

# Postmaterialism and age: An Australian anomaly?

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Refereed paper presented to the  
Jubilee conference of the Australasian Political Studies Association  
Australian National University, Canberra, October 2002

This paper was partially completed while Bruce Tranter was a Visiting Research Fellow in the Political Science Program, Research School of Social Sciences at the Australian National University

## Abstract

Inglehart's thesis of value change is one of the most widely discussed accounts of social and political change in advanced Western nations. This research offers a critique of Inglehart's thesis and a clarification of the Australian case. While others have attacked the validity of Inglehart's postmaterialism measures, we use Inglehart's own values index to show that even if - as Inglehart claims - his measures are valid, the age/values predictions do not hold as the theory suggests in Australia. In a recent article, Inglehart and Abramson (1999:673) cite Australia among a group of '28 high-income' countries that exhibit 'stronger relationships between values and age' than found in the United States of America. We dispute Inglehart's and Abramson's findings in relation to Australia. We show that the age/values relationship in Australia, like the USA, is very weak, and highlight the problematic nature of assuming a linear relationship between age and values without evidence. We also uncover a new nonlinear relationship between values and age in Australia.

This 'Australian pattern' has implications for the study of values research internationally, as similar patterns occur in several other advanced industrial nations. Strong age/values effects tend to be found in multi party polities where Green parties are also influential, however, the relationship between age and values is weaker where such parties have limited influence, in major party polities such as the USA, Britain and Australia. We conclude that institutional structures and political parties should be given far greater prominence in accounts of postmaterial value change internationally.

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## Introduction

Inglehart's thesis of postmaterial value change is one of the most well known and influential accounts of social and political change in advanced Western nations. For the last thirty years, Inglehart (e.g. 1971, 1977, 1990a, 1997) has argued that the key to understanding political preferences and behaviour lies in childhood socialisation, as early experiences influence the formation of different value priorities. Those who experience economic hardship, war or major social and political upheaval during their 'formative years', tend to develop materialist (economic) values (Inglehart 1977:23). Alternatively, experience of relative economic affluence and physical safety tend to favour quality of life, postmaterial issues over materialist issues.

Inglehart has conducted extensive research on value change in Western Europe and the United States (Inglehart 1977; 1981; 1990a), and more recently expanded the scope of this research to include a variety of other countries (Inglehart 1997). Still, his thesis has not gone uncontested.<sup>1</sup> A common theme running through many critical accounts of Inglehart's work, is to attack the validity of his popular 4 item values index (e.g. Jagodzinski 1982; Flanagan 1982a; 1982b; 1987; Clarke and Dutt 1991; Duch and Taylor 1993; 1994; Bean and Papadakis 1994; Brown and Carmines 1995; Clarke, Dutt and Rapkin 1997; Davis and Davenport 1999; Clarke, Kornberg, McIntyre, Bauer-Kaase and Kaase 1999; Clarke 2000). Nevertheless, Inglehart and his collaborators have defended such attacks vigorously (e.g. Abramson, Ellis and Inglehart 1997; Inglehart 1997; Abramson and Inglehart 1995; Abramson and Inglehart 1994; Inglehart and Abramson 1994). One such defence is our point of departure for this paper.

A recent series of papers (Clarke, Kornberg, McIntyre, Bauer-Kaase and Kaase, 1999; Davis and Davenport 1999; Inglehart and Abramson 1999) in *American Political Science Review* document a debate over the extent to which value priorities in advanced industrial societies, have become increasingly post-materialist as these societies became increasingly secure. The genesis of our paper was Inglehart and Abramson's (1999) response to

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<sup>1</sup> For example, Inglehart and Abramson (1994, 351) allow that 'period effects' (e.g. inflation and unemployment) may have short term influences on levels of postmaterial values (i.e. that higher inflation and unemployment rates lead to prioritisation of material rather than postmaterial values), Clarke and Dutt (1991) argue that high rates of unemployment actually lead to increases in relative levels of postmaterial values, rather than decreases.

criticism in that debate. In particular, we highlight the problematic nature of Inglehart and Abramson's (1999) conceptualisation and operationalisation of generational value change. Our critique then forms the basis for a more detailed analysis of generational-based value change in Australia, and a subsequent extension to cross-national comparisons through analyses of Australian, and World Values Survey data (Inglehart et al. 2000).

Australia is a highly pertinent case with which to begin investigating Inglehart's thesis, since it has consistently shown comparatively high living standards, wages and levels of physical security in the period following the World War II. If post-materialist value change has not occurred in Australia in the way Inglehart's thesis predicts, as we show, we have a powerful counter-example to the theory. If this "Australian pattern" can be generalised to other countries, as our results suggest it can, we have substantial evidence for a modification of Inglehart's thesis.

While other critics have attacked the validity of Inglehart's 4 item index, we show that, even if – as Inglehart claims – his measure is valid, the expected age/values relationship does not hold in Australia as he suggests it should, nor in several other countries. This suggests the need for a more complex account of value change than that advanced by Inglehart and his followers. We seek to contribute to the debate over value change by advancing an explanation that considers the impact of political institutions and political parties on age/values relationships in advanced industrial nations.

## **Conceptualising and operationalising values and generations**

Inglehart's argument suggests that successive generations will increasingly show postmaterialist value priorities as a result of secular trends toward increased affluence and freedom from external physical threat. Since values are formed in early adolescence and generally remain stable over the lifecourse (Inglehart 1997:34, 46) generation-based value differences can be found by carrying out appropriately constructed cohort analyses of cross-sectional data.

In particular, Inglehart frequently investigates cohort (i.e. generational) differences in values by examining Percentage Difference Indexes (PDI) derived from cross-tabulations of age cohorts by values (e.g. Inglehart, 1997:136; 1990a:85; 1985:507; 1977:32; Inglehart and Abramson, 1994:340). The PDI is the proportion of postmaterialists within a cohort minus the proportion of materialists. The PDI is often graphed against cohort and time to enable

Inglehart to show the level of postmaterial values for each cohort, and consequently to demonstrate, *inter alia*, that younger people in advanced industrialised nations are more postmaterialist than older people. The important methodological point here is that Inglehart typically uses age cohorts to illustrate *generational* based differences in values in a manner consistent with his arguments that cohorts have distinctly different sets of formative experiences that shape their basic value orientations.<sup>2</sup>

Given Inglehart's arguments, operationalising the concept of generation in terms of age cohort has substantial face validity. However, in a recent article in *APSR*, Inglehart and Abramson (1999:672) operationalise age as a continuous variable in regression analyses to model support for postmaterial values. They do so, not only as they state, "because it surely is" a continuous measure, but also in order to maximise its variance (1999:672). Yet this approach does not allow the detection of cohort - for Inglehart 'generational' - differences in value orientations, unless we assume there is a linear secular trend in the emergence of postmaterialist values, associated with, for instance, consistently increasing affluence and the ongoing elimination of threats to physical security.<sup>3</sup> While 'age' is potentially a continuous measure (assuming appropriate measurement strategies), the postmaterialist argument is one about the distinctive formative experiences of generations, understood as specific cohorts (Inglehart 1997:33-45). The theory predicts discontinuities between generations, not a linear age trend in the emergence of postmaterialist values.

The manner in which Inglehart and Abramson (1999) measure value orientations is also problematic. In much of his work on value change, Inglehart measures values with a well known and widely administered 4 item index which asks respondents to choose the two most important aims from a set of two materialist and two postmaterialist options.<sup>4</sup> This short index is

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<sup>2</sup> Inglehart's 'generational shift' thesis also allows for the possibility of a shift back toward materialism (Inglehart and Abramson, 1994:351), for example, in response to sustained periods of economic downturn or major threats to physical safety such as large scale wars.

<sup>3</sup> In his recent work on postmodernisation, Inglehart (1997:11-13) is adamant that social change is NOT linear in this fashion.

<sup>4</sup> The Postmaterialist scale is derived from Inglehart's (1977: 28) four item index, that requires respondents to rank the two most important national goals or aims from a list of four. The question asks, "Here is a list of four aims that different people would give priority.

1 Maintain order in the nation.

2 Give people more say in important government decisions.

3 Fight rising prices.

4 Protect freedom of speech".

If you had to choose among these four aims, which would be your first choice? And which would be your second choice? Postmaterialists are those who choose any combination of responses 2 and 4, while those

usually scored as a three category variable comprised of 'pure postmaterialists' at one extreme and 'pure materialists' at the other, with a 'mixed' category as the midpoint (see for example, Inglehart 1997: 389). Inglehart rarely disaggregates the mixed value orientation category further, although to do so is consistent with the theory of postmaterial value change.<sup>5</sup> As he has previously stated "[T]hough for simplicity of presentation we will usually compare the two polar types, we are dealing with a continuum having numerous intermediate categories" (Inglehart 1981:885). By combining the intermediate categories, Inglehart assumes their similarity, without evidence of this point.

This strategy is somewhat contradictory, because Inglehart and Abramson's (1999) analysis of the relationship between values and age is a response to an article by Davis and Davenport (1999), whose own analysis of the United States found little relationship between value orientations and age. Inglehart and Abramson (1999:672) were critical of Davis and Davenport (1999) for truncating variance, firstly for modelling the 4 item values index as dichotomous variables (representing postmaterialists and materialists), and secondly for operationalising age as birth cohorts in regression analyses. Yet, by scoring the 4 item index for OLS regression analysis as a 3 category dependent variable, Inglehart and Abramson (see 1999:672: Table 4) also truncate variance, in their case, on the dependent variable. In the next section we show that in Australia, and elsewhere, the way in which values are operationalised and analysed has an important impact upon the type of age and values relationship uncovered.

## **Materialism and postmaterialism in Australia: What does the evidence show?**

Despite the widespread international evidence of a generational shift to postmaterialist values, there is a relative dearth of Australian research on generational-based value change. Perhaps the reason for this is that in Australia, unlike many other countries, the relationship between age and values has usually been found to be weak (see Bean and Papadakis 1994: 279-80; Blount 1998:445; Gow 1990:59). We were therefore somewhat surprised to find in their recent article, Inglehart and Abramson (1999:673) including Australia in a list of '28 high-income' countries that exhibit 'stronger relationships between

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choosing any combination of responses 1 and 3 are Materialists. All other responses are usually assigned to the Mixed category.

<sup>5</sup> See for example, Inglehart (1971, 1995: Table 3) and Minkenberg and Inglehart (1989, 96: Table 3) where the four item index is disaggregated into six and four categories respectively.

values and age' than found in the United States of America. Empirical analyses in the article were evidently based upon the 1990-91 World Values Survey (Inglehart et al. 2000). However, claims made about Australia based on these data were clearly erroneous, as an Australian survey was not included in the second wave of the WVS (see Inglehart 1997:393). Inglehart and Abramson (1999:673) were in fact referring to an Australian survey administered in the third (1995-1997) wave of the WVS.

**Table 1: Australian values data from the 4 item index (per cent)**

	1988	1990	1993	1996	1998	1999	2001	1995 WVS
Postmaterialists	12.2	13.0	14.2	18.5	17.8	15.5	15.8	35.0
Mixed	61.0	61.3	64.3	62.3	64.3	65.8	62.1	57.2
Materialists	26.8	25.7	21.5	19.2	17.9	18.7	22.1	7.8
PDI	-14.6	-12.7	-7.3	-.7	-.1	-3.2	-6.3	27.2
n	(1744)	(1979)	(2302)	(1710)	(1822)	(2223)	(1913)	(2014)

Notes: Percentage Difference Index (PDI) is the percentage of postmaterialists minus the percentage of materialists. Ns are weighted for 1993 and 1999 surveys to adjust estimates to be nationally representative.

Sources: *Attitudes to State and Private Welfare, Australia, 1988*; *Australian Election Studies (1990 - 2001)*; *Australian Constitutional Referendum Study (1999)*; *World Values Survey - Australia (1995)*.

Nevertheless, the problematic nature of Inglehart and Abramson's claim about Australia remains. In particular, the estimates of values from the 1995 WVS data diverge markedly from other Australian surveys into this issue. In Table 1 we present data showing the distribution of value orientations in Australia according to the 1995 WVS and other relevant sources. The final column in Table 1 shows the percentage of materialists and postmaterialists in Australia calculated from the 1995 WVS. Other estimates are based on Australian academic survey data collected between 1988 and 2001. The WVS data indicate that 35% of Australians are postmaterialists and approximately 8% materialists, suggesting that Australia is a nation with very high levels of postmaterialism, indeed - a percentage difference index (PDI) of 27.2. However, estimates of postmaterial values from the 1995 WVS data are almost twice as high as those from the 1996 Australian Election Survey (AES), while the proportion of materialists is less than half that shown in the 1996

AES, where the PDI is only -0.7. Further, percentages from the AES and other sources show relatively consistent levels of value orientations. The World Values Survey estimates vary considerably from other sources, well beyond what might be expected from sampling error alone. The percentages in Table 1 provide strong *prima facie* evidence that the 1995 Australian World Values Survey four item index is unreliable. We are therefore very sceptical of claims made about Australia based upon these data.

This finding has wider implications than simply setting the record straight on the Australian case. For much of the second half of the twentieth century, Australians enjoyed living standards and levels of material welfare that were among the highest in the world. In 1950 Australian GDP per capita was the fifth highest in the world (Summers and Heston 1991). Unemployment rates rarely exceeded 2% until the mid 1970s and during the 1950s and 1960s were consistently among the lowest in the world (Gregory 1991). Australian rates of private home ownership remained at 70% or higher for most of the post-war period (Kemeny 1980) ensuring that around 85-90% of older households were free of mortgage obligations (Gruen and Grattan 1993). Australian economic growth rates were also high by international standards until the mid 1970s (on the order of 3-5 percentage points higher than those of the United States, for example) (Gregory 1991). In addition, for much of the twentieth century, Australia had a unique system of institutionalised wage setting in which wage levels were compulsorily adjudicated by Federal and State Tribunals. This system ensured real wage rates that were comparatively high by international standards and a level of wage dispersion or inequality that was comparatively low.

These points are important because they mean that Australia was characterised by internationally high levels of prosperity and economic security for much of the second half of the twentieth century (and much of the twentieth century more generally). Under these circumstances, Inglehart's theory predicts postmaterialist values should be more widespread in Australia than in less affluent societies, and the age-values relationship should be much more pronounced than it is in societies that have not experienced such long periods of economic and physical security, or such high rates of economic growth (Inglehart 1997: 45-47).<sup>6</sup>

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<sup>6</sup> These predictions are derived from Inglehart's arguments about postmodern cultural change, rather than specifically postmaterialist change, but they are justified because the shift to postmaterialist values is a "core element" (Inglehart 1997:35) of postmodernisation.

**Table 2: Value type by age cohorts (per cent)**

	Born between							
	1900-15	1916-25	1926-35	1936-45	1946-55	1956-65	1966-75	1976+
Postmaterialists	10.4	14.1	12.1	15.3	16.1	15.7	17.2	14.4
Mixed	61.7	62.3	62.2	63.2	62.5	63.9	63.9	67.7
Materialists	27.9	23.6	25.7	21.5	21.4	20.5	18.9	17.9
PDI	-17.5	-9.5	-13.6	-6.2	-5.3	-4.8	-1.7	-3.5
n	(365)	(1065)	(1772)	(2074)	(2931)	(2712)	(1682)	(479)

Notes: Percentage Difference Index (PDI) is the percentage of postmaterialists minus the percentage of materialists. Ns are weighted for 1993 and 1999 surveys to adjust estimates to be nationally representative.

Sources: *Pooled Attitudes to State and Private Welfare, Australia (1988)*; *Australian Election Study (1990 - 2001)*; *Australian Constitutional Referendum Study (1999) Data*.

As mentioned above, however, other researchers have found the relationship between postmaterialism and age in Australia to be very weak, while the more credible survey evidence also shows the proportion of postmaterialists to be low (see Table 1). This is *prima-facie* evidence against the Inglehart thesis for at least one (noteworthy) case. We can take the analysis further by considering the age-values relationship in Australia in more detail.

To examine the relationship between values and age we use pooled cross sectional data (Table 2) collected over a much longer period than previous studies (1988 to 1999). Like previous researchers, we also find that the relationship between values and birth cohorts in Australia is very weak, at least when measured with a 3 category dependent variable. While there is evidence of a reduction in the proportion of materialists from the oldest to the youngest cohorts, the pattern among postmaterialists is less clear. The PDI figures show that the second oldest cohort born between 1916 and 1925 is more postmaterialist and less materialist than the 1926-1935 cohort. However, less than three percentage points separate each cohort on postmaterialism for the 1936-45 and younger categories, while the PDI is relatively stable until dropping for the 1966-75 cohort. These are somewhat curious findings. In the light of Inglehart's thesis, we would have expected a clearer break between those born before and after the end of the Second World War.

To conduct multivariate analyses of the age and values relationship, we employ multiple linear regression of a postmaterial values dependent variable with four controls (sex,

education, occupational status and religious denomination) in Table 3. While we have stated above that continuous measures of age are problematic if the aim is to examine the generational basis of value orientations, we use this approach initially to provide a comparable model to the analyses of values in the USA conducted by Inglehart and Abramson (1999). The dependent variable is derived from the 4 item values index, with regression estimates presented for a three category dependent variable (postmaterialists =1; mixed=0.5; materialists=0).

**Table 3: Value orientations, age and social background in Australia (OLS)**

	b	beta	b	beta
Age	-0.0009***	(-0.047)	-0.0005**	(-0.026)
Sex (reference: women)				
Men			-0.0032	(-0.005)
University Degree			0.025**	(0.030)
Professionals			0.041***	(0.050)
<b>Year of Survey</b>				
1988 (referent)				
1990	0.011	(0.013)	0.014	(0.017)
1993	0.041***	(0.051)	0.041***	(0.051)
1996	0.068***	(0.074)	0.064***	(0.070)
1998	0.076***	(0.086)	0.073***	(0.081)
1999	0.060***	(0.072)	0.054***	(0.065)
2001	0.043***	(0.050)	0.035**	(0.041)
Adjusted r-squared		.009		.025

\*\* p<0.01 \*\*\* p<0.0001

Notes: 3 Category Dependent Variable: 1 = Postmaterialists; 0.5 = Mixed 0 = Materialists.

Sources: *Pooled Attitudes to State and Private Welfare, Australia, (1988)*; *Australian Election Studies (1990 - 2001)*; *Australian Constitutional Referendum Survey (1999)*.

Inglehart (1997:149) has stated: “[T]he value change thesis implies that large amounts of intergenerational *change* will be found in countries that have experienced relatively high

rates of economic *growth*". Our results do not support the value change thesis in this regard. As the regression estimates show, the relationship between age and values in Australia is very weak, although the large pooled data set produces highly significant results. In fact, the pattern in Australia resembles the weak relationship found in the USA and Canada (Inglehart and Abramson 1999:673), rather than the strong age effects apparent for many Western European countries (Inglehart 1997:135).

Linear regression is one possible technique for modelling values, but where the outcome variable lacks an unambiguous metric and where the intervals between scores are unknown, linear regression can produce biased results (Long 1997:115). Other modelling strategies are also possible including logit and probit models for ordinal dependent variables, and logit and probit models for unordered polytomous dependent variables. To allow maximum flexibility in examining the relationship between age and values, we next use multinomial logistic regression which treats the categories of the dependent variable as distinct, but imposes no ordering on them. We also use dummy variables to represent birth cohorts in light of Inglehart's arguments about generational-based value change. The dummy variable specification corresponds more closely to the idea of a generation than does the continuous age specification, and allows, among other things, for a shift back toward materialist values under certain circumstances (Inglehart and Abramson, 1994:351). The less restrictive specifications on both independent and dependent variables give us greater scope to find an age-values relationship in the data than the linear regression model does, and also provide a more theoretically convincing operationalisation of the generation concept. In addition, the multinomial model enables us to examine if values measures exhibit an ordinal structure when we regress them on age. On this occasion we model the 4 item values index as both a 3 and 4 category dependent variable. In the latter models the 'mixed' category is broken down into two finer groupings (1=postmaterialists; 2 =1<sup>st</sup> choice postmaterialists; 3= 1<sup>st</sup> choice materialists; 4=materialists).

The logits in Tables 4 and 5 elaborate the relationship between age cohorts and values in Australia. Table 4 shows the likelihood of predicting 'pure postmaterialists', or mixed values versus 'pure materialists'. In Table 5 we model the likelihood of predicting 'pure postmaterialists', 1<sup>st</sup> choice postmaterialists and 1<sup>st</sup> choice materialists as opposed to 'pure materialists' on the basis of the values of our independent variables: age cohorts, sex, tertiary education, professional occupational status and secularity. As these are pooled data, we also control for the year each survey was administered. As with the linear regression analysis, we find very weak, and in this case non-significant effects for values with the 3 category dependent variable (Table 4).

**Table 4: Values and age cohorts in Australia (Logits)**

	'Pure' Postmaterialists vs 'Pure' Materialists	'Mixed' vs 'Pure' Materialists
Constant	-1.14***	.71***
<i>Age Cohorts</i>		
1976+	.06	.25
1966-1975	.22	.19
1956-1965	.12	.14
1946-1955	.15	.10
1936-1945	.18	.12
1926-1935	-.15	-.06
1900-1925 (referent)	0	0
<i>Sex (Women)</i>		
Men	-.03	-.05
<i>Education (non-tertiary)</i>		
University Degree	.28**	.06
<i>Occupational status (other)</i>		
Professionals	.44***	.12
<i>Religion (religious denomination)</i>		
Secular	.88***	.31***
<i>Year of Survey</i>		
1988 (referent)	0	0
1990	.16	.06
1993	.41**	.29***
1996	.67***	.31***
1998	.76***	.44***
1999	.54***	.39***
2001	.35**	.14
n (13080)		

\* p<0.05 \*\* p<0.01 \*\*\* p<0.001

Sources: *Pooled Attitudes to State and Private Welfare, Australia, (1988)*; *Australian Election Studies (1990 - 2001)*; *Australian Constitutional Referendum Survey (1999)*.

**Table 5: Values and Age Cohorts in Australia (Logits)**

	'Pure' Postmaterialists vs 'Pure' Materialists	'First Choice' Postmaterialists vs 'Pure' Materialists	'First Choice' Materialists vs 'Pure' Materialists
Constant	-1.14***	-.36**	.30**
<i>Age Cohorts</i>			
1976+	.06	.56**	.01
1966-1975	.22	.40**	.04
1956-1965	.12	.33**	.02
1946-1955	.15	.30**	-.05
1936-1945	.18	.27**	.02
1926-1935	-.15	.01	-.10
1900-1925 (referent)	0	0	0
<i>Sex (Women)</i>			
Men	-.03	-.08	-.02
<i>Education (non-tertiary)</i>			
University Degree	.28**	.12*	.00
<i>Occupational status (other)</i>			
Professionals	.44***	.15	.08
<i>Religion (religious denomination)</i>			
Secular	.88***	.40***	.23**
<i>Year of Survey</i>			
1988 (referent)	0	0	0
1990	.16	.13	.04
1993	.41**	.44***	.18
1996	.67***	.40***	.25**
1998	.76***	.54***	.36***
1999	.54***	.40***	.39***
2001	.35**	.12	.16
n (13080)			

\* p&lt;0.05 \*\* p&lt;0.01 \*\*\* p&lt;0.001

Sources: Pooled Attitudes to State and Private Welfare, Australia, (1988); Australian Election Studies (1990 - 2001); Australian Constitutional Referendum Survey (1999).

However, in Table 5, all cohorts born from 1936 onwards are significantly more likely than the oldest cohort to be '1<sup>st</sup> choice postmaterialists' rather than 'pure materialists'. Further, the magnitude of these cohort effects declines monotonically with age – a pattern that Inglehart usually finds for 'pure postmaterialists'.

It appears that in Australia there is an age basis to value orientations after all, but it is a rather different relationship to that typically found in advanced Western nations. These results suggest that it may not always be appropriate to assume that postmaterial values should be measured as a 3 category continuous variable, with materialists through mixed to postmaterialists. They also suggest that we should not assume that values – at least those based on the 4 item index – form a continuum. Our findings also raise a question. If such a relationship holds in Australia, is it also apparent elsewhere?

## **Age and values in cross-national context**

To test whether the 'Australian pattern' of age effects exists in other countries, we employ a series of multinomial logistic regression models with the 4 category values dependent variable regressed upon birth cohorts.<sup>7</sup> The data are from the World Values Survey (1981-1997) and from our preferred Australian sources. To test if there are statistically significant age based differences between 'pure' and 'first choice' postmaterialists cross nationally, we again regress the four category values variable on birth cohorts. However, in this instance 'pure postmaterialists' are coded as the reference category. We pool the WVS data and control for the year surveys were administered for each country. Only estimates for 'first choice' postmaterialists compared with 'pure postmaterialists' are presented in Tables 6 and 7. The multinomial estimates (logits) show that while pure postmaterialists tend to be younger than first choice postmaterialists in Austria, Belgium, Britain, France, West Germany, the Netherlands, Sweden, Switzerland, Finland, Italy, Ireland, and Spain, no significant ( $p < 0.05$ ) age differences between 'pure' and 'first choice' postmaterialists were found for Canada, Denmark, Iceland, Japan or Norway, and only one significant cohort for Australia and the USA.

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<sup>7</sup> World Values Survey Data from countries surveyed on more than one occasion are pooled in Tables 6 – 9.

**Table: 6 Advanced nations with significant age and values relationships (Logits)**

	West Germany	Netherld	France	Belgium	Italy	Austria	Sweden	Finland	Switz	Britain	Ireland	Spain
Constant	.69***	.64***	.37	1.01***	1.13***	.59**	1.60***	1.16***	1.45***	1.24***	1.47***	1.15***
<i>Age Cohorts</i>												
1976-80	-.57	n/a	n/a	n/a	n/a	n/a	-.16	-1.77**	-1.29**	n/a	n/a	-1.52**
1966-75	-1.10***	-.50	-.73*	-.67**	-.75**	-.94**	-.73*	-1.29**	-.83**	-.85**	-.98**	-1.40***
1956-65	-1.14***	-.65**	-.50*	-.64**	-.65**	-.86**	-.75**	-1.11**	-.91***	-.56**	-.76**	-1.19***
1946-55	-.89***	-.57*	-.65**	-.73***	-.74**	-.76**	-.88**	-1.06**	-.93***	-.52*	-.57*	-.97***
1936-45	-.55**	-.51*	-.18	-.40*	-.29	-.62*	-.93***	-1.21**	-.93***	-.26	-.34	-.71**
1926-35	-.22	-.68*	-.39	-.34	.18	.02	-.59	-0.96*	-.51	-.75**	-.71*	-.53*
1900-25 (referent)	0	0	0	0	0	0	0	0	0	0	0	0
n	(4225)	(2032)	(2096)	(3422)	(3217)	(1410)	(2878)	(1413)	(2422)	(2586)	(2121)	(7011)

\* p&lt;0.05 \*\* p&lt;0.01 \*\*\* p&lt;0.0001

Dependent variable for Multinomial Logistic regression analysis: 'first choice' postmaterialists = 1; 'first choice' materialists = 2; 'pure' materialists = 3; 'pure' postmaterialists = 4. Only estimates for 'first choice' postmaterialists compared with reference category of 'pure' postmaterialists are presented.

Source: *Pooled World Values Survey (1981-1998)*;

**Table 7: Advanced nations with non-significant age and values relationships (Logits)**

	Australia	Canada	Denmark	Iceland	Japan	Norway	USA
Constant	0.64***	0.48**	-.05	0.49	1.17**	0.54*	.40**
<i>Age Cohorts</i>							
1976-80	.42*	n/a	n/a	n/a	n/a	.68	-.96
1966-75	.06	.12	.18	-.37	.57	.12	-.15
1956-65	.10	.28	-.13	-.28	.10	.09	-.22
1946-55	.05	.14	-.19	-.50	-.21	-.27	-.41*
1936-45	.05	.09	-.11	-.38	.62	.06	-.08
1926-35	.17	.16	.13	.01	-.10	.18	.16
1900-25 (referent)	0	0	0	0	0	0	0
n	(13080)	(2816)	(2025)	(1572)	(1727)	(3443)	(3223)

\* p<0.05 \*\* p<0.01 \*\*\* p<0.001

Dependent variable for Multinomial Logistic regression analysis: 'first choice' postmaterialists =1; 'first choice' materialists = 2; 'pure' materialists = 3; 'pure' postmaterialists = 4. Only estimates for 'first choice' postmaterialists compared with reference category of 'pure' postmaterialists are presented.

*Source: Pooled World Values Survey (1981-1998); Australian Data: Pooled Attitudes to State and Private Welfare, Australia, (1988); Australian Election Studies (1990 - 1998); Australian Constitutional Referendum Survey (1999)*

While age is related to value orientations in many countries, we have shown that in several countries it is problematic to assume that the relationship between age and values is linear. Yet an important question remains, why are 'first choice postmaterialists' younger than materialists, while 'pure postmaterialists' are not in several countries? To address this question we analyse Australian and World Values Survey data further. By disaggregating the 4 item index into all possible combinations of value choices, we examine a values variable with 12 attributes (i.e. 4 choices \* 4 choices less combinations of the same 4 choices on the diagonal). A continuous measure of age is regressed upon dummy variables representing 10 values combinations (i.e. the two pure materialists categories are our reference category), with OLS regression, controlling for the years surveys were administered (Tables 8 and 9).

**Table 8: Deconstructed 4 item postmaterialism index and age (OLS regression)**

	West Germany	Netherld	France	Belgium	Italy	Austria	Sweden	Finland	Switz	Britain	Ireland	Spain
Constant	51.8***	45.4***	45.0***	48.3***	45.1***	55.0***	47.8***	48.7***	49.6***	47.7***	46.2***	48.6***
Value Choices												
<i>Say &amp; Speech (P)</i>	-14.6***	-7.7***	-7.6***	-8.8***	-9.0***	-14.9***	-8.1***	-10.2***	-10.9***	-9.5***	-10.5***	-15.4**
<i>Speech &amp; Say (P)</i>	-15.5***	-9.2***	-9.9***	-9.4***	-13.0***	-15.6***	-8.1***	-11.8***	-11.0***	-7.7***	-9.5***	-15.3***
Say & Order	-9.8***	-6.9**	-4.1	-3.6*	-7.4***	-9.4***	-5.5***	-8.4***	-4.8*	-10.2***	-11.5***	-8.9***
Say & Prices	-10.0***	-5.8*	-6.4***	-5.5***	-6.9***	-6.1**	-6.5***	-8.6***	-5.2**	-6.9***	-6.5***	-9.6***
Speech & Order	-9.5***	-7.5***	-3.3*	-6.3***	-6.4***	-13.0***	-6.4***	-7.4**	-6.8***	-3.9*	-4.2*	-9.8***
Speech & Prices	-7.4***	-8.5***	-6.5***	-7.3***	-6.9***	-9.8**	-11.7***	-1.3	-10.7***	-2.3	-4.7*	-10.6***
Order & Say	-5.1***	-0.8	-2.9	-4.5**	-4.2**	-5.7**	-0.9	-3.2	0.8	-4.6**	-6.2***	-5.3***
Order & Speech	-5.3***	0.5	1.4	-1.4	-3.8**	-5.3**	-1.0	1.1	-0.3	-0.3	-2.0	-7.5***
Prices & Say	-5.3**	-6.9**	-6.8**	-4.5**	-2.8*	-12.3**	-8.1***	-7.9**	-5.8**	-3.3*	-5.7***	-4.4***
Prices & Speech	-11.4***	-2.7	-3.9**	-4.6***	-1.0	-6.1*	-2.4	-5.1	-4.3**	1.2	-1.6	-8.5***
<i>Order &amp; Prices (M)</i>	0	0	0	0	0	0	0	0	0	0	0	0
<i>Prices &amp; Order (M)</i> (referent)	0	0	0	0	0	0	0	0	0	0	0	0
R-squared (%)	9.0	5.7	4.4	3.6	5.9	9.5	4.4	7.0	6.7	4.1	5.0	10.0

\* p<0.05 \*\* p<0.01 \*\*\* p<0.0001. Italicised values choices are 'pure postmaterialists' (P) and 'pure materialists' (M) respectively.

Source: Pooled World Values Survey (1981-1998)

**Table 9: Deconstructed 4 item postmaterialism index and age continued  
(OLS regression)**

	Australia	Canada	Denmark	Iceland	Japan	Norway	USA
Constant	47.8***	41.9***	45.2***	39.9***	43.0**	47.2***	49.2***
Value Choices							
<i>Say &amp; Speech (P)</i>	-2.4***	-0.7	-7.7***	-6.0***	-3.9*	-8.6***	-4.0**
<i>Speech &amp; Say (P)</i>	-1.3	-0.8	-8.2***	-6.3**	-3.8	-9.8***	-4.3**
Say & Order	-3.2***	-3.7**	-7.8***	-5.1**	-5.7**	-9.2***	-1.3
Say & Prices	-3.2***	-1.6	-8.7***	-7.2***	-5.5***	-9.2***	-3.2*
Speech & Order	1.4	0.2	-4.7**	3.4	1.8	-10.3***	-0.2
Speech & Prices	-1.9*	-2.8	-7.5*	-2.7	-4.0	-10.4***	-1.7
Order & Say	0.01	1.4	-2.2	-1.7	-4.2	-5.3***	-0.8
Order & Speech	2.9***	2.2	-0.3	4.0**	2.4	-3.0***	0.2
Prices & Say	-3.6***	-1.0	-9.7**	-10.8***	-6.3***	-7.6**	-3.6*
Prices & Speech	0.3	2.5	-2.6	0.6	-2.0	-1.0	-0.8
<i>Order &amp; Prices(M)</i>	0	0	0	0	0	0	0
<i>Prices &amp; Order (M)</i> (referent)	0	0	0	0	0	0	0
Adj R-squared (%)	1.5	0.9	3.9	7.4	3.6	4.7	.09

\* p<0.05 \*\* p<0.01 \*\*\* p<0.0001. Italicised values choices are 'pure postmaterialists' (P) and 'pure materialists' (M) respectively.

Source: Pooled World Values Survey (1981-1998); Pooled Attitudes to State and Private Welfare, Australia, (1988); Australian Election Studies (1990 - 1998); Australian Constitutional Referendum Survey (1999).

Some readers may find our analytic decision to regress age on values counterintuitive. This approach seems to reverse the normal causal ordering for these variables. However, we are not assuming a causal relationship between age and values in this case, rather we are merely interested in establishing whether there are age differences between different values combinations. This approach allows us to estimate if there are significant age differences for various values combinations, compared to a 'pure' materialist reference category (i.e. the 'fight rising prices' and 'order in the nation' combination).

In Australia, those choosing values combinations that include 'more say in important government decisions' tend to be younger than the reference category, while those choosing combinations that include 'order and speech' are older. Again, is this 'Australian

pattern' also apparent in other countries? The regression results show a similar pattern for Iceland, and, to an extent also for Denmark, Japan, Canada and the USA (Table 9). In general, this pattern emerges in countries where the relationship between age and values is relatively weak – where as we have seen above in Table 7, differences in age between first choice and pure postmaterialists are non-significant.

Flanagan (1987:1305) has claimed that the 'order in the nation' response is not a measure of materialism at all, but an authority item. While to an extent 'order in the nation' taps concerns over physical security, on the face of it, this item bears no relation to economic aspects of materialist values. Perhaps 'order in the nation' measures personal anxiety in relation to crime, particularly among older citizens. If this is the case, it is an individual level measure of physical security rather than a measure of the security of the nation as a whole, and not unexpectedly, is more likely to be chosen by older rather than younger citizens.

In countries where the age difference between 'pure' and 'first choice' postmaterialists is not statistically significant (Table 7), younger respondents tend to choose value combinations that include the 'more say in important government decisions' item (Table 9). The 'more say' response may be a proxy for the pro-democratic values (Warwick 1998:586) prominent among the young. Such values are typical among new social movement supporters, such as the environmental, peace and anti-nuclear movements (Inglehart, 1990b). However, in certain countries such as Australia, Denmark, Iceland, Japan and Norway and the USA (Table 9), younger people are as likely to combine 'more say' with the economic measure, 'fight rising prices' as they are to be 'pure' postmaterialists. Perhaps this is because many younger people are less secure financially. They therefore lean toward economic, materialist value priorities, such as concern over 'rising prices', but combine this with the pro-democratic, pro-participation 'more say' item (Warwick 1998:586), to a greater extent than the authority measure 'order in the nation' (Flanagan 1987). Value choices involving the 'more say' item, to an extent, reflect a sense among younger citizens of being locked out of political decision making, as baby boomer elites continue to hold the reins, politically and economically. Nevertheless, this does not explain why such a pattern only appears in some countries.

## Polities, parties and postmaterialism

Our explanation is necessarily tentative, and by no means explains all cross national differences. That caveat aside, we argue that politically influential, participatory-democratic style parties, such as Green parties, influence responses to the short values index. In countries with strong two party systems, where new politics parties have not emerged or are weak, for example, where electoral systems hinder the rise of small parties and independents, the interests of younger voters may be underrepresented. Prominent new politics parties highlight issues that are of greater concern to younger people, such as the environment. New politics parties tend to emerge from new social movements, and like NSMs embrace a participatory democratic style of decision making. They not only advocate participation (i.e. 'more say'), but also emphasise 'free speech'. Therefore, the presence of relatively influential new politics parties may increase the value placed upon the other postmaterialist item - 'free speech' - particularly among younger, highly educated, politically interested and articulate citizens that Inglehart (1990b: 44) refers to as 'cognitively mobilised'. In doing so, the presence of relatively influential new politics parties may actually increase the proportion of younger postmaterialists in a nation.

New politics or left-libertarian parties (Kitschelt, 1990; Müller-Rommel, 1990) receive strong support in countries such as Germany, the Netherlands, France, Italy and Belgium where the 'normal' age/values relationship exists. The fact that most of these countries have multi-party systems is significant here. Inglehart and others state that the rise of postmaterial values fosters the emergence of new politics parties (Inglehart, 1997:266; Dalton, 1996:192). However, as we have shown, in countries where major parties dominate, the relationship between postmaterial values and age tends to be weak. Major or two party systems may attenuate the rise of postmaterialist values among the young. Where political systems allow the establishment of small parties, green parties often emerge (Inglehart 1997:243-4). Green politicians (along with new social movements) increase levels of postmaterial values by highlighting, and giving legitimacy to new politics issues. While the relatively affluent and safe postwar period underlies the shift toward postmaterialism in the West (Inglehart, 1977), the presence of green parties hastens that shift. The relationship between postmaterial value orientations and new political parties is dynamic, resembling a feedback loop, and acts like a turbo charger. Postmaterial values not only give rise to green parties, but by highlighting quality of life issues, these new parties act as socialising agents that influence the formation of value priorities, particularly among those in their 'formative years'.

**Figure 1: Age/values relationship by polity**

		<b>Polity</b>	
		Major Party	Multiple Party
<b>'Stronger'</b>	<i>Italy</i> (2.2)		<i>Austria</i> (4.9)
	Spain		<i>Belgium</i> (13.3)
			<i>France</i> (1.2)
			<i>Finland</i> (5.5)
			<i>W. Germany</i> (7.2)
			<i>Ireland</i> (1.2)
			<i>Netherlands</i> (7.3)
			Norway
<b>VALUES/AGE</b>			
<b>'Weaker'</b>	Australia		Canada
	Britain		<i>Denmark</i> (2.8)
	USA		Iceland
			Japan
			<i>Sweden</i> (4.6)
			<i>Switzerland</i> (5.0)

Note: Strength of Values and Age relationship is based on adjusted r-squared from OLS regression of postmaterial values on age cohort dummy variables. A 'Strong' relationship is based on  $\geq 2.7\%$  of variance explained the median of adjusted r squared for these countries. Major Party systems defined as 2 parties holding  $>80\%$  seats in national legislature. Italicized countries signify the presence of Green politicians in legislative houses. Figures in parentheses represent the proportion of Green seats in legislative houses.

Sources: PoliSci.com: <http://www.polisci.com/almanac/nations.htm>

European Federation of Green Parties:

<http://utopia.knoware.nl/users/oterhaar/greens/europe/europe.htm>

In multi party polities such as Belgium, France, Germany and the Netherlands, strong age/values effects abound, but where such parties are absent or have limited influence, such as in the USA, Britain and Australia, the relationship between age and values tends to be weaker (see Figure 1; Appendix II). Without the formal political representation and legitimacy offered by parties that express postmaterial concerns, less emphasis is placed upon quality of life issues in the political arena, and consequently citizens have less exposure via mass media to such issues. As new politics parties appeal disproportionately to younger voters, the formation of postmaterial value orientations among younger

citizens may be impeded (or at least, not 'boosted'), in countries where such parties are absent or weak.

## Conclusions

This research has important implications for the analysis of value change, not only in Australia, but also internationally. We recognise that our mixed cross-national findings regarding the relationship between values and age require further investigation and explanation. However, they clearly highlight that care is needed when measuring postmaterial values, and that a simple linear relationship between age and value orientations should not be assumed. Caution is also required when operationalising age as a continuous measure to model 'generational' change, as this approach is problematic on both conceptual and methodological grounds. If there are clear generational bases to materialist and postmaterialist value orientations, as Inglehart's thesis proclaims, cohort measures are conceptually preferable to quantitative measures of age, that typically imply simple linear trends between age and values.

We have tried to demonstrate the importance of green parties to the process of value change. The presence of new politics parties in a given country - particularly green parties - may actually strengthen the association between age and postmaterial values, by 'boosting' the numbers of young postmaterialists. The success of such parties is, of course, to a large extent determined by the political system extant in any given country, as Inglehart (1997:243-4) puts it 'environmentalist parties have begun to emerge in many societies in which the electoral system does not tend to strangle new parties'. Postmaterial issues gain political legitimacy, and greater salience through the mass media, when green parties gain parliamentary representation. Green parties are not only supported by younger voters, as Inglehart and others have shown, once elected, they are also able to attract new voters, particularly younger voters. In addition to environmental issues, green parties also highlight social justice issues, such as womens', gay and lesbian rights, and support for ethnic minorities (Inglehart 1997:245), once again, issues that attract younger citizens. The likelihood of younger people developing postmaterial values in countries with strong green parties, may therefore be greater than would be the case from generational replacement alone. Green parties legitimate postmaterial issues such as 'freedom of speech', and encourage their supporters to have 'more say in government', precisely the type of participatory norms that appeal to younger citizens (and that also may increase the proportion of postmaterialists detected in surveys through the short

values index). If we are correct, institutional structures and political parties should not be ignored, on the contrary, they must be given far greater prominence in theories of postmaterial value change internationally.

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## Appendix I: Data

Collection of postmaterial values data is a relatively recent phenomenon in Australia, at least compared to European countries. The first administration of Inglehart's questions occurred in 1984 with the advent of the National Social Science Survey (Kelley, Cushing and Heady 1987). The extended 12 item version of Inglehart's postmaterialist values battery was included in the 1984 NSSS, with respondents asked to rate 16 national aims from most to least important, while in 1987, the advent of the Australian Election Study series (1987-1998) saw the introduction of the more common four item values index.

The 4 item index questions require respondents to rank the two most important national goals or aims from a list of four. As the rating and ranking questions from the 1984 NSSS and the AES surveys are essentially different, comparable cross sectional data are available for a fifteen year period only – 1987, 1988, 1990, 1993, 1996, 1998, 1999 and 2002 (McAllister and Mughan 1987; Jones et al. 1990; Jones et al. 1993; Papadakis 1993; Jones et al. 1996; Bean et al. 1998; Gow et al. 2000; Bean et al. 2002). However, the 1987 AES values responses produced large proportions of inconsistent answers and consequently a high degree of missing data, so we omit them from our analyses. The Australian data used in these analyses therefore span the period 1988 to 2002.

We also use World Values Survey data (Inglehart et al. 2000) on which much of Inglehart's research is based. These data were collected in three waves, the first between 1981 and 1984, the second between 1990 and 1993 and the third between 1995 and 1998. Not all countries were surveyed for all waves and in some instances, relevant variables were unavailable in some surveys. For example, an Australian WVS was administered in 1981 but did not include Inglehart's value orientation questions.

SAS Version 8 is used for all analyses. We do not replace missing data. By default the SAS System regression procedures used above - PROC REG, PROC LOGISTIC and PROC CATMOD - employ listwise deletion of missing cases.

All data used in the analyses above were obtained from the Social Sciences Data Archives, Research School of Social Sciences at the Australian National University, Canberra.

## Appendix II: Strength of relationship between age and postmaterial values (adjusted r-squared \* 100)

### 'Stronger' age/values relationships

	Austria	Belgium	Finland	France	W. Germany	Ireland	Italy	Netherlands	Norway	Spain
Survey year	1990	1990	1996	1990	1997	1990	1990	1990	1996	1996
adj. r <sup>2</sup>	8.1	4.0	3.6	2.6	7.8	4.7	5.8	6.7	3.1	8.3

### 'Weaker' age/values relationships

	Australia	Britain	Canada	Denmark	Iceland	Japan	Sweden	Switzerland	USA
Survey year	2001	1990	1990	1990	1990	1995	1996	1996	1995
adj. r <sup>2</sup>	0.4	2.4	0.2	1.4	1.1	0.4	0.9	1.7	0.5

Notes: Age/values relationship assessed by regressing 3 category values variable on age cohorts with OLS regression. Median adjusted r-squared for all countries = 2.6%. Countries with 2.6% or more of adjusted r-squared are deemed to have a 'stronger' age/values relationship. Data are from most recent surveys that contain relevant variables.

Sources: *Pooled World Values Survey (1981-1995/7)*; *Pooled Attitudes to State and Private Welfare, Australia, (1988)*; *Australian Election Studies (1990 - 1998)*; *Australian Constitutional Referendum Survey (1999)*.