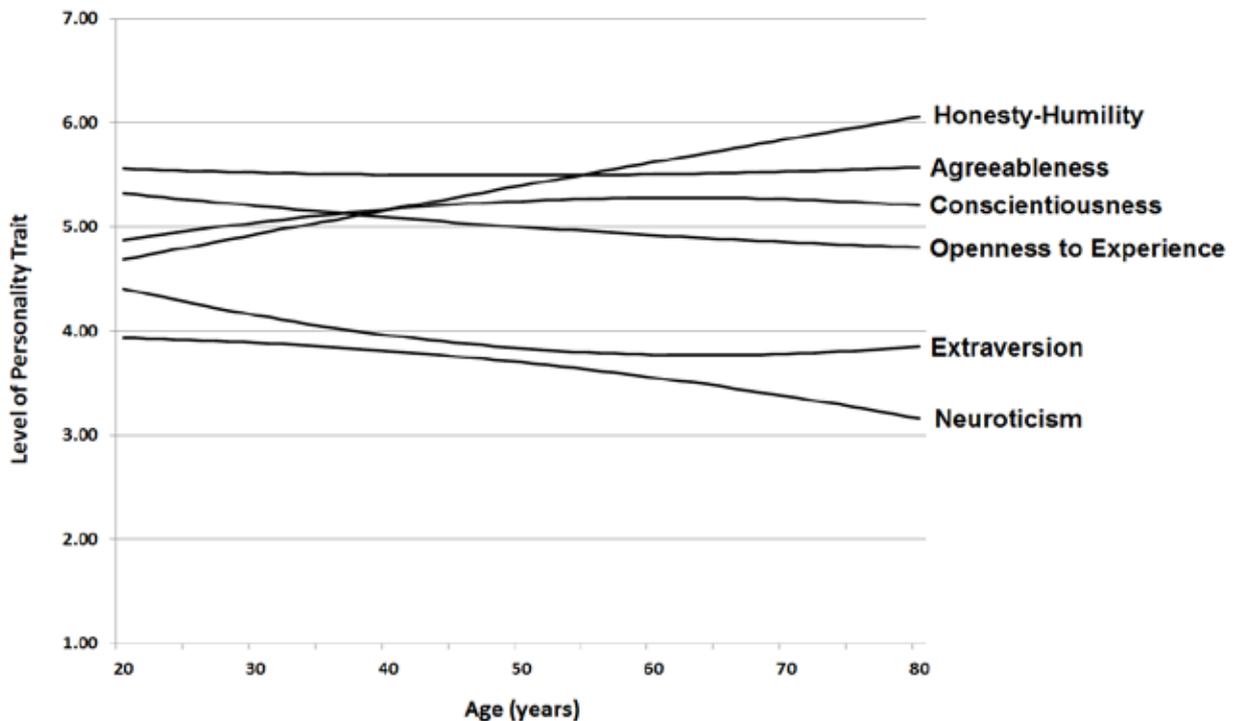


Figure 3.

Curvilinear regression slopes representing the line of best fit for the association between age and each Mini-IPIP6 personality scale score in the New Zealand population in 2009. (Slopes represent age (cohort) differences in personality estimated using the age parameters from the regression equations presented in Tables 5-7 and therefore adjust for all other demographic covariates included in the equations).



representative of the population, and to do so using a public domain personality inventory. This public domain scale is known as the Mini-IPIP6. The Mini-IPIP6 is a short-form personality instrument which provides four-item markers of the six broad-bandwidth dimensions of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience and Honesty-Humility based on the work of Goldberg (1999) and Donnellan et al. (2006).

The Mini-IPIP6 has been extensively validated in the New Zealand context (see Sibley et al., 2011; Sibley, 2012). This line of research is important because as a discipline, we need access to, and the ability to continually improve, a public domain personality inventory that reliably indexes the major broad-bandwidth dimensions of personality. In order to maximize the utility of such an inventory for use in the New Zealand context, we need to know about that inventory's properties, its reliability, factor structure, predictive utility across numerous criterion outcomes, and population norms and demographic differences. Following Goldberg (1999), we believe that this information needs to be openly accessible to the scientific community if we want to see systematic progress in the science of personality in the New Zealand context.

Results indicated that the Mini-IPIP6 has reasonable distributional properties, with levels of skew and kurtosis that were within a reasonable range. This indicates firstly, that Mini-IPIP6 personality scale scores are reasonably normally distributed in the New Zealand population. This information also provides baseline norms against which subsequent Mini-IPIP6 scores for individuals or subgroups can be judged. For instance, given that the norms provided are based on a representative national probability sample, they can be used to judge the extent to which subsequent samples depart from the population average on a given dimension of personality. This can be easily achieved by determining whether the confidence interval for a given sample mean overlaps with the confidence interval for the estimated population value of that Mini-IPIP6 scale score as reported in Table 2.

### *Demographic Differences in Personality*

Our analyses identified a number of important theoretical differences in personality across various demographics that support and extend previous research. However, the most compelling result to consistently emerge from these analyses was the small proportion of variation in personality scores explained by demographic differences. Goldberg et al. (1998) first documented this seemingly counterintuitive finding: that demographic factors are only weakly predictive of personality in a national probability sample of working adults in North America. Goldberg et al. (1998) examined only a small range of demographic variables, however. These were gender, age, years of education, and ethnicity. The present study extended this analysis to the New Zealand context, and also used a much larger range of demographic factors. The results were much the same regardless. As a combined set, the 13 demographic variables included in our analysis explained a fairly small proportion of the variance in Extraversion (3.1%), Conscientiousness (3.7%), Neuroticism (5.1%) and Openness to Experience (8.1%). Our combined set of demographic factors explained slightly more variance in Agreeableness (11.6%) and Honesty-Humility (12.5%); although in both cases, the proportion of variance in these dimensions of personality explained by our model remained small in absolute terms.

Overall, the current findings highlight that the lion's share of the variance in personality (including error) is unexplained by demographics. While knowing about a person's gender, age, religious affiliation and so forth will allow prediction of their personality scores at significantly better than chance; prediction will still be highly inaccurate. Put another way: although people vary widely in their personality, some being extraverted and others being introverted, and so on, a fairly small proportion of the rich and presumably meaningful variation in personality was due to differences in demographic factors.

The strongest demographic differences in personality were consistently those between men and

women, and across age cohorts. The gender difference in Neuroticism (low Emotional Stability) is a potentially important finding. Neuroticism reflects general psychological vulnerability, and the observed gender difference in this trait substantiates developmental differences in related psychological outcomes for men and women more generally. In a New Zealand-based study, Jose and Brown (2008) examined gender differences in rumination and depression in school children aged 10-17 years. As summarized in Table 1, Mini-IPIP6 Neuroticism is a broad-bandwidth construct that should subsume more specific traits related to rumination, depression, anxiety and psychological adjustment more globally.

As with research on broad-bandwidth Neuroticism, Jose and Brown (2008) reported that girls were higher in rumination than boys, and that this gap widened as children reached puberty (around age 13). This increase in rumination also coincided with the increase in girls' levels of depression relative to boys over this same time-period, and probably accounts for at least part of the increase in depression during this development phase. The gender difference probably occurs because (a) girls tend to experience more stress in adolescence, paired with (b) that gender roles and socialization practices cause girls to become more likely to use ruminative-based coping strategies in which they think repetitively about stressful events and problems relative to boys, who tend to use more agency-based coping strategies (Wichstrøm, 1999). At the more general level, the current data indicate that this difference in psychological adjustment and coping (as indexed by Neuroticism) is also reliable in adult women and men in New Zealand.

Our findings also document the average or overall level of each personality trait across different age cohorts. The slopes reported in Figure 3 represent predicted values of each personality trait depending upon age, and when statistically adjusting for all other demographic covariates in the model. Differences across age were reasonably consistent with patterns expected based on the comprehensive meta-analysis of lifespan differences

in personality conducted by Roberts et al. (2006). It is nevertheless important to keep in mind that our analyses compared cohorts measured at the same point in time. Thus, the age effects we document almost certainly result from a combination of (a) developmental change in personality (as documented by Roberts et al., 2006); and also (b) differences resulting from the socialization experiences of different age groups during formative periods where personality traits may tend to be set, possibly as if in plaster, for broad periods of the remainder of one's life (see Srivastava, John, Gosling, & Potter, 2003, for discussion of this debate).

Consistent with Roberts et al. (2006), Extraversion tended to be highest for people in their 20s, and then decreased with age. Agreeableness was highly consistent across different age groups. This is contrary to Roberts et al. (2006), who reported that Agreeableness tended to increase with age. Rather, analysis of age differences in our six-factor model showed that Honesty-Humility was higher in older age groups. This increase in Honesty-Humility in our Big-Six framework may reflect the same general process documented by Roberts et al. (2006) for broader measures of Agreeableness; as such earlier measures tend to combine markers of both Honesty-Humility and our more specific narrow-bandwidth Mini-IPIP6 Agreeableness measure. As predicted, Neuroticism decreased with age. Conscientiousness increased over the 20-50 year old age range, and then plateaued; and Openness to Experience decreased in a relatively linear fashion across the age range.

The analyses reported here also provide information on the links between economic deprivation and personality vulnerability: this is an area in which there is relatively little research in New Zealand. Comparing the standardized betas across regression models, results indicated that deprivation was most strongly associated with Neuroticism. This effect was relatively weak however, with  $\beta = .054$  when adjusting for all other demographic factors in the model. This association probably occurred because living in more impoverished areas introduces additional stressors into people's lives, which increases the

likelihood of personality vulnerability (as broadly indexed by Neuroticism). It is also worth highlighting that there were no ethnic group differences in Neuroticism (the effects of ethnic group membership in the regression model were non-significant). This finding is consistent with Read's (2011) call for an increased focus on poverty (rather than ethnicity) as a key factor predicting psychological vulnerability and mental illness in New Zealand.

The link between deprivation and Neuroticism may also further exacerbate the demonstrated gap in subjective wellbeing between the rich and poor in New Zealand (Sengupta et al., 2012; Sibley, Harré, Hoverd, & Houkamau, 2011). This is likely to occur given that income is a stronger predictor of subjective wellbeing for those high in Neuroticism (Soto & Luhmann, 2013). This has the troubling implication that those high in Neuroticism should experience particularly low levels of subjective wellbeing when living in impoverished conditions, and yet simultaneously, the current findings indicate that deprivation is directly linked to higher levels of Neuroticism, thus possibly exacerbating the cycle.

Our analyses also address possible common misconceptions about what people who belong to a given group or demographic are like and how they might differ: aside from gender and age, group-based differences in personality were non-existent or trivial in size across the broad majority of the population. Previous research has identified consistent and commonly held stereotypes about different ethnic groups in New Zealand (Sibley, 2011; Sibley et al., 2011). People tend to hold stereotypes about what ethnic groups are like in New Zealand in terms of their levels of competence, for example (Sibley et al., 2011). The current data, however, shows little to no support for these stereotypes in terms of personality traits that should relate to that same conceptual domain, that is: Conscientiousness and Openness to Experience. We found at most only trivial differences in levels of Conscientiousness and Openness to Experience across different ethnic groups. We raise this finding simply to reiterate what we view as one of our

key findings: overall, demographic differences in personality were subtle and generally very small in size, and highly inconsistent with commonly held stereotypes about what ethnic groups are like.

### Concluding comments

This study provides the most representative and extensive analysis of the distribution of broad-bandwidth personality traits and demographic differences to be conducted in New Zealand using a public domain personality inventory to date. Mini-IPIP6 scale scores were reasonably normally distributed, and approximate quartile thresholds for low, mild, moderate and high levels of each trait are provided for the New Zealand population. These norms provide a baseline comparison useful for determining the extent to which subsequent samples might depart from the population average on a given dimension of personality or may change over time. As part of our general goal in providing New Zealand-specific personality norms, we also presented extensive demographic analyses of possible differences in personality.

Our regression models included a broad range of different demographic variables and explained relatively little variance in each Mini-IPIP6 scale score (5%-10%), although there were reliable and consistent gender and age (cohort) effects. This is an important finding in our view because it gets us one step closer to knowing how people differ, and also how they are the same. In and of itself, this is simply an empirical question. The answer to this empirical question could, however, be framed in various ways depending on what we had found and depending upon people's motivation to position others as similar or different. Pinker (2002) eloquently summarized the crux of this issue when he stated that:

*the problem is not with the possibility that people might differ from one another; which is a factual question that could turn out one way or the other. The problem is with the line of reasoning that says that if people do turn out to be different, then discrimination, oppression, or genocide would be OK after all.*

(Pinker, 2002, p. 141)

So should we even consider the possibility of differences based on identifiable demographic factors? In our view yes, we should, because we need to know about similarities and differences based on demographics in the New Zealand population if we want to recognize the diversity of peoples and more accurately understand how groups might converge or differ in their subjective experiences (see for example, Jose & Ratcliffe, 2004; Sibley & Houkamau, in press; Sibley, Houkamau, & Hoverd, 2011; Houkamau & Sibley, 2010, 2011; Manuela & Sibley, in press a, in press b). *Recognizing* such differences is central to *respecting* such differences; rather than implicitly or explicitly folding everyone into the same melting pot which masks possible differences in outcomes and worldviews across groups. Sibley and Duckitt (2010), for instance, have presented extensive longitudinal data in New Zealand showing that support for ‘melting pot’ ideologies which argue that we are all the same and that group differences should be ignored tend to be most strongly endorsed by those high in the motive for social dominance because such ideologies help maintain inequality (see also Harding & Sibley, 2011). The recognition of possible differences, and respect for such differences, is aligned with the first principle of the Code of Ethics for Psychologists working in Aotearoa/New Zealand. The Code of Ethics states the following in regard to how it recommends that we view differences and diversity:

*Respect requires sensitivity to cultural and social diversity and recognition that there are differences among persons associated with their culture, nationality, ethnicity, colour, race, religion, gender, marital status, sexual orientation, physical or mental abilities, age, socio-economic status, and/or any other personal characteristic, condition, or status. Such differences are an integral part of the person.*

To conclude, let us be clear about what we hoped to achieve in the current paper. The focus of the current paper was not to emphasize or highlight any particular differences between people

based on one particular stratification, be it gender, ethnicity, age, or any other demographic factor or socially constructed category. We need to know about differences when they do occur for the most appropriate application of personality science within our communities, in terms of appropriate norms, modelling change, and applying scales appropriately in the prediction of outcomes. We hope that this paper may be of use in this regard, in allowing us as New Zealanders to recognize, and value, diversity in personality where it does occur, while also being informed by the data regarding the startlingly little portion of variance in personality explained by demographic factors within the New Zealand population more generally. The story these data tell, in our view, is one of the rich variety of individual differences in personality across New Zealand, and the fact that very little of the differences between people can be accounted for by the demographics that we commonly examine.

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## Appendix

## The Mini-IPIP6

<b>Instructions: This part of the questionnaire measures your personality. Please circle the number that best represents how accurately each statement describes you.</b>							
I...	Very Inaccurate			Very Accurate			
	↓						↓
1. Am the life of the party.	1	2	3	4	5	6	7
2. Sympathize with others' feelings.	1	2	3	4	5	6	7
3. Get chores done right away.	1	2	3	4	5	6	7
4. Have frequent mood swings.	1	2	3	4	5	6	7
5. Have a vivid imagination.	1	2	3	4	5	6	7
6. Feel entitled to more of everything.	1	2	3	4	5	6	7
7. Don't talk a lot.	1	2	3	4	5	6	7
8. Am not interested in other people's problems.	1	2	3	4	5	6	7
9. Have difficulty understanding abstract ideas.	1	2	3	4	5	6	7
10. Like order.	1	2	3	4	5	6	7
11. Make a mess of things.	1	2	3	4	5	6	7
12. Deserve more things in life.	1	2	3	4	5	6	7
13. Do not have a good imagination.	1	2	3	4	5	6	7
14. Feel others' emotions.	1	2	3	4	5	6	7
15. Am relaxed most of the time.	1	2	3	4	5	6	7
16. Get upset easily.	1	2	3	4	5	6	7
17. Seldom feel blue.	1	2	3	4	5	6	7
18. Would like to be seen driving around in a very expensive car.	1	2	3	4	5	6	7
19. Keep in the background.	1	2	3	4	5	6	7
20. Am not really interested in others.	1	2	3	4	5	6	7
21. Am not interested in abstract ideas.	1	2	3	4	5	6	7
22. Often forget to put things back in their proper place.	1	2	3	4	5	6	7
23. Talk to a lot of different people at parties.	1	2	3	4	5	6	7
24. Would get a lot of pleasure from owning expensive luxury goods.	1	2	3	4	5	6	7

*Scoring instructions.* First, reverse code the following items: 6, 7, 8, 9, 11, 12, 13, 15, 17, 18, 19, 20, 21, 22, and 24. Next, create an average score for the four items assessing each dimension of personality. Extraversion: 1, 7, 19 and 23. Agreeableness: 2, 8, 14 and 2. Conscientiousness: 3, 10, 11 and 22. Neuroticism: 4, 15, 16 and 17. Openness to Experience: 5, 9, 13 and 21. Honesty-Humility: 6, 12, 18 and 24. An SPSS data entry template and scoring syntax is available from the first author upon request.