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Trends in Indigenous and Non-Indigenous Multidomain Wellbeing: Decomposing Persistent, Maturation, and Period Effects in Emerging Adulthood

Philip D. Parker*

Philip.parker@acu.edu.au

*Institute for Positive Psychology and Education & The Australian Centre for Indigenous Thriving,
Australian Catholic University*

Gawaian Bodkin-Andrews

Gawaian.Bodkin-Andrews@uts.edu.au

Centre for Advancement of Indigenous Knowledge, University of Technology Sydney

Rhiannon B. Parker

r.b.parker@unsw.edu.au

Centre for Social Health Research, University of New South Wales

Nicholas Biddle

nicholas.biddle@anu.edu.au

*Centre for Aboriginal Economic Policy Research,
ANU Centre for Social Research and Methods
Australian National University*

We explore whether disadvantage exists in domain specific happiness with Indigenous youth of Australia. Data were collected from 52,270 Australian's, aged 15-28 years, 4% of whom were Indigenous, and came from four birth cohorts between the years 1997-2013. Random and fixed effects decomposed differences in wellbeing into persistent (present at the earliest wave and consistent over time), maturation (changes over age), and period (changes in response to a particular year) components. Results suggested that happiness differences were small to moderate but favored non-Indigenous groups. There were small, persistent differences in happiness with social and future prospects and developmental differences for happiness with life and government. Period effects were observed for happiness with the government. This research reveals that a nuanced approach to Indigenous wellbeing disadvantage is needed including not just a multi-dimensional approach but also one that is sensitive of the means by which disadvantage may emerge.

Keywords: Indigenous psychology; wellbeing; happiness; human development; context

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*Corresponding Author: Dr. PHILIP D PARKER

Associate Professor | Institute for Positive Psychology and Education

Faculty of Health Sciences^{SEP}, Australian Catholic University

25a Barker Road, Strathfield NSW 2135 Locked Bag 2002, Strathfield NSW 2135 E: philip.parker@acu.edu.au

Whatever the form or constitution of government may be, it ought to have no other object than the general happiness. When, instead of this, it operates to create and increase wretchedness in any of the parts of society, it is on a wrong system, and reformation is necessary.

Thomas Paine, *The Rights of Man*, 1791

The American and French revolutions ushered in a new form of government; one that saw the pursuit, protection, and maintenance of citizens' happiness as its primary role (Radcliff, 2013). While this has often been interpreted in the form of objective wellbeing, governments, particularly in the UK, have been increasingly interested in rigorously recording the subjective happiness of society and its constituent parts (e.g., ONS, 2016). In this new era it has become common for scientists interested in the macrocontext of happiness to quote the first sentence of Paine above and, with this, to consider how society should be structured, policed, governed, and cultivated (Radcliff, 2013). Yet it is the second sentence from Paine, where the critical need to facilitate happiness for all groups in society is noted, that is the motivation for the current research. We argue that the challenge for society is not just to conduct a simple utilitarian calculus on whether the amount of happiness and wellbeing is being maximized as a whole but rather to evaluate happiness at all levels of society and across all social groupings. In many Western countries Indigenous and First Peoples and are repeatedly placed at risk of lower objective and subjective wellbeing.

The current research uses a contextual view of human development as promoted by psychologist Urie Bronfenbrenner (1979) and sociologist Glen Elder (1998) to explore issues of Indigenous wellbeing. These theories focus research attention on the interlocking contexts that individuals are subject to and are agentic forces within. This includes contexts that range from macro to minor context as well as temporal and historical contexts. We focus on individuals aged 15-30, broadly identified as extended adolescence or emerging adulthood, as this is a critical stage in which decisions made and actions taken by the individual may have greater impact on lifelong outcomes than any other developmental period (Steinberg, 2014). The research compares Indigenous¹ and non-Indigenous Australian youth using four birth cohorts followed longitudinally from the age of 15, with data collected from 1997 to 2013. With this data we consider the degree to which Indigenous and non-Indigenous youth differ in happiness with general, social, future orientated, and government; distinguishing between differences that are persistent (i.e.,

¹ We acknowledge that there is considerable debate as to what is the most appropriate English language label to respectfully represent the immense diversity of Aboriginal and Torres Strait Islander peoples, communities, clans, and nations found within Australia (Dudgeon & Walker, 2015). For this paper, we are utilising the label of 'Indigenous Australian' to remain consistent with most existing academic research, but ask that the readers recognise that this label is a poor reflection of 250+ language groups found across Australia.

remain stable across the developmental period of interest), change with maturation, or are associated with particular points in time.

The Australian Context

When attempting to understand the health and wellbeing of Indigenous Australian peoples and communities, a sole emphasis on Western based theory and evidence should be considered problematic. This is particularly apparent within broad governmental reporting on ‘Indigenous disadvantage’ as it is often framed within individualistic measures that have been argued to continually portray Indigenous Australians in simplistic and deficit oriented frameworks (Smallwood, 2015). For example, within the 7th report on overcoming Indigenous Disadvantage (SCRGSP, 2016), it was found that, while there has been improvement across some outcomes such as education, employment, and infant mortality, other areas worsened, particularly for mental health and social wellbeing. This included higher levels of psychological distress for adults (5% increase from 2004-5 to 2014-15), hospitalizations from self-harm (56% increase from 2004-5 to 2014-15), substance misuse (23% increase from 2002 to 2014-15), and adult imprisonment rates (77% increase from 2000 to 2015). Within the SCRGSP (2016) report, Indigenous Australians, when compared to non-Indigenous Australians, are 2.6 times more likely to suffer from high levels of psychological distress, and to be hospitalized for self-harm, and twice as likely to die from suicide.

The persistency of these findings has led a large number of Indigenous Australian scholars to critique both research and policy for its inability to accurately engage with the diverse contextual complexities of Indigenous Australian peoples’ and communities’ epistemologies, ontologies, and histories (e.g., Atkinson & Atkinson, 2017; Aitken & Wareham, 2017; Dudgeon & Kelly, 2014). It can be argued that within Western psychological approaches there is ongoing blindness of the systemic and structural policy limitations that may be detrimental to Indigenous peoples and communities (Maddison, 2012; Smallwood, 2015). We argue here that, given the critical nature of Australian Indigenous disadvantage, research on this topic should be a core concern for developmental science, and society as a whole, rather than being relegated to a niche position. In particular, investigation of these issues balances individualist focus on psychological processes and acknowledges social contexts as a critical causal agent (Bronfenbrenner, 1979). In addition, knowledge of these inequalities in wellbeing and how they develop may be beneficial to the field as a whole by providing insights into the mechanisms that work to marginalize certain groups.

Models of wellbeing

There is a broad range of proposed mechanisms in the social sciences for how wellbeing develops. These range from top-down, individual, and interpersonal mechanisms, which largely hypothesize no group differences, to bottom-up, contextual mechanisms, which highlight a range of persistent and transitory mechanisms that may lead to differences between groups in wellbeing (Radcliff, 2013). Top-down models of wellbeing focus on the intra-psychic factors that may pre-dispose an individual toward or away from happiness regardless of context. This is contrasted with bottom-up approaches, which focus on the accumulation of positive or negative events across multiple life-domains where contextual factors are a major driving force in wellbeing (Lybournirsky, 2001). We consider top-down mechanisms before considering bottom-up research and theory. However, we must first define what we mean by wellbeing, a term that suffers from definitional confusion. Here, we focus on wellbeing as happiness or satisfaction with an individual's life or life prospects either generally or in relation to a particular socially valued life domain. We consider happiness not as a mood state but as synonymous with life satisfaction. The focus on happiness with, rather than satisfaction with, is due to the former terms greater familiarity with young people (Tomyn, Tyszkiewicz, & Cummins, 2011). Regardless, empirical research suggests that participants do not distinguish as different the items "how satisfied are you with your life so far" and "how happy are you with your life so far" with a p-value for the log-likelihood ratio test of the difference between these two wordings of $p = .956$ (Tomyn, Tyszkiewicz, & Cummins, 2011).

Top-down models. Using a top-down approach, research has suggested that there is no difference in happiness between Indigenous and non-Indigenous youth (Tomyn, Fuller-Tyszkiewicz, & Norrish, 2013). However, this assessment was made on the basis of invariance testing using fit indices (used to overcome sample size sensitivity) rather than fit statistics (providing traditional p-values) as criteria. From the Tomyn et al. (2013) paper we were able to approximate the Cohen's d for the difference in wellbeing between their Indigenous and their non-Indigenous, 'at risk' sample which was $d = .17$ ($p < .001$). Research that argues group differences are non-existent or small tends to use homeostasis theory, which proposes that wellbeing centers on stable biologically determined set-points, regardless of personal or contextual circumstances (Cummins, 2013). This theory does not preclude change in response to life events and research has demonstrated that factors like unemployment can alter wellbeing set-points (Lucas, Clark, Georgellis, & Diener, 2004). Should these factors differ systematically between Indigenous and non-Indigenous people, differences in wellbeing may emerge even in the presence of homeostasis theory.

A complementary argument is that of range effect (Veenhoven & Ruut, 1991). Range effects theory proposes that wellbeing levels are set not just by biology but also by context. However, this context is considered to be at the microsystem level in that individuals assess what they have against proximate peers (Frey & Stutzer, 2010). Thus, there is no reason to suspect a difference in wellbeing if Indigenous youth compare themselves to other Indigenous youth (or, for that matter, non-Indigenous youth with similar levels of material wellbeing). This aligns with the Easterlin paradox which claims that there is no correlation between economic growth and happiness because people form their subjective wellbeing on the basis of local frames-of-reference (i.e., happiness is based on comparisons with immediate peers) that adjust as the context for that comparison changes (Easterlin, 1974). However, recent evidence has shown that, when using changes in income and log-linear models, the relationship between income and wellbeing is much stronger at both an individual ($r \approx .20-30$) and country-aggregate level ($r = .74$; Diener & Biswas-Diener, 2008; Kahneman & Deaton, 2010; Sacks et al., 2012). Further, adaptation to increased income appears to be stronger in relation to mood states compared to more global assessment like those we focus on here (Kahneman & Krueger, 2006). A recent paper using twins data (and hence controlling for genetic differences) has shown a strong positive association between log income and happiness ($\beta = .72$; Li, Liu, Ye, & Zhang, 2011). The relationship between context and wellbeing may depend on what group is under investigation, with suggestions that the relationship between contexts and wellbeing may be strongest in vulnerable groups. Indeed, Biswas-Diener and Diener (2009) found that the relationship between income and happiness in the slums of Calcutta was strong ($r = .53$) and remained strong even when controlling family and friendship satisfaction ($r = .52$). Further, Biddle (2015) showed that there is a relationship between income and happiness for Indigenous males living in non-remote areas ($\beta = .42$), but a no association for females and for both sexes in remote Australia.

Bottom-up models. Top-down models need not suggest that long-term changes in wellbeing cannot occur. Lyubomirsky (2001) has noted a range of cognitive processes and intra-psychic factors that are aligned with wellbeing. While noting that these factors give credence to set-point or set range and while acknowledging the high heritability coefficients found for happiness (i.e., top-down processes), Lyboumirsky (2001; see also Lyubomirsky, Sheldon, & Schkade, 2005) suggests that this doesn't mean that changes in circumstances for an entire group cannot subsequently affect their wellbeing.

Likewise, we suggest that the macrocontext has an effect on happiness and, to the degree that the macrocontext is different for Indigenous and non-Indigenous youth, has an effect on group differences. For example,

there is a consistent theme within much Indigenous scholarly research which suggests that broader socio-political contexts continually threaten and/or silence the very strengths, identities, and growth of Indigenous peoples and their cultures (Behrendt, 2016; Bodkin-Andrews, Bodkin, Andrews, Evans, 2017; Paradies, 2016). This coincides with findings from representative surveys of Australian youth that show notable and consistent wellbeing disadvantages for Indigenous youth, particularly in relation to those reporting dissatisfaction with life (e.g., Cave, Fildes, Lockett, & Wearing, 2015). Indeed, Indigenous youth are 6.5 times more likely to report being very sad compared to non-Indigenous youth (Cave, et al., 2015).

Forms and Mechanisms of Difference in Wellbeing

Empirical research has indicated that the Easterlin paradox (see above) is overly simplistic and that macrocontextual issues matter (Diener & Biwas-Diener, 2008; Di Tella, MacCulloch, & Oswald, 2003). This is perhaps seen most clearly in the effect of the financial crises on wellbeing. For example, Elder (1998) noted the effects of the great depression on youth wellbeing. Likewise, Parker et al. (2016a) and Clarke and Heath (2014) found evidence that the global financial crisis (GFC) had a significant impact on subjective wellbeing. Finally, evidence has been found by Conger and Rueter (2000) of the effect of the rural economic downturn in the United States on wellbeing and by Schoon (2006) that growing up in the Golden era of the 1970s promoted wellbeing and offset mental illness in youth. Given the available evidence, it is clear that macrocontexts influence wellbeing. Furthermore, as macrocontexts affect whole populations, even small effects may be of empirical, and policy interest.

Acknowledging that wellbeing can be influenced by context is not a sufficient reason to assume differences in wellbeing between Indigenous and non-Indigenous youth. Further, given that most research on macrocontext is cross-sectional, differences between social groupings provides little insight into what mechanisms may be involved. From a developmental perspective, differences could take three forms, each resulting from a distinct set of mechanisms (summarized in Table 1). Mechanisms which would imply no difference in Indigenous wellbeing are presented above in relation to top-down models. Below we outline alternative perspectives related to differences that are persistent, change with development, or result from events at a particular period of time.

Persistent differences. A persistent and developmentally stable difference between Indigenous and non-Indigenous youth wellbeing may be found across adolescence and emerging adulthood. Effects that are of an equal size over the course of a developmental time of interest may represent the “legacy of early experiences in development” (Fraley, Roisman, & Haltigan, 2013) or persistent differences in life conditions. If differences remain

stable across the period of interest it is reasonable to assume that they emerge from mechanisms present before the initial data collection; in this case being present at birth, childhood, or early adolescence. These influences may be due to early events and experiences (e.g., early maternal attachment) that have ongoing and persistent effects (Fraley et al., 2013). Alternatively, such effects may be due to fundamental differences in context that change little across development. For example, many of the issues we note above, such as lower income, higher risk of unemployment, poorer access to health services, and racial bias and inequality, may remain stable across the developmental period of interest. However, it would be wrong to consider persistent effects to only be due to material disadvantage. Kymlica (1995) notes the complicated relationship that national minority groups have within otherwise equality oriented, liberal societies. For example, many political decisions about language use, structure of education, national holidays, and the maintenance of institutions tend to favor majority groups and, if minority institutions and resources go unprotect, frustration and dissatisfaction among national minorities can result. As such, measures of happiness with the government are a critical domain of interest for Indigenous youth. At a more local level, Hunter (2000) points to the potential role that Indigenous social capital, based on experiences of discrimination, may play in down-leveling group norms in relation to trust of others and future prospects (two other domains we target in this research).

Maturation Effects. Differences between social groupings may emerge in response to particular developmental pressures that differentially affect Indigenous and non-Indigenous youth. For example, mesocontextual effects at school or other institutions could influence wellbeing at a particular point, but, as young people leave those institutions or their relationship with those institutions change, differences in wellbeing may exacerbated or attenuate over time. While racism against Indigenous Australians has been noted across all levels of education, it may be argued that the nature of the racism experienced by Indigenous youth varies as they move through the levels of the schooling systems. Indeed, some evidence suggests that racism experienced by Indigenous school students is centered on the interpersonal level (e.g., name calling and assault; Bodkin-Andrews, Denson, Finger, & Craven, 2013; Grigg & Manderson, 2015). Numerous studies have also suggested that racism in higher education is reflected more in terms of alienation and silencing of Indigenous perspectives (Hollinsworth, 2016; Page, Trudgett, & Bodkin-Andrews, 2016). Racism effects wellbeing (Bodkin-Andrews, O'Rourke, Grant, Denson, & Craven, 2010; Walter, 2016) but it maybe the effect differs across the lifespan. In addition, Indigenous and non-Indigenous youth may adjust differently to particular age-graded developmental tasks due to distinct situational

affordances and constraints. For example, Indigenous youth are more likely to live in rural areas and previous research has suggested that the transition from compulsory schooling is often more difficult for rural children who move far away from home and community (Parker, et al., 2016b).

Period Effects. Finally, consistent with the pioneering work of Elder (1998), differences may emerge in response to particular events. Importantly, we do not mean life events that an individual may or may not experience at any given time (e.g., death of a loved one or individual unemployment), or age-graded events like graduation from high-school. We are instead referring to macrocontextual events which are often located within a specific period and effect a whole population or sub-population. These generally relate to factors associated with economic (e.g., GFC), political (e.g., the election of a government that employs a particular set of policies), geo-political (e.g., terrorism such as 9/11; Metcalfe et al., 2011), epidemic/pandemics (e.g., outbreaks such as SARS; Lau et al., 2008), or meteorological events (e.g., drought; Berry et al., 2011).

There are two ways in which such effects may have differential influences on the wellbeing of Indigenous and non-Indigenous youth. First, the same events might have differential effects. For example, there is evidence that Indigenous people are affected more quickly and experience slower recovery from economic downturns (Hunter & Gray, 2016; Stephens et al., 2005). Alternatively, macrocontexts may be qualitatively different for Indigenous and non-Indigenous people. First Nations scholars throughout the world have repeatedly highlighted examples of oppressive, bilateral government policies (Bourassa, McKay-McNabb, & Hampton, 2004; Davis, 2016). For example, the dismantling by the Australian government of the Aboriginal and Torres Strait Islander Commission, an elected representative Indigenous body, was viewed as a threat to Indigenous sovereignty and self-determination (Robbins, 2010; Davis, 2016).

Recent advances in self-determination theory (SDT) may provide the psychological mechanism for explaining links between Indigenous sovereignty and wellbeing. SDT notes that all humans have basic needs for autonomy, relatedness, and competence and that the meeting of these needs provides the necessary and sufficient conditions for wellbeing (Ryan & Deci, 2017). However, new research suggests that these needs may also exist at the communal level in which individuals are integrated and situated. For example, group autonomy (or sovereignty) has been shown to have a unique and positive effect on individual wellbeing above and beyond individual level need satisfaction (Kachanoff et al., 2016, 2017). Thus, where a group identity is fully integrated into one's sense of self, an individual's wellbeing requires need satisfaction at both the individual and group level. Scholarly engagement

with STD to Indigenous or First Nations contexts is only in its infancy (e.g., Craven, Ryan, et al., 2016), and we argue has largely been limited to considerations at individual (autonomy though internal frame of reference and competency) and individual-relatedness (as defined by family and community connectedness) levels. Many Indigenous and First Nations scholars though also place a strong emphasis on relatedness and resilience through wider macro contexts related to decolonization frameworks resisting and healing “personal, collective, and historical” trauma (Linklater, 2014, p. 133 see also Dudgeon & Walker, 2015; Paradies, 2016) and the pursuit of self-determination and governance within sovereign rights frameworks (Davis, 2016; Smallwood, 2015; Alfred, 2009).

Context of the Current Research

The current study aims to take a broad contextual view of the potential differences in wellbeing between Indigenous and non-Indigenous youth. We consider not just whether differences exist (which has been demonstrated in previous research) but whether they are attributable to period, maturation, or persistent effects. We explore these differences not just in relation to general life happiness but in relevant wellbeing domains with a focus on elements known to be influenced by macroconditions, including social and intrapersonal happiness and happiness with future prospects (Parker et al., 2016a). We also consider happiness with domains directly related to macrocontexts in relation to government. Psychologists, economists, and sociologists have all been interested in the influence of both micro and macrolevel conditions on wellbeing. Most of this research has focused on general or aggregated wellbeing (e.g., life satisfaction). However, empirical research suggests that context can differentially affect wellbeing in different domains (Easterlin & Sawangfa, 2009; Parker, et. al., 2016). Table 1 outlines forms of Indigenous/non-Indigenous differences in happiness and speculates about what mechanisms might arise from them. We focus primarily on articulating the forms of happiness difference here. The main research questions are as follows:

H1: Results will show a difference in happiness between Indigenous and non-Indigenous emerging adults (i.e., the results will not support a no effect mechanism from Table 1).

RQ1: Will the results showing a difference in happiness between Indigenous and non-Indigenous emerging adults support persistent, maturation, or period mechanisms (see Table 1)? And will this vary as a function of life domain?

In the interests of space, we focus only on four domains. First, we focus on overall happiness as a general measure of wellbeing. Next, in light of concerns of Putnam (2000), and Clarke and Heath (2014) about declining

community trust and social capital, we focus on happiness with relationships with people in general. This life domain not only has relevance for individual wellbeing, but also collective wellbeing in light of direct links between social trust and civic engagement (Clarke & Heath, 2014). We also consider the domain of future prospects given the role that period effects can have on either enhancing or suppressing wellbeing in this domain (Clarke & Heath, 2014; Elder, 1998). This domain is also critical to the developmental period under investigation where individuals are faced with more developmental tasks, covering more domains, where adequate engagement can have the most significant effect on life-long outcomes of any period (Dietrich et al., 2012). Both social and future prospect domains have been seen as at risk for Indigenous youth through social capital processes (Hunter, 2000). Finally, we consider happiness with government, given its unique aspect of Indigenous sovereignty in the Australian context. For this reason, understanding the factors associated with period effects in government wellbeing is critical.

Method

Data Sources and Participants

The current research uses the first four cohorts of the Longitudinal Study of Australian Youth (LSAY; $N = 66,522$). The LSAY consists of cohorts utilizing two different designs. The early cohorts were representative samples of year 9 students (modal birth year 1981 [$n = 9738$; ages covered 17-25] and 1984 [$n = 9548$; ages covered 17-26]). The vast majority of the sample was aged 14 at the time of initial testing and was followed for 10 years. The latter cohorts (modal birth year 1987 [$n = 9378$; ages covered 17-26] and 1990 [$n = 9353$; ages covered 17-23]) represented extensions of the Programme for International Student Assessment (PISA) in 2003 and 2006 and, as such, were representative samples of 15 year olds who were then followed for 10 years. Descriptives of the four different cohorts used at the time of initial testing can be found in Table 2.

Measures

Happiness was assessed using a measure taken from and inspired by the Personal Wellbeing Index (PWI; Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003). Versions of the PWI measure have been used in a number of large-scale panel studies in Australia and beyond including in all LSAY cohorts. There are 14 domains covered by this instrument. All variables begin with the stem 'How happy are you with [DOMAIN]' (see below for suffixes), with response scales varying from 1 = 'very happy' to 4 = 'very unhappy'. To aid interpretation, these answer points were reverse scored so that higher scores reflected greater happiness. An additional response point was included representing 'can't say/don't know'. This choice was selected by less than one percent of the sample on average and never by more than four percent for any question in any wave. This response was coded as missing

for the purposes of the current study. We selected one variable for each of the following: social life, future prospects, government, and general life. Abbreviations used for the wellbeing variables (exact item suffix in brackets) were: general (*your life as a whole*), future (*your future prospects*), people (*how you get on with people in general*), and government (*the way the country is run*). Table 3 provides the distribution of responses. As is common in wellbeing research, most individuals reported being happy (Lane, 2000). Indeed, it was only with the government that a large proportion of the sample did not report being ‘very happy’; although most participants still reported being happy. The raw data indicates that Indigenous youth were significantly less likely to respond positively (i.e., happy or very happy) for general ($\chi^2(1) = 20$; $p < .001$; standardized residual [Indigenous and happy] = -4.3), future ($\chi^2(1) = 20$; $p < .001$; standardized residual [Indigenous and happy] = -4.8), and country ($\chi^2(1) = 20$; $p < .001$; standardized residual [Indigenous and happy] = -4.8). Happiness with people, was not significantly different ($\chi^2(1) = .05$; $p = .80$; standardized residual [Indigenous and happy] = -0.3).

Predictors included age calculated in days from birth to data collection (this was centered around the median age of the sample and placed on a year metric), and age squared as per the classic Age-Period-Cohort (APC) model of Yang (2008).

Analytical Strategy

Age-Period-Cohort Effects. A long existing concern in developmental psychology has been how to disentangle the effects of age, period, and cohort (see Baltes & Nesselroade, 1970). *Age* effects are concerned with how old an individual is, *cohort* effects are concerned with the shared experiences of those who grow up in a similar historical context, and *period* effects are concerned with the impact of particular events that occur at a given time in history (see Schoon, 2006; Yang, 2008). Such models are difficult to specify due to the known linear dependency of the effects involved. Put simply, if one knows two pieces of the information, then the third piece can be calculated with absolute certainty (e.g., $Age = Period - Cohort$). Yang (2008) aimed to overcome this issue via the use of a cross-classified multilevel model in which the quadratic effect of age is used as a fixed effect, and cohort and year are treated as crossed random effects². While such models do converge, Bell and Jones (2014) have noted this does not solve the underlying issue of linear dependency. Two solutions to this issue have been proposed. First,

² Here we use ‘random effect’ and ‘year-fixed effect’ to reflect either partial pooling across clusters of intercept and/or slope estimates and/or no pooling across clusters of intercept or slope estimates as defined by Gelman and Hill (2006).

Bell and Jones (2014) suggest using strong assumptions for at least one of the components. Second, Winship and Harding (2008) suggest focusing on the mechanisms by which cohort, period, and age may have their effect. We primarily relied on the former approach and assumed that birth cohort had no effect (given that we were restricted to data from individuals born roughly within a 10-year span, this is a reasonable assumption). However, as an additional compromise, we used total population birth cohort size as a proxy for cohort effects under the assumption that the larger the cohort, the more positional competition at each stage of life (i.e., for university placement or labor market positions), leading to lower average wellbeing (Kahn, 2010).

In addition to the nesting of observations within year, we also included random intercepts for observations nested under an individual and individuals nested within schools. Thus, the model represents a cross-classification structure. The fixed components of the base model were:

$$y_{well-being} = \beta_0 + \beta_1 Age + \beta_2 Age^2 + \beta_3 CohortSize$$

Here, β_1 is the linear effect of age, β_2 is the quadratic effect of age, and β_3 is the effect of cohort size as a proxy for birth cohort effects. This model provided the baseline (M1). Subsequent models tested whether components of the model differed by Indigenous status. M2 added Indigenous status without random effects under the assumption that there was a persistent difference in wellbeing unrelated to maturation or period. M3 considered Indigenous status by age interaction, suggesting that differences in wellbeing may be tied to developmental processes during adolescence and emerging adulthood. M4 reproduced model M2 with the addition of a random slope for Indigenous status by period. A log likelihood ratio test of M2 versus M3 provided a test of whether differences in wellbeing were tied to particular periods in time. When significant, we used the delta method to calculate confidence intervals for Indigenous effects at each year. Finally, model M5 included an interaction of Indigenous status by age and a random effect of Indigenous status by period under the assumption of differences by both maturation and period. We also use a binary logistic regression model to estimate the likelihood of reporting ‘very happy’ versus all other categories (see Table S2 in supplementary material). This approach, including model selection, is consistent with previous approaches to this question (e.g., Easterlin & Sawangfa, 2009).

There were some issues for the government domains where standard errors associated with the extracted results for each year were too small and there was evidence of multicollinearity among the random intercepts and slopes. Simplifying the model so that only the random effect for period was estimated resolved this issue and led to extremely similar point estimates and more conservative standard errors. It is this model to which we refer when

discussing the results for year. However, as a sensitivity test, we re-estimated all models using full year-fixed effects and random effects for individuals and school. These results are presented in the supplementary material and are very similar to the results presented here (see Table S1).

Missing Data. Missing data took three forms. The first was attrition. In supplementary material we provide a table of sample sizes and attrition rates by year and cohort by Indigenous status (Table S2) and a figure of the attrition rates (Figure S1). This attrition tends to occur earlier for Indigenous than non-Indigenous samples. In the current case, attrition was twice as large for Indigenous participants than non-Indigenous participants in the early waves before the gap stabilized in later waves. Still at its most extreme attrition was as high as 80% for Indigenous youth and 60% for non-Indigenous youth. Attrition is well-known issue with longitudinal databases covering the post school transition and extending in emerging adulthood (see Parker, Thoemmes, Duineveld, & Salmela-Aro, 2015). For this reason survey organizers have derived an extensive set of attrition weights. The aim of these weights is to ensure that the sample remains representative of the original population of interest (Lim, 2011). For details on how these weights are derived please see Lim (2011). The second form of missing data was due to item-level non-response. In this case very small (< 6% for all variables). To account for the latter, which applied in very few cases, all available information was used for each analysis. Put simply, when longitudinal data are modeled in long form (i.e., each row is an observation rather than each row being a participant) models naturally include all available data given that no participant is list-wise deleted from a model because of a single missing observation. The final form was missing completely at random (MCAR) where survey organizers did not to ask a particular question for a particular cohort at a given wave. This occurred for questions relating to satisfaction with government in the 87 (2005, 2006) and 90 (2007, 2008, 2009).

Results

Table 4 displays the model fits for all wellbeing domains. The $\Delta\chi^2$ for model M1 represents the chi-square value for the random year effect. Three patterns of results were observed. Happiness with getting along with others and future prospects tended to show persistent differences between Indigenous and non-Indigenous youth, irrespective of period or age. However, general life happiness indicated potential maturation effects in the difference between Indigenous and non-Indigenous youth. As expected, happiness with government displayed mostly period effects, although there was also evidence of some maturation effects. Table 5 provides parameter estimates for the selected models. Figures 1 to 4 displays the pattern of results visually. Each wellbeing domain is discussed in turn

but it is important to note that cohort size had either a non-significant or very small effect on wellbeing (effects are in 10,000 units, yet cohorts always differed by less than 10,000 individuals).

General life. Happiness with life in general had a rising pattern in early adolescence before declining in late adolescence and adulthood (Figure 1). The decline came later for Indigenous youth at age 25, compared to 20 for non-Indigenous youth (based on the turning point of the quadratic effect). This meant that, over the age range of our population of interest, Indigenous youth had lower levels of happiness in mid to late adolescence, with this effect disappearing in emerging adulthood. From the logistic regression model, the results suggested that non-Indigenous youth had a .550 predicted probability of reporting being very happy at age 15 compared to .516 at age 28. For Indigenous youth these results were .433 at age 15 and .536 at age 28. This meant that, on average, 11.7 percent fewer Indigenous youth reported being very happy at age 15 but at age 28 this difference essentially disappeared. The year effect, which was not moderated by Indigenous status, appeared to follow the fortunes of the economy quite closely with a notable decline during the Global Financial Crisis (GFC; i.e., post 2008). The probabilities of youth reporting being very happy ranged from .451 in 1997 (during the Asian Financial Crisis; AFC) to .597 in 2008 (just prior to the GFC). Probabilities again dropped to close to 1997 levels for the post GFC years.

Future prospects. Happiness with future prospects displayed considerable maturation effects, rising by half a standard deviation from age 15 to 25 before leveling off (Figure 2). Period effects were modest and, indeed, smallest for this wellbeing domain compared with all those assessed. Nevertheless, the predicted probability of reporting being very happy still ranged from .445 in 1999 to .335 in 2013. Both age and period effects were consistent for Indigenous and non-Indigenous participants. Rather, differences by Indigenous status were slightly less than a tenth of standard deviation across the whole developmental period of interest. This effect was quite small with the predicted probability of being very happy at age 19 being .386 for non-Indigenous youth compared to .355 for Indigenous youth in the logit models.

Getting Along with Others. Indigenous youth persistently showed a lower level of happiness of approximately a tenth of a standard deviation (or a 3 to 4-percentage points difference in the logit models) when compared to non-Indigenous youth in relation to happiness with interactions with others in general (see Figure 3). This did not change across the developmental period of interest. In addition, all youth displayed moderate period effects that showed a particular downward trend over the historical period of interest. The range was approximately 15 to 20-percentage points in the logit models (evaluated at the median age and cohort size).

Government. Happiness with government data revealed the most complex set of results (Figure 4). First, there was evidence of an interaction by Indigenous status for maturation effects. Non-Indigenous happiness appeared to remain relatively stable over the course of developmental period of interest, while Indigenous happiness showed a steady decline. There was also evidence of large period effects, which was moderated by Indigenous status. These effects differed by Indigenous status in 2005 and 2009 – though the 2009 effect was not consistently significant across all models. The logistic regression models suggested that these differences, when estimated in relation to the likelihood of reporting being very happy, were approximately 3-percentage points. This effect was thus small but it should be noted that, at any year, no group had more than 12-percent of their population reporting being very happy with the way the country was run.

Discussion

The current research linked a number of complex aspects of happiness including: a) life domain specific effects; b) decomposing change into age and period effects; and c) Indigenous/non-Indigenous differences in wellbeing through the lens of persistent, maturation, and period effects. Given this complexity, we provide a general summary of the results in Table 6. In discussing the results we first consider the sample as a whole before then considering specific differences by Indigenous status.

Overall Effects

The current results highlight the critical importance of considering a multidimensional approach to the development of wellbeing as adolescents entered adulthood. Significantly, wellbeing domains varied substantially in the degree to which age or period effects dominated or were large or small over the period of interest. Further, previous research with this sample has shown that correlations between domains are moderate (Parker et al., 2016). Our results suggest that the developmental effects of interest differed considerably by domain in terms of the pattern of results.

Age Effects. The most common maturation pattern was one of increasing happiness across adolescence and stabilization during adulthood. This may correspond with major developmental tasks (e.g. establishing adult relationships, gaining independence from parents, and gaining meaningful employment) that occurred during this time and with the increased autonomy that these tasks provide (Litalien, Lütke, Parker, & Trautwein, 2012). Indeed, despite common stereotypes, research has shown that adolescents' transitions out of formal school are often associated with adaptive development (Dietrich, et al., 2012; Parker, Lütke, Trautwein, & Roberts, 2012). Indeed,

Arnett (2007) describes emerging adulthood as ‘the age of possibilities’ (p. 69) and thus it is not surprising to see an overall increase in happiness with future prospects as young people move into this developmental period.

The majority of developmental happiness research has suggested that a U-shaped change occurs over the life span with happiness gradually declining into middle adulthood before increasing again (Di Tella et al., 2003). However, most of this research focuses on adulthood. The current research suggests that there may be a preceding inverted U shape that takes place during the transition from formal schooling, which peaks as youth establish themselves in the adult world, before declining. Taken together, it is critical to move toward research that examines the full life span in order to assess the relative cadences of happiness and how they align to biological change as well as to changes consistent with age graded developmental tasks.

Period Effects. Period effects also ranged in size and pattern, being strongest for happiness with government but statistically significant for all life domains. These patterns were, at least in part, associated with the economic conditions within the country and with notable declines after the GFC for some domains. Australia was not the only country to experience sharp rises in unemployment in response to the GFC. Indeed all Anglophone and most OECD countries displayed very similar patterns (see Figure 5). Extracting only the period effect and correlating this trend with yearly youth unemployment rates suggested significant ($p < .05$) correlations for general life happiness ($r = -.652$). Other period effects may be associated with elements of the political economy including direct democracy and having a meaningful say in the political process (Frey & Stutzer, 2010). Unfortunately, unlike youth unemployment, there were no good youth-specific indexes of these factors available for exploration. Future research in this area will be critically important.

Youth happiness with interactions with others decline over time despite rising as participants aged. This suggests competing mechanism for development and period effects. For development, the increase as participants aged is consistent with the findings of McDonald and Mair (2010) who suggest human capital is accumulated across development. For period effects, we posit that the decline from 1997 to 2013 may be related to declines in social capital, as noted by Putnam (2000), and to declines in the quality of social support, as noted by Lane (2000). Lane (2000, p. 9) has suggested that modern Western society is experiencing an ever increasing “famine in warm interpersonal relations” and that this is contributing to the overall decline in happiness in society. Importantly, this decline in social capital may be restricted to Anglophone countries and, even then, may be dependent on the type of social capital considered. Research by Sarracino and Mikucka (2017) suggests that trust in others showed consistent

declines in Anglophone countries, where most other countries increased over time. Trust is most similar to happiness with interaction others that we found to decline over time in another Anglophone country - Australia.

Indigenous/Non-Indigenous Differences in Wellbeing

While the current research provided a unique opportunity to explore how happiness historically and developmentally changes in youth, our major purpose was to make the pattern of differences in wellbeing between Indigenous and non-Indigenous youth visible. During a review of the literature it was identified that, while observing overall differences and whether they hold when controlling for other characteristics is an important first step, further interrogation of the age-specific nature of these differences is needed. For this reason the current research aimed to explore whether differences were persistent across development, changed in response to maturation, or were associated with period rather than development (i.e., yearly changes irrespective of age). We found evidence of a) differences for every domain, b) different domains exhibiting different forms of effects and, c) a combination of these effects, at least in the case of happiness with government.

Maturation Difference. The results indicated that Indigenous disadvantage for general life happiness differed in adolescence but disappeared during adulthood. From an emerging adulthood perspective, this closing of the gap in happiness may be seen as surprising. Indeed, Arnett (2007) suggests that while emerging adulthood is generally a positive period, it can be associated negative outcomes for vulnerable populations who may struggle with the sudden increase in freedom and lack of structure. However, the vulnerable groups that Arnett seems to have in mind are individuals on the fringes of the dominant group (i.e., foster children and those with disabilities). It maybe that the strong and sustained social capital and norms of minority cultural groups (see Walter, 2015) offsets experiences of anomie that those in majority groups, and those at the fringes of those groups in particular, may experience as a result of the sudden removal of structures like compulsory schooling and family obligations. This may account for the results we find here.

Although the closing of the happiness gap between Indigenous and non-Indigenous youth may be considered a positive finding, initial differences in adolescence is a concern. Adolescence is a time of vulnerability and many choices made during this period go on to have a lifelong impact (Steinberg, 2014). As such, it is important to consider what affect this disadvantage during adolescence may have on long-term outcomes. We do not have the capacity in this research to consider specific mechanisms that may account for this pattern of results but we

nevertheless identify potential candidates in Table 1. We suggest that future research focuses on relationships with compulsory educational institutions and on differential adjustment to developmental tasks during adolescence.

Persistent Differences. There was evidence of small but persistent differences in happiness with future prospects and getting along with others. These differences point toward mechanisms associated with early development or persistent differences in material wellbeing. Since the Easterlin (1974) paradox, it has been common to state that money doesn't buy happiness. However, this oversimplifies the available research, which actually suggests that material resources are indeed associated with happiness, but that these effects are non-linear and are most pronounced where material deprivation is largest (Sacks et al., 2012). The current research is a representative sample of Indigenous youth and does not focus on those with the lowest material resources where the disadvantage in wellbeing might be even greater. Future research needs to take an intersectional approach, including socio-economic status, in order to fully untangle these results. Nevertheless, the average differences in circumstances may account for the persistent though small effects found in this research. However, as we discuss in more detail below, persistent issues related to Indigenous sovereignty and self-determination should also be considered (Davis, 2016; Kymlica, 1995).

Period Effects. Significant differences were only observed on two occasions (2005 and 2009) for happiness with government. In year-specific cases, the rationale for such results will always be post-hoc. Nevertheless, in the interests of context we note particular historical events that may be associated with these results. Previous research has shown that happiness with government can be negatively affected when individuals feel like they have little autonomy in the political process (Frey & Stutzer, 2010). With this in mind, Indigenous happiness with government was significantly lower than non-Indigenous happiness in 2005. This precedes the government's dismantling of ATSIC in 2004-2005. ATSIC was an Indigenous run government body and it was replaced in 2005 by a government appointed advisory board. ATSIC served as a means of self-determination for Indigenous people and its removal was seen as disempowering by many Indigenous persons (Robbins, 2010). The only other period effect was for 2009 in which Indigenous happiness was higher than non-Indigenous happiness. This effect should, however, be read with significantly more caution as it was not consistently significant across the sensitivity models. It does, however, appear in the year following an important event in modern Indigenous history. Namely, the national apology (occurring on the 13th of February, 2008) to the Stolen Generations (Indigenous youth who were forcibly removed from their family homes and placed in the homes of White Western families during the period of 1905 to 1969).

Whilst this finding may be considered within a positive context, the rapid return to the status quo must also be understood. Indeed, Aboriginal scholar Mark McMillan (McMillan & Rigney, 2018, see also Behrendt, 2016; Smallwood, 2015) highlighted growing cynicism and ongoing colonial tensions surrounding the national apology. This includes over ten years (between the official recommendation for the apology and the apology itself) of divisive and derogatory political and media discourses questioning the existence and negative impact of the Stolen Generations, and minimal efforts of successive governments to commit to reparations and justice for individual, families, and communities that have suffered from the Stolen Generations. In addition, as of 2017, there were 17,664 Indigenous children in out-of-home care, which was 10 times the rate for non-Indigenous children (Productivity Commission, 2018). At the time of the apology, 9,070 Indigenous children were in out-of-home care (nearly 2.5 times the rate of non-Indigenous children).

General Findings. Although tentative and preliminary, we believe our results justify further research into the impact of perceived group sovereignty on wellbeing. Philosophy has suggested such issues are politically salient (e.g., Kymlicka, 2007); however, SDT provides us with a theoretical set of mechanisms for why such issues are also of psychological interest. As noted before, SDT states that individuals cannot be happy unless their autonomy needs are met (Ryan & Deci, 2017). Most of the support for this has focused on autonomy of the individual person. However, some nascent research suggests that group level autonomy may also be critical and indeed predict wellbeing even after controlling for individual level autonomy (Kachanoff et al., 2017). Further research focusing on this is essential as it outlines how individual psychological functioning, government policy, and minority issues converge.

A further question of interest is why differences in Indigenous and non-Indigenous wellbeing should be driven by different mechanisms, or sets of mechanisms, in different domains. One answer is that youth operate in multiple contexts and stand in a variety of differing relationships with institutions and groups at different levels of Bronfenbrenner's (1974) socioecological model. Thus, differences in context between Indigenous and non-Indigenous youth likely operate at different levels for different domains. Domains of wellbeing likely differ in the extent to which proximate or distal contexts influence dominant whether relationships with local community members and friends versus the wider community or institutions are most important. This too may change over time as young people move through developmental transition and, as a result, undergo changes in how they stand in relation to local versus distal forces and influences. For example, Indigenous happiness with interactions with others

and with future prospects may be due to potentially problematic aspects of social capital that influence all group members at all ages. In particular, real experiences of discrimination for some members of the group, may be translated into downward leveling of group norms about whether people in general can be trusted and whether one should expect the future to be rosy (Hunter, 2000; Walter, 2015). In contrast, happiness with government necessarily includes influences that change as the political cycle changes. Finally, the Indigenous gap in general life happiness may be driven by developmental forces in microcontexts that change as individuals move through different institutions. As noted above, the nature of Indigenous reported racism in school versus university takes on different characteristics. In this respect, our research creates more questions than it answers and suggests a need for more in-depth research of specific domains potentially utilizing different methodologies (see below).

Implications for Positive Psychology

A major outcome of our research was the relatively small differences in happiness between Indigenous and non-Indigenous youth. This may be due to the top-down nature of happiness, discussed below, but these small differences may also highlight the unique strengths and resilience that can be found among marginalized groups (Biswas-Diener & Patterson, 2011). Happiness studies and positive psychology in particular have been criticized for its predominant focus on the traditions of white middle class people (Bodkin-Andrews, et al., 2013; Christopher & Hickinbottom, 2008). This has potentially ignored the strengths and ways to wellbeing that are present in minority groups that could facilitate wellbeing for all. For example, Constantine and Sue (2006) highlight the unique strengths of people of color in the US. These strengths contribute to wellbeing, including resilience developed through adversity, perceptual wisdom gained through experience with powerful others, and the cultural competence gained through inheriting both their own and White American culture. Constantine and Sue argue that the bicultural flexibility this affords may provide significant advantages in an increasingly multicultural world. Whilst bicultural and positive acculturation narratives of the likes of Constantine and Sue may overlap with some Indigenous standpoint theories and methodologies (e.g. the Cultural Interface; Nakata, 2007), it must be rooted with an understanding of the specific cultural contexts of minority and Indigenous/First-Nations groups worldwide. Internationally, many Indigenous scholars have argued that understanding the processes behind the self-determination of Indigenous peoples must, in-part, be approached from decolonization frameworks that recognize diverse and ongoing historical and intergenerational traumas perpetuated by colonial theory, policy, and practice

(Alfred, 2009; Battiste, 2013; Brave Heart, Chase, Elkins, & Altschul, 2011; Linklater, 2014; Pihama, Reynolds, Smith, Reid, Smith & Nana, 2014; Smith, 2012).

Too rarely does positive psychology notice the unique strength that minority and marginalized groups possess. And rarer still are these strengths identified as something that the discipline as a whole could learn from. For this too occur, however, positive psychology may need to embrace a *rooted* cosmopolitan approach (Appiah, 2006). This approach acknowledges the situatedness of people in cultures but champions curiosity of difference and the transformative power of people learning from each other. Yet this can only happen if culture is seen as fluid and one's own and others' cultural values are held as provisional. Thus, constant attention and dialogue is needed, rather than reliance on historical stereotypes, to understand what it means to be a member of a given group – whether this be Indigenous, non-Indigenous, or otherwise – and what this might teach us about the variety of pathways to happiness. This does not mean that difference should be accepted uncritically. But it does mean that Western research should be open to learning from the unique strengths of others. For example, many scholars highlight the unique and diverse cultural strengths (e.g., Country, Indigenous Knowledges, Storytelling, family history, kinship networks) that Indigenous peoples may draw strength and happiness from (Donovan, 2015; Fredericks, et al., 2015; Martin, 2017).

Implications for Theory

Top-down vs Bottom-up Models. Top-down models imply individual difference or intra-psychic processes are responsible for differences in happiness (Lyubomirsky et al., 2005). As such, we would generally expect to see relatively stable well-being and a relative absence of group differences. Bottom-up models, in contrast, emphasize the contextual nature of happiness (Lybounirsky, 2001). Our results clearly do not support a pure top-down model given the presence of developmental trends, group differences between Indigenous and non-Indigenous youth, and year-to-year fluctuations in youth happiness. Particularly of interest is this latter fluctuation in which year to year variation in not only fluctuated by at least .20 of a standard deviation unit (from its highest to lowest point) for each domain under investigation, but most notably for happiness with interactions with others a general declining trend was observed in the population. While this suggests a pure top-down model cannot be in operation, it is important to note that between individual differences, controlling for time, development, and Indigenous status, were typically of a magnitude that was five times larger than period variation. As such, while broad contextual

effects are of considerable significance, they should be interpreted in light of their relative weakness when compared to the individual differences that top-down model proponents emphasize.

Our research shows the complicated nature of minority status and wellbeing. In particular, there is now considerable research that shows that minority status has a significant effect on wellbeing and that this difference can be explained by contextual variables such as discrimination (see Jasinskaja-Lahti, Liebkind, & Perhoniemi, 2006). Yet, as with this research highlighting minority disadvantages in subjective wellbeing, the differences were small. This may seem surprising given the scale of some of the disadvantages that Indigenous people may be forced to endure. As early as the 1980's, however, Croker and Major (1989) noted the many ways in which stigmatized groups may use intrapsychic regulation processes to protect their subjective wellbeing. This suggests happiness with various life domains is not top-down or bottom-up but both.

Macro-context. We noted above that Indigenous differences in wellbeing is not merely a local issues. Rather, research such as ours is relevant across developmental psychology. This is partly because most modern States have significant Indigenous populations (e.g., United States, Norway, Bolivia) and/or are multination states (e.g., Switzerland, Spain, Canada) for whom the issues explored here are also likely of interest. In addition, such research also provides a means of exploring and testing mechanisms that are present in the developmental process. For example, the current research extends Elder's (1998) work on the great depression to suggest macrocontext events that influence development can be diffuse in scope (e.g., effecting individuals nationwide), but selective in nature (i.e., targeting, and may only be relevant for, individuals within a collective group). Previous research shows that events can affect groups differentially but some large-scale events may only carry developmental portents for discrete segments of the population. This is largely speculation but, with the rise of multicultural, multination, and multiethnic states, along with large scale repeated cycle databases like the World and European Social Surveys, the potential for research that focuses on differentially selective macrocontext events is immense.

An additional issue of interest is identifying differential growth rates in wellbeing. It may be that processes like adaptation and other top-down processes eventually result in in-group differences in wellbeing dissipating as individuals reach adulthood. However, early gaps in wellbeing may nevertheless have lifelong impacts. This suggests that research should be cautious in interpreting null group effects at a given point without knowledge of the full developmental process up to that point. For example, should individuals down-regulate their aspirations in early adolescence in order to bolster happiness, and should they be successful in such regulatory efforts, a null group

effect in late adolescence or early adulthood could vastly understate the developmental significance of group membership on wellbeing.

Limitations and Future Direction

There are research design limitations that should be considered in interpreting these results. First, we treated cohort effects as sufficiently negligible to ignore. While the small and inconsistent effects for cohort size support this, it is possible that cohort effects over a longer span of time may be important. Unfortunately, this limitation was not easily resolved given the dependency between age, period, and cohort and a compromise was thus required. In addition, single-item measures were the only available measure of domain specific wellbeing. Multi-item measures would have allowed for latent variable modeling and thus a control for measurement error. It should also be stated that, while every domain displayed some significant difference between Indigenous and non-Indigenous youth, the effect sizes tended to be moderate to small. This could reflect the relative strength of set-point and/or range effects if not for the fact that there was evidence of considerable change by period and development when considered as a whole. However, it is more likely that the data did not account for the diverse differences between Indigenous cultures, languages, nations, practices, and circumstances. Sample sizes are often too small to gain stable statistical estimates of sub-groups within this category and there is a need for research that better accounts for such diversity, and an increased effort to reduce sample attrition of Indigenous youth from longitudinal studies. Further, the epistemic foundations of wellbeing measures within this study are drawn from a non-Indigenous knowledge base that fail to consider diverse cultural perceptions and experiences of wellbeing from Indigenous standpoints (Bodkin-Andrews & Carlson, 2016; Dudgeon & Walker, 2015; Linklater, 2014). Whilst it is difficult to directly address this final concern in pre-existing research and databases, an awareness of this limitation is essential for guiding future research. A partnership between the quantitative analysis of large-scale databases and qualitative research, and a joining together of Western and Indigenous research methodologies and knowledges is needed to redress this imbalance (Bodkin-Andrews, Whittaker et al., 2017). The aim of this research was to make the nature and size of Indigenous differences in wellbeing visible by using available data. The goal of future studies will be to test specific mechanisms. The partnership suggested above provides a roadmap for doing this. This may mean focusing on circumstances such as health, education, and poverty reduction but with these programs being Indigenous led. Unfortunately, Western-based research and policy has a long history of ignoring both the complexities and strengths that can be found within Indigenous Australian communities (Maddison, 2012). This is

endemic across not only research, but the translation of research into policy, and the Australian political system itself. As argued by Cobble Cobble and Indigenous Australian scholar Megan Davis (2016, pp 84-85), “For Indigenous Australians, the system is broken... when a policy area involves 2 per cent of twenty-three million people [e.g., the abolition of ATISC and more recent constitutional recognition of Indigenous Australians], it becomes a significant problem for the scrutiny of decisions between the ballot box.”

Ultimately, non-Indigenous Australians too often judge in ignorance of Indigenous scholarly literature that has revealed a wide range of successful social initiatives and strategies that have closely engaged with the immense diversities and strengths within ‘Indigenous Australia’ (e.g., Cox, Dudgeon, Holland, Kelly, Scrine, & Walker, 2014; Fredericks, Lamey, Mikecz, & Santamaria, 2015; Lovett, Dance, Guthrie, Brown, & Tongs, 2014).

Psychology research associated with happiness is beginning to engage more with minority and marginalized groups that more seriously acknowledge the unique strength that such groups may hold; but there is still much work to be done in this area (Biswas-Diener, 2011). It is long past the time in which non-Indigenous researchers and policy-makers respectfully engage with, and defer to, the sovereign rights of Indigenous peoples across all levels of society, and within the very foundations of research itself.

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Table 1
Forms and Mechanisms of Indigenous Difference in Wellbeing

Forms	Potential Mechanism for Indigenous Difference
No Effect	Set-point wellbeing, which does not differ by group; and/or Wellbeing is largely defined by highly localized and homophilic reference groups.
Persistent	The legacy of early experiences in development; and/or Persistent material disadvantage, racial inequality, and a lack of Indigenous sovereignty.
Maturation	Differential adaptation to age-graded developmental tasks; and/or Situational affordances and constraints that differ by group and in strength by institution (e.g., present in high-school but disappear in university or the labor market).
Period	Different reactions and recovery rates to economic or political events; and/or Unique events that have greater impact or influence for one group than the other.

Table 2
Demographic Data by Cohort

	Birth Cohort			
	1981	1984	1987	1990
Cohort size '000 ¹	2.85	2.85	2.76	2.79
Age (SE)	16.46(.02)	16.58(.02)	17.14(.01)	17.35(.01)
Male %	48.88	51.35	50.85	48.86
Indigenous %	2.93	3.37	2.08	2.93
State of Residence				
ACT %	1.96	1.93	1.89	2.03
NSW %	33.47	32.78	31.75	32.62
VIC %	24.32	23.45	24.14	23.96
QLD %	18.36	20.07	19.05	19.63
SA %	7.59	7.61	8.99	8.07
WA %	10.57	10.55	11.18	10.23
TAS %	2.92	2.75	2.24	2.63
NT %	0.81	0.86	0.75	0.83

Notes. Three letter codes are used for Australian States. All figures use sample weights. ¹Cohort size taken from Australian Bureau of Statistics data.

Table 3
Distribution of Responses: Row Percentages.

Domain	% of Sample	Very Unhappy	Unhappy	Happy	Very Happy
General	Total	.17	1.30	45.98	52.55
	non-Indigenous	.16	1.24	46.03	52.67
	Indigenous	.24	1.90	48.05	49.76
Future	Total	0.34	2.92	55.70	41.04
	non-Indigenous	.33	2.88	55.70	41.09
	Indigenous	.60	3.87	56.09	39.44
People	Total	.15	.96	43.68	55.22
	non-Indigenous	.15	.95	43.63	55.97
	Indigenous	.20	.94	46.88	51.97
Government	Total	6.10	22.31	64.77	6.77
	non-Indigenous	6.10	22.25	64.94	6.71
	Indigenous	7.25	24.72	59.64	8.39

Notes. Chi-square test differences between Indigenous and non-Indigenous youth across the response categories. It is based on a weighted frequency table (using sample weights).

Table 4
Model Selection

Model	Comp (df)	$\Delta\chi^2$			
		General	Future	People	Government
M1: Age+Period	M0(1)	1356***	450***	701***	2996***
M2: Age+Period+Indig	M1 (1)	8268***	8019***^	8137***^	8195***
M3: Age*Indig+Period	M2 (1)	14***^	1	4	13***
M4: Age+Period*Indig	M2 (2)	>1	2	4	18***
M5: Age*Indig +Period*Indig	M3 (2)	>1	3	>1	15***
	M4 (1)	13***	3	3	9***^

Notes. ^ Selected model. * $p < .05$; ** $p < .01$; *** $p < .001$. Comp = comparison model. df = degrees of freedom.

$\Delta\chi^2$ = A chi-square difference test between the fit of the preceding simpler model (see column Comp) and the proposed model (see column Model). Significant effects indicated that the proposed model fits the data significantly better than the simpler model.

Table 5
Parameter Estimates from Selected Models

Model	wellbeing			
	General	Future	Social	Government
Random Effects (S.D. units)				
Individual	.58***	.53***	.53***	.58***
School	.09***	.09***	.09***	.11***
Year	.08***	.05***	.10***	.14***
Indigenous Year				.09***
Fixed Effects				
Age	.00	.05***	-.01***	-.03***
Age ²	< -.01***	< -.01***	< -.01***	> .01***
Cohort Size	.01	.01	-.04*	-.03
Indigenous	-.08***	-.07**	-.05*	-.06
Indigenous x Age	.02***			.02**

Notes. * $p < .05$; ** $p < .01$; *** $p < .001$. Age is on a year metric. Cohort size is in 100,000 people units. Random effects are given in standard deviation units. All other effects are given in standard deviation units of wellbeing.

Table 6
Summary of Results

Domain	Overall		Indigenous Effects		
	Age	Period	Persistent	Maturation	Period
General	Small decelerating upward pattern	Moderate	none	Moderate in early adolescents. Disappeared in adulthood	none
Future Prospects	Moderate decelerating upward pattern	Moderate	Small	none	none
Getting Along with Others	Small decelerating upward pattern	Small	Small	none	none
Government	Stable moderate downward pattern	Large	none	No downward effect for Indigenous youth	Present only in 2005 and 2009

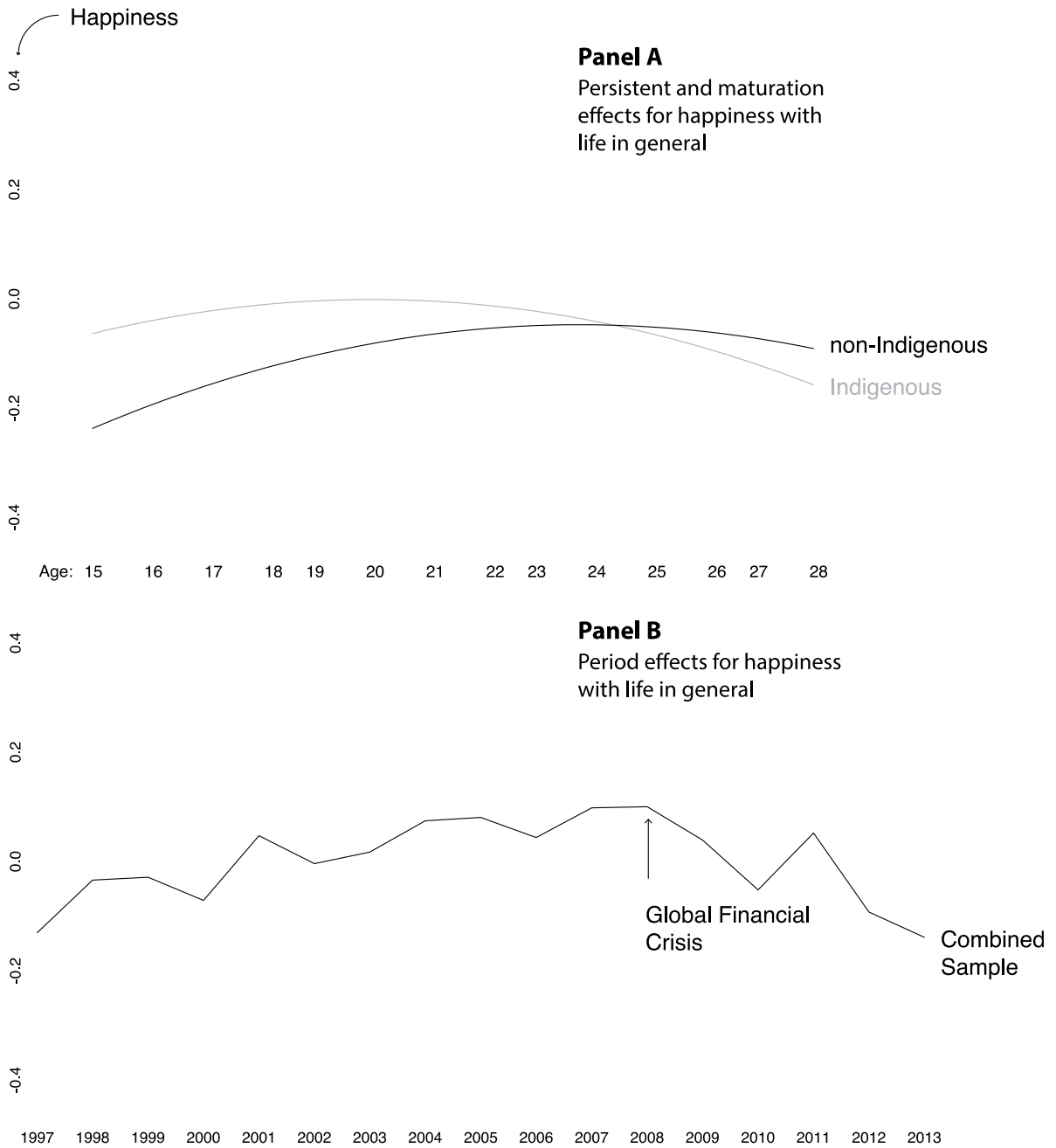


Figure 1. General life happiness. This figure is based on model M3. Model controls for birth-cohort size. Number of observations = 221,460 from 37,095 participants.

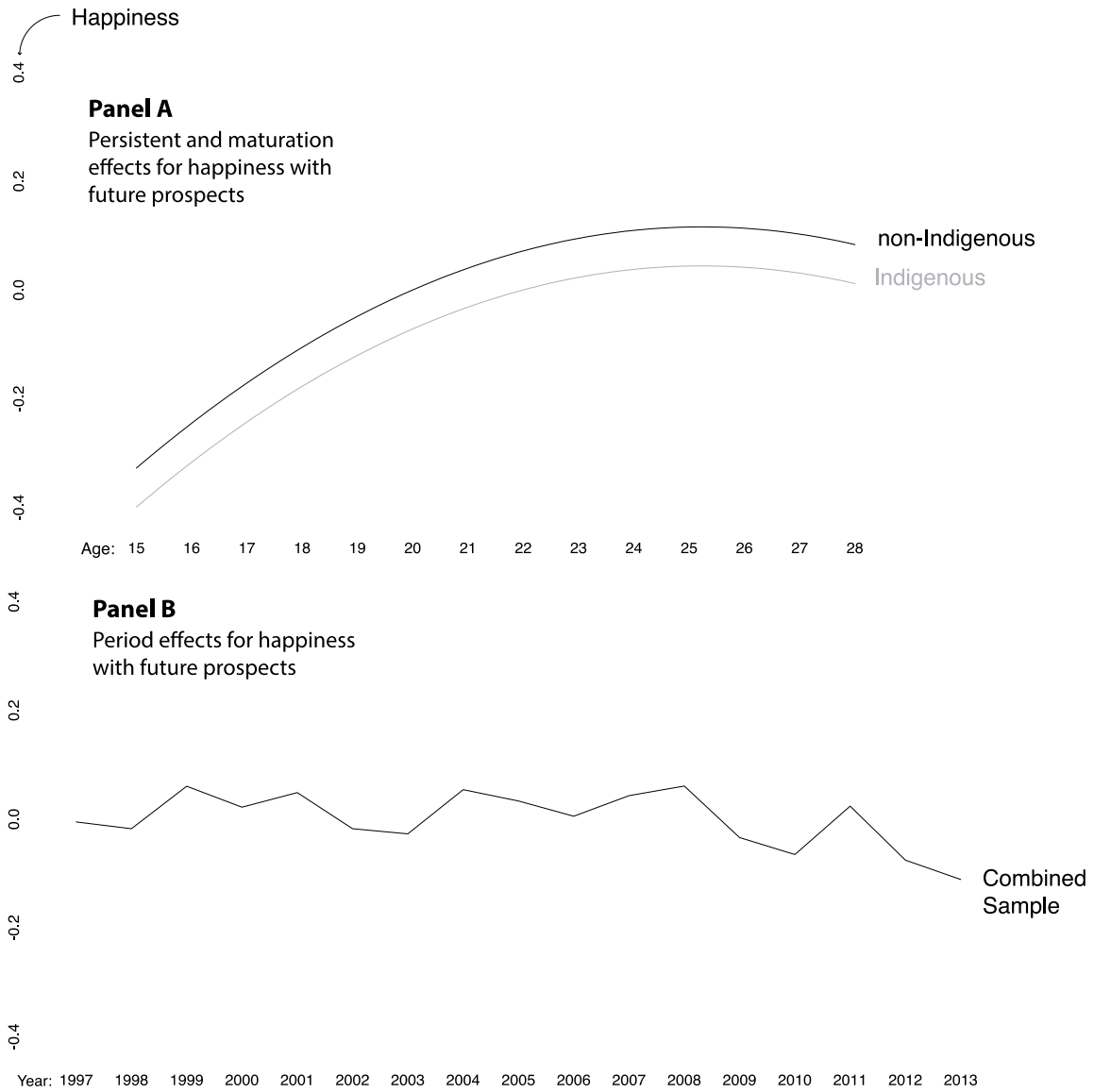


Figure 2. Happiness with future prospects. This figure is based on model M2. Model controls for birth-cohort size. Number of observations = 218,013 from 36,959 participants.

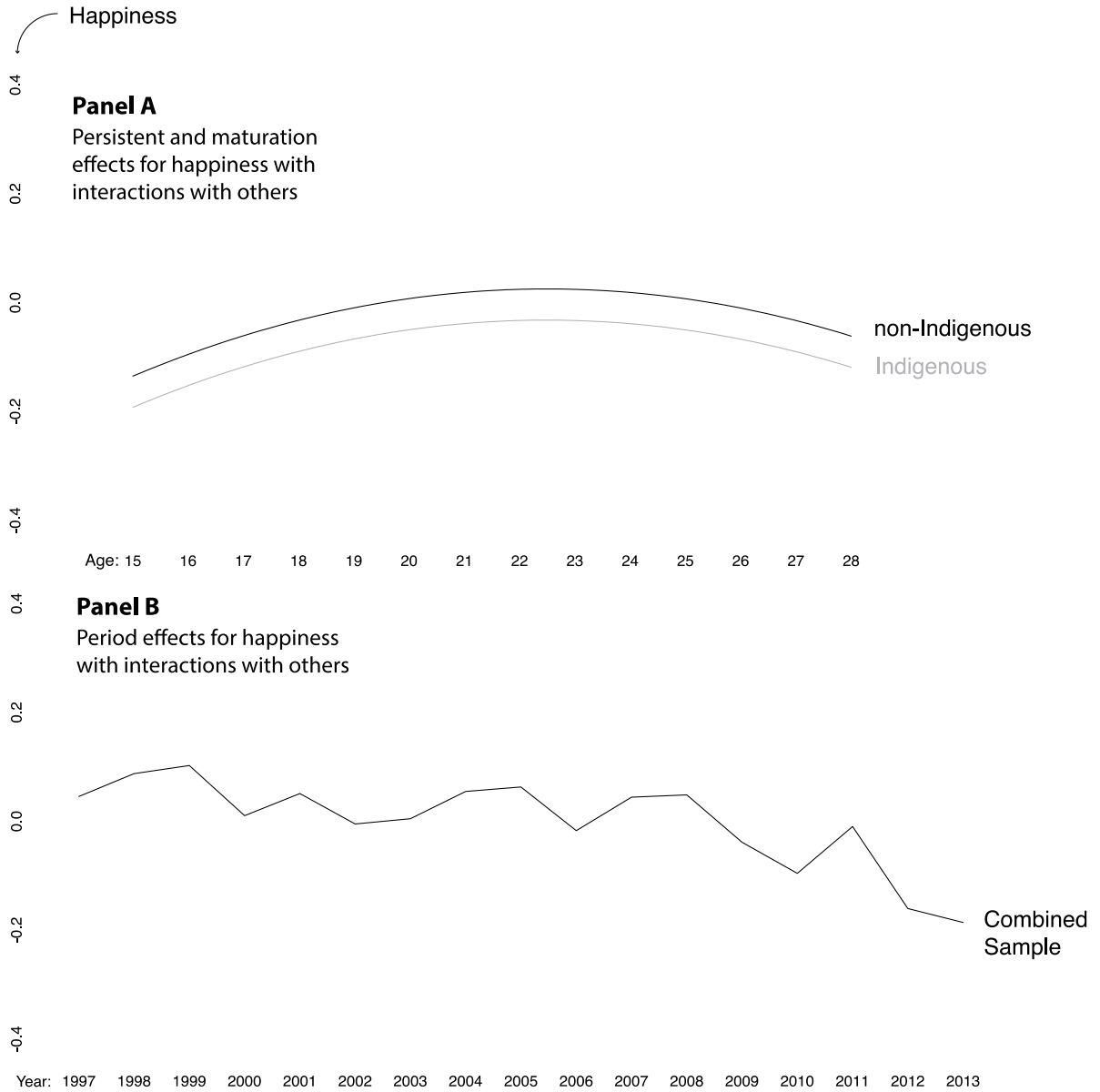


Figure 3. Happiness with interactions with people in general. This figure is based on model M2. Model controls for birth-cohort size. Number of observations = 221,703 from 37,106 participants.

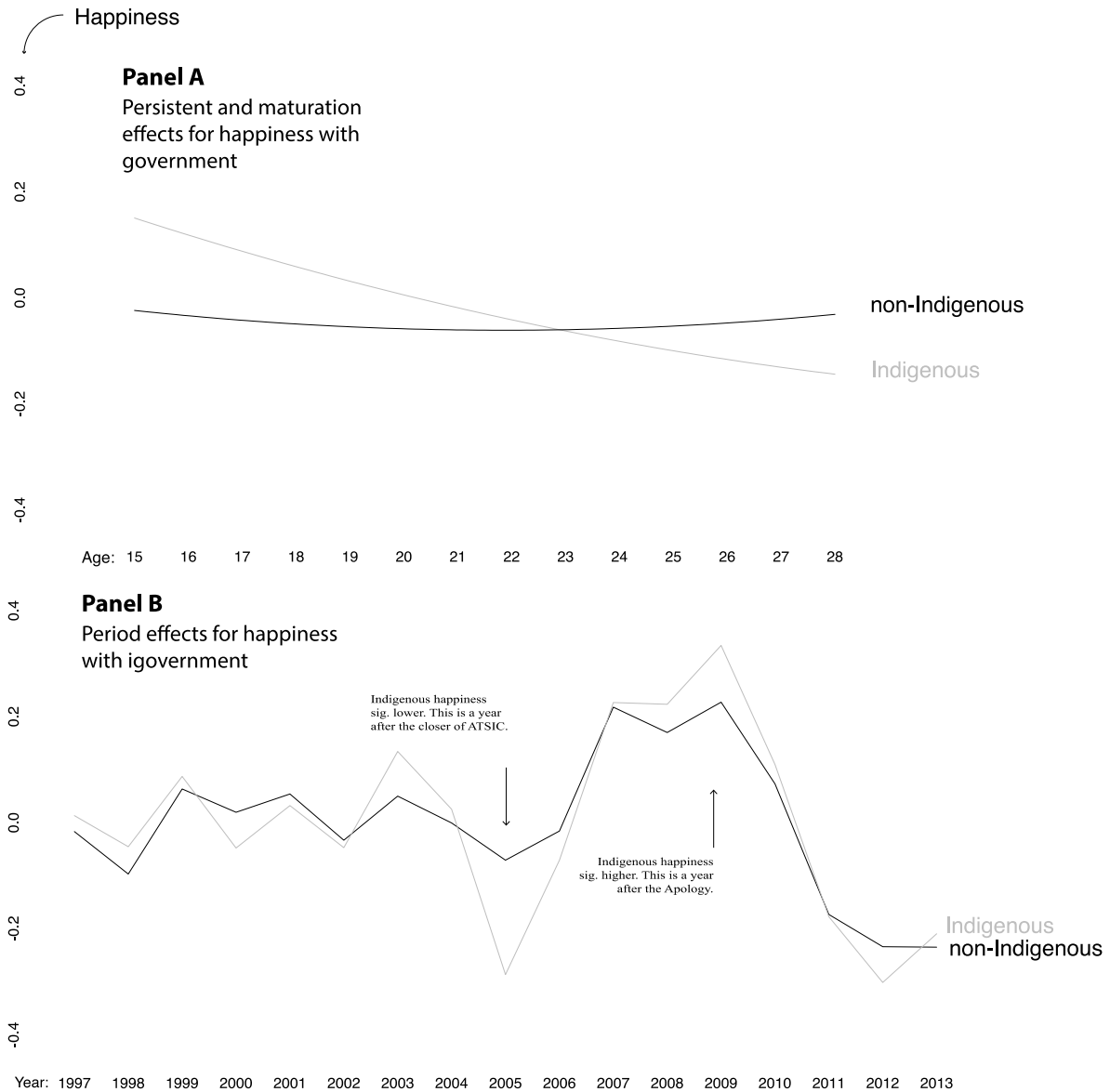


Figure 4. Happiness with the way the country is run (Government). Small dots represent non-Indigenous maturation (smoothed trends corresponding to the bottom axis) and period (unsmoothed trends corresponding to the top axis) effects. Large dots represent Indigenous maturation (smoothed trends corresponding to the bottom axis) and period (unsmoothed trends corresponding to the top axis) effects.* Significant differences between Indigenous and non-Indigenous youth in period effects. Figure represents model M5. Model control for cohort size. Period effects are given with 95% confidence intervals. Number of observations = 170,998 from 33,672 participants.

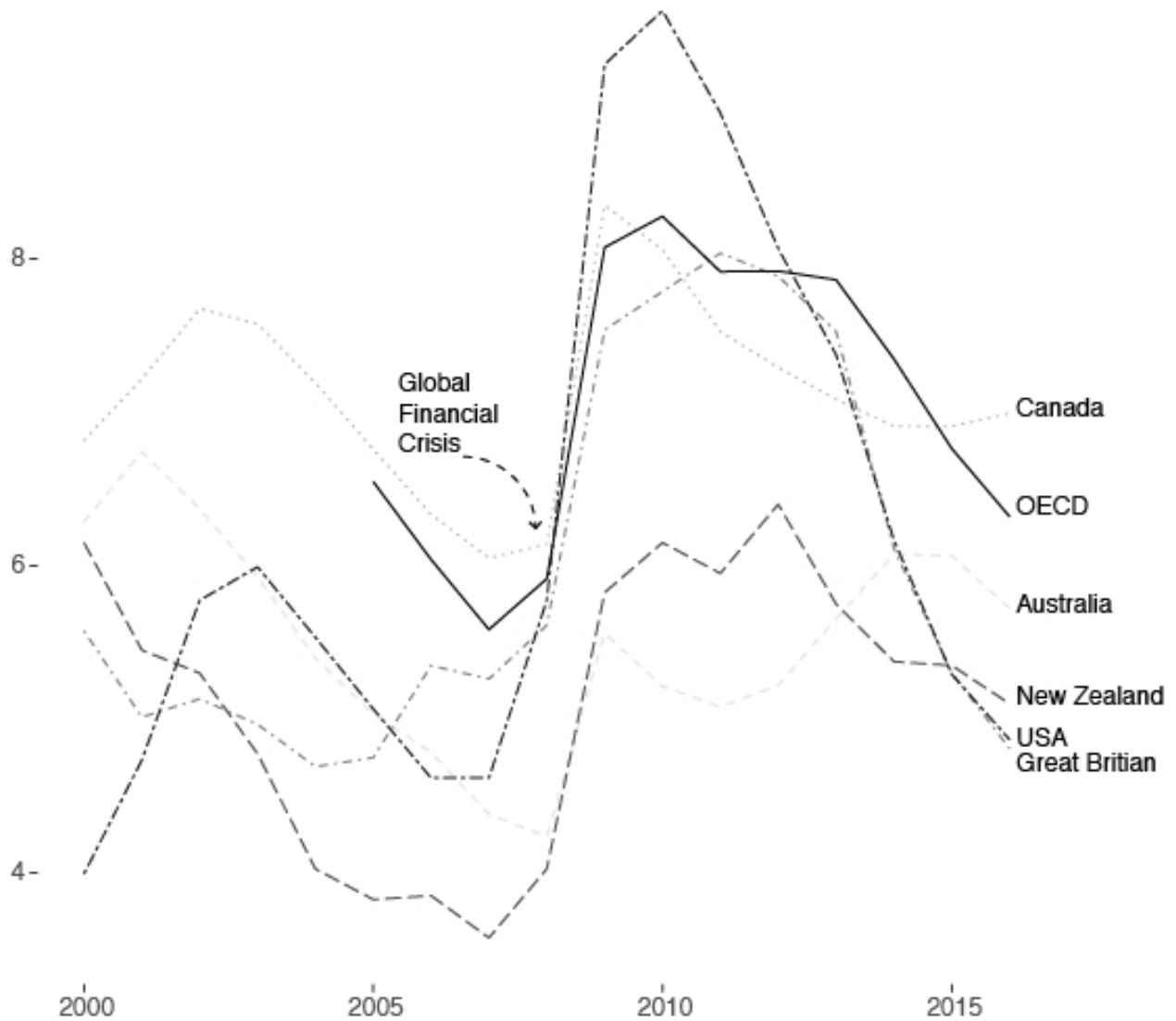


Figure 5. Trends in unemployment rates in Anglophone countries and averaged across the OECD. Data retrieved from <https://data.oecd.org/unemp/unemployment-rate.htm>. Onset of the Global Financial Crisis is represented by the vertical black line.