Developmental Investigation of the Domain-Specific Nature of the Life Satisfaction Construct Across the Post-School Transition

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Acknowledgements

This study was partially supported by a grant from the Australian Research Council (DE140100080) awarded to the third author.

Abstract

This study evaluated the nature of the life satisfaction construct with an emphasis on the comparison between a global or domain-specific operationalization during the transition from adolescence to adulthood. A combination of person-centered and variable-centered methods were used to analyze seven waves of data covering the post-school transition from a sample of 24721 youth participating in Longitudinal Study of Australian Youth between 1998 and 2010. Evidence for the increasing importance of a domain-specific approach as adolescents entered adulthood was provided by: (1) factor analyses identifying a three-factor model covering achievement, family, and leisure satisfaction that proved invariant across time waves; (2) factor mixture analyses showing shape-related differences between profiles (i.e., within-profile differences between domains) that increased as young people moved into adulthood.

Keywords: well-being, life satisfaction, domain-specificity, measurement invariance, factor mixture modeling, longitudinal study of Australian youth.

The question of how to best measure life satisfaction is more complex than it may seem. General population surveys typically measure life satisfaction either as a global component (i.e., global life satisfaction), or as a series of domain-specific components (i.e., domain satisfaction, e.g., achievement, family, leisure) (e.g., Cummins, 1996; Diener, Lucas, Oishi, & Suh, 2002; Gilman, Huebner, & Laughlin, 2000). Arguably, assessing life satisfaction from a global perspective has been the most common practice in the literature, particularly with youth (Gilman & Huebner, 2003). Empirical literature however, suggests that relying on a single global component of life satisfaction may hide critical processes that occur at the domain-specific level, and in particular critical changes occurring during periods of developmental transition (Gilman & Huebner, 2003; Proctor, Linley, & Maltby, 2009).

Importantly, a critical assumption of the domain-specific, multidimensional, approach to life satisfaction is that individuals' profiles of life satisfaction will show differential levels of satisfaction toward different domains (e.g., Cummins, 1996). This assumption has yet to be systematically investigated. Likewise it is unknown whether profiles of life satisfaction change as a result of major developmental transitions. The current research utilises three cohorts of the Longitudinal Study of Australian young people to explore changes in life satisfaction using a well-validated multidimensional measure of life satisfaction (e.g., Cummins & Lau, 2005) during the post high-school transition and relying on a combination of variable-centered (i.e., factor analyses) and person-centered (i.e., profile analyses) methods.

The Post High-School Transition

The post high-school transition is a distinctive developmental period associated with numerous developmental tasks covering most life domains (Dietrich, Parker, & Salmela-Aro, 2012). As youth move out of their parents' home, start to work or enter university, become increasingly financially independent, or become gradually involved in families of their own, their lives undergo major transformations cover multiple domains (e.g., Arnett, 2000). Most young people handle this transition relatively well while a subset of individuals struggle (Gilman & Huebner, 2003; Litalien, Lüdtke, Parker, & Trautwein, 2013; Parker, Lüdtke, Trautwein, & Roberts, 2012). This transition is unique in that many developmental tasks, across many distinct life domains, are required to be almost simultaneously addressed by young people (Dietrich et al., 2012; Zarrett & Eccles, 2006). This transition period coincides with the beginning of a relatively modern developmental stage referred to as emerging adulthood (Arnett, 2000, 2006). This period extends into mid to late 20's and is defined by considerable instability, role and identity exploration, increases in risk behaviors, and growing autonomy.

Life Satisfaction: A Multidimensional Construct?

Life satisfaction is a central component of subjective wellbeing (Diener, Oishi, & Lucas, 2003) and is often used as a by-product of positive youth development (e.g., Proctor, Linley, & Maltby, 2008). However, there is also research suggesting that life satisfaction is more than a by-product of well-being, and rather represents a direct contributor to positive youth development (Huebner, Suldo, Smith, & McKnight, 2004). Adolescents with higher life satisfaction have been found to have better adaptation ability (Hirschi, 2009), mental health (Suldo & Huebner, 2004) and psychosocial functioning (Suldo & Huebner, 2006).

In previous research, life satisfaction has been alternatively considered (and measured) as either a unidimensional global construct, or as a multidimensional construct in which individuals are assumed to present differential levels of satisfaction toward various life domains (Cummins, 1996). Typically research has focused almost exclusively on global unidimensional approaches. Yet, there are indications that a multidimensional perspective may lead to a better understanding of positive youth development (Gilman & Huebner, 2003). Domain-specific measures have been found to be more reactive to changes in life circumstances than global life satisfaction measures (Diener, Inglehart, & Tay, 2012; Easterlin, 2006). For example, Long and Huebner (2014) found that school satisfaction measures are more responsive to a wide array of school-related outcomes compared to a global unidimensional measure of life satisfaction. Likewise, empirical research suggests that unidimensional measures may miss important distinctions that multidimensional measures capture. For instance, Gilman and Huebner (2003) provide an overview of research indicating that young people with mental health concerns, intellectual disabilities, and transitions to stressful environments display differential patterns on multidimensional measures of life satisfaction compared to the general population, but little difference in global life satisfaction.

Studies of children's and adolescents' well-being also provide valuable insights regarding the application of a domain-specific approach within a developmental context. When monitoring children's well-being in large scale studies, well-being typically tends to be defined multidimensionally (Kosher, Jiang, Ben-Arieh, & Huebner, 2014), and comparisons made between countries also tend to reveal domain-specificity (e.g., Bradshaw, Keung, Rees, & Goswami, 2011; Bradshaw & Richardson, 2009). Similarly, Huebner and colleagues identified five critical domains underlying well-being and life satisfaction in childhood and adolescence (Gilligan & Huebner, 2007; Huebner, 1998; Weber, Ruch, & Huebner, 2013; Zullig & Huebner, 2005), and confirmed their differentiation: Family, friends, school, self, and living environment (Antaramian & Huebner, 2009; Matthews, Zullig, Ward, Horn, & Huebner, 2011).

The current study focuses on life satisfaction across the post-school transition. Although there is no consensus as to the numbers of life satisfaction domains relevant across this period, there is sufficient support for the need to consider the following major life domains: achievement (e.g., Milyavskaya et al., 2009; Zarrett & Eccles, 2006), leisure (e.g., Fredricks & Eccles, 2006a; Larson, 2000) and family life (e.g., Basuil & Casper, 2012; Milyavskaya & Koestner, 2011; Parket et al., 2012).

Developmental Differences in Life Satisfaction

An important consideration is the possibility of developmental changes in the nature of global life satisfaction and domain-specific satisfaction. There are two aspects to consider in the development of the life satisfaction construct. First, there may be changes in the level of life satisfaction over the life span. Second, from a multidimensional perspective, there may be changes in the composition of life satisfaction over time. In relation to changes in level, there is some evidence that life satisfaction evolves with age (e.g., Blanchflower & Oswald, 2004, 2008; Plagnol & Easterlin, 2008). For example, using growth mixture modeling, Salmela-Aro and Tynkkynen (2010) identified three global life satisfaction trajectories two years after the post-school transition: high-stable (i.e. flat pattern), low-increasing, and high-decreasing. However, there is strong evidence that patterns of change over time are different for global life satisfaction measures than for domain-specific measures (e.g., Easterlin, 2006; McAdams, Lucas, & Donnellan, 2012). For example, Easterlin (2006) found that global life satisfaction, as well as family and job satisfaction, generally followed an inverted U-shape trajectory across adulthood, whereas financial satisfaction presented a U-shape pattern and health satisfaction followed a linear decrease over time. In relation to the post high-school transition, Parker, Thoemmes, Duineveld, and Salmela-Aro (in press) showed that global and work related components of life satisfaction in youth attending university followed an inverted U-shape trajectory, with the highest levels in the few years after high-school before declining as graduation from university approached.

There is, to our knowledge, little research exploring how the composition of life satisfaction changes over time. However, Gilman and Huebner (2003) note that self-concept theory provides a model for how life satisfaction may differentiate across the life span. In particular there is a suggestion that self-concept becomes more multidimensional as young people age. In particular, domains of self-concept tend to be highly correlated at early ages. However, as young people age, the structure of self-concept changes with domains that are similar in content remaining highly correlated while distal domains become increasingly less correlated (Marsh, 2007a). This change in structure is due in part to developing cognitive abilities but also exposure to more diversified life domains such as the change in schooling structure from elementary to secondary education (e.g., Marsh, 2007a; Marsh & Ayotte, 2003; Shavelson, Hubner, & Stanton, 1976). Thus, both individual development and changes in the social context change the structure of self-concept.

While little research has explored how the structure of life satisfaction changes over development, there are both dramatic changes in cognitive (Steinberg, 2014) and social (Arnett, 2000) structures during the post high-school transition that may influence the structure of life satisfaction. As noted above, emerging adulthood is characterized by identity development, experimentation with a number of life roles but particularly work, relationships, and world views and increasing autonomy (Arnett, 2000). Thus, where changes in cognitive and social structure have influence on the structure of self-concept, it is possible that such changes also influence the structure of life satisfaction. In this regard, Caspi and Moffitt (1993) note that major life transitions, such as school graduation and entry into adulthood, provide a particularly interesting window of opportunity to study developmental differences as they are typically marked by important changes across multiple life domains (see also Dietrich, Parker, & Salmela-Aro, 2012; Parker , Lüdtke, Trautwein, & Roberts, 2012).

Domain-Specificity Hypothesis

Although some studies address the importance of domain-specific measures, comparisons between domain satisfaction and global life satisfaction have not, to our knowledge, been conducted in a person-centered perspective. Similarly, longitudinal studies are few, and none of them address the increased differentiation of life satisfaction over time. The generalized structural equation modeling framework (Bengt Muthén, 2002; Skrondal & Rabe-Hesketh, 2004), which incorporates continuous and categorical latent variables, provides a way to address these issues.

Within this framework, the extraction of multiple factors reflecting distinct domains of life satisfaction and the superiority of a solution incorporating multiple factors over a single-factor solution would provide a first source of variable-centered evidence of the validity of domain-specific approach. However, the existence of multiple factors underlying measures of life satisfaction does not guarantee that meaningful differences will emerge regarding the relative strength of different domains of life satisfaction at the individual level – especially if and when the factors are themselves strongly correlated. Such verification can be conducted using person-centered analyses, which are designed to group individuals according to prototypical categories (i.e., profiles) based on similarities on a set of indicators. This approach directly aims to model population heterogeneity through the identification of quantitatively and qualitatively distinct subgroups in the population. While there has been research which has explored global life satisfaction from a person-centered perspective (e.g., Salmela-Aro & Tynkkynen, 2010; Tolan & Larsen, 2014; Wang, 2007), we are unaware of any person-centered research which has done so from a multidimensional life satisfaction perspective, particularly longitudinally.

The presence of qualitative (i.e., *shape*-related) differences between the extracted subgroups of participants is often invoked as an important pre-requisite to the meaningfulness of a person-centered solution (e.g., Bauer, 2007; De Boeck, Wilson, & Acton, 2005; Morin & Marsh, 2015). We hypothesize that the presence of *shape* differences between profiles (e.g., with one profile showing high satisfaction in the family, but low in other areas) would support a domain-specific operationalization of life satisfaction. A lack of *shape* differences, however, would provide evidence in favor of a stronger global component underlying life satisfaction's ratings. Morin and Marsh (2015) note that it is possible for constructs to incorporate both a global component (e.g., a global life satisfaction component related to the covariance shared among all of the life satisfaction indicators), as well as profiles showing a domain-specific differentiation which explain the covariance in the items not explained by the global component. In such cases, the global component may create a confounding that renders the identifications of *shape*-differentiated profiles harder to achieve. Morin and Marsh (2015) thus propose to rely on a person-centered factor mixture analyses, allowing for an explicit representations of both *shape* (through a categorical latent variable representing qualitative difference in life satisfaction profiles) and *level* (through a continuous latent variable representing quantitative difference in life satisfaction profiles) effects in the model. In this study, we apply these methods to investigate the domain-specificity of life satisfaction.

Hypothesis 1A: The life satisfaction construct will exhibit multiple factors/domains supporting the superiority of domain-specificity.

Hypothesis 1B: Individuals will be distinguished into profiles with differentiated *levels* and *shapes* of life satisfaction. The more differentiation shown by the profiles' shape, the stronger the support for the domain-specificity argument.

Developmental differences in the nature of life satisfaction can be expressed in many ways. First, the nature of the measurement model underlying responses to multiple life satisfaction items could change (for instance, moving from a 1-factor model to a multiple-factor model), or remain the same, as a function of aging. This reflects the strongest possible form of developmental change and would suggest that age-related comparisons in regards to life satisfaction should remain qualitative in nature as the life satisfaction construct itself changes with age. Assuming that the underlying measurement model remains stable, the precision of the measures may change with age, again suggesting that age-related comparisons are precarious and may be biased by measurement differences. Such verification would involve test of measurement invariance of the underlying factor model over age groups (Millsap, 2011). Finally, the nature of the person-centered profiles of individuals' extracted based on multidimensional measures of life satisfaction may also change with age. We therefore hypothesize that evidence of increased differentiation with age would come from the observation of increasingly marked *shape* differentiation between the profiles as participants get older.

Hypothesis 2A: The numbers of domains underlying life satisfaction construct could change over time, which would reflect the strongest possible form of developmental change.

Hypothesis 2B: The shape differentiation of life satisfaction profiles will increase over time.

This study investigates these forms of age-related differences using longitudinal ratings of life satisfaction across multiple items covering various life domains. The data was collected over a total of seven different time waves using three consecutive cohorts (all born in the 80's) from the Longitudinal Surveys of Australia Youth (LSAY). This study covers an age period ranging from 17 to 25 years old, encompassing the post-school transition.

Method

Sample

Data was selected from the 1995, 1998 and 2003 cohorts of the Longitudinal Surveys of Australia Youth (LSAY; NCVER, 2010). LSAY is managed by the Australian Council for Educational Research (ACER) and the Commonwealth Department of Education, Science and Training (DEST), is designed to provide policy-relevant information about youth transition from school to work (Marks & Rothman, 2003), and is publically available after an online registration and application process (www.ada.edu.au/). Data is collected annually until participants turn to 26. LSAY data has a long history to be used to study post-school transition issues (e.g., Marks, 2005).

This study matched data from three cohorts of LSAY, all of which form nationally representative samples of the Australian youth population. For the first two cohorts, we use the full LSAY sample (*N*=13613 for the 1995 and *N*=14117 for the 1998 cohort). For these two cohorts, the data collection started when they were in grade 9. In contrast, the 2003 cohort, rather than using a representative sample of grade 9 students used a representative sample of 15 years old. Thus, to ensure that all participants were in the same developmental period and would be undergoing the post-high school transition at the same time, we incorporate all participants in the1995 and 1998 cohort with the 7378 (out of 10730) participants in the 2003 cohort to ensure all participants were in the same high-school grade. Importantly, our focus was on the post high-school transition. As such, the first time wave in our study was when participants were in the final year of high school in Australia (i.e. Grade 12, when participants are on average 18 years old), which is also the year where life satisfaction data became available. The current study includes a total of 7 waves of data collected between 1998 and 2010 on a total sample of 35108 participants, including 17579 (50%) boys and 17443 (50%) girls.

Of those, 10387 (30%) have missing data on all 7 waves of life satisfaction measures, and needed to be excluded from the analyses, leaving a final sample of 24721 participants. The average yearly attrition rate for this sample is 11%. Among which, 11533 (37%) were coming from lower class family, 12917 (41%) were from middle class family and 7162 (23%) were from upper class family. Social class was based on the International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom & Treiman, 1996). Most participants were born in Australia (86.4%) and spoke English as the primary language at home (87.4%). However, 34.3% had fathers and 31.7% had mothers who were born overseas. In terms of educational status, 34.9% of fathers and 31.5% of mothers had a tertiary levels of education. The average yearly attrition rate for this sample is 11%. One year after the post-high school transition, 12864 (37%) of the participants entered university, 7434 (21%) started vocational training, 16662 (47%) started working and 896(3%) were married or in a De Facto relationship. By the end of the seven waves of this study, 4615 (13%) of the participants had completed at least one bachelor degree, 3723 (11%) had completed vocational training, 10369 (30%) were employed, and 3497(10%) were married or in a De Facto relationship. More information could be found in online supplement material Figure S2.

In Australia, students are in a compulsory education system between the ages of 5 and 18, which includes primary education (starting in kindergarten or grade 1 [depending on the state], up to grade 6), followed by secondary education (grades 7 to 12).). By the end of secondary education, most students are 17 to 18 years old. After the post-school transition, some students will move on to vocational education and training, other to university training. A large proportion will enter the job market. University entrance is determined by students' school marks (Tertiary Entry Rank – TER) during the last two years of high school. High TER scores are required for entrance into more prestigious universities and courses (e.g., medicine).Tuition costs are heavily subsidized. Students do not pay for their tuition upfront. Rather a low-interest, income contingent loan is provided, which only has to be repaid after graduation and once income reaches a particular threshold.

Census data from the 1996 and 2006 (covering most of the period in which the current data has been collected) suggests an upward trend in university education with an increase of about 10% in the number of adults with a university qualification (ABS, 2008). Likewise, in the population of 20-24 year olds, there has been an increase in those in education going from 27% in 1996 to 34% in 2006 (ABS, 2008). Based on Australian Census data (2006 and 2011), approximately 6 to 8% of 20-24 year olds were unemployed, while 72% were in some form of employment. A total of 42 to 47% were in full-time employment. In 1995 around 7% of high school graduates took a gap-year, with this rising to 22% of the students in 2006 (Curtis, 2014; Curtis, Mlotkowski, & Lumsden, 2012; Lumsden & Stanwick, 2012). Additional information for the time period under investigation can be found at ABS (2008).

Measure

The life satisfaction scale used in LSAY includes 13 items assessing life satisfaction in specific life domains. These items are obtained from a widely adopted scale, the Australian unity well-being index (e.g., Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003) and are similar to life satisfaction scales adopted in other large-scale population studies (Summerfield et al., 2014). From these items, two items related to satisfaction with the global political and economic climate of Australia were not analyzed in this study, as they are not directly related to youth proximal life circumstances. These items (work, career-prospects, future, wage, living-standard, home-life, residence, independence, social-life, relationship, leisure; see the online supplement for a detailed description) are rated on a 5-point scale ranging from 1 "very unhappy" to 5 "very happy". An example question would be like "how happy are you with the work you do, at study, at home or in a job" (work item). Readers can register online to download the full questionnaire (www.lsay.edu.au/publications/2297.html).

Analyses

Factor Analyses

Exploratory structural equation modeling (ESEM) was used to explore the structure of life satisfaction scale. Analyses were conducted using the robust weighted least squares estimator (WLSMV) for ordered categorical data available in Mplus 7.1 (Beauducel & Herzberg, 2006; Finney & DiStefano, 2006; Muthén, Du Toit, & Spisic, 1997), and the limited amount of missing data present at the item level (M_{missing} = 28%) was handled by the full information algorithms implemented in Mplus in conjunction with WLSMV (Enders, 2010). Given the known over sensitivity of the chi-square test of exact fit to sample size, we adopted the following guidelines to evaluate global model-fit (Hu & Bentler, 1999; Marsh, Wen, & Hau, 2004): Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values greater than 0.90 and Root Mean Square Error Approximation (RMSEA) value lower than .08 reflect an “acceptable” fit to the data, while CFI and TLI values greater than 0.95 and RMSEA values lower than .08 reflect an “excellent” fit to the data.

Tests of measurement invariance across time waves were then conducted to verify whether the final ESEM model remained comparable across waves. We adopted following sequence to test the invariance of the measurement model across time waves (e.g., Meredith, 1993; Millsap, 2011): (1) configural invariance; (2) weak invariance; (4) strict invariance (5) invariance of the factor variances and covariances; (6) latent mean invariance. Evidence for invariance was evaluated using the following widely used criteria: ΔCFI < 0.01, ΔRMSEA < 0.015 (Chen, 2007; Cheung & Rensvold, 2002).

Person-Centered Analyses

To identify latent profiles of individuals based on their life satisfaction across multiple domains, we conducted factor mixture analyses (FMA) at each time point. FMA have the flexibility to both capture a common source of influence on all indicators and distinct prototypical profiles of participants. To ensure that the profiles estimated at each time point are maximally comparable, we estimated them using the factor scores saved from the most invariant model from the previously described invariance sequence. The following indicators were considered to determine the optimal number of profiles: Akaike Information Criterion (AIC; Akaike, 1987), Bayesian Information Criterion (BIC; Schwarz, 1978), Consistent AIC (CAIC; Bozdogan, 1987), Adjusted BIC (ABIC; Sclove, 1987), Lo, Mendell, and Rubin (2001) likelihood ratio test (LMR), Bootstrap Likelihood Ratio Test (BLRT; McLachlan & Peel, 2000), and entropy. Lower values on the AIC, CAIC, BIC and ABIC suggest better fit.

Entropy varies from 0 to 1, with higher values reflecting higher accuracy in the classification of individuals into the profiles (Henson, Reise, & Kim, 2007; McLachlan & Peel, 2000). LMR and BLRT test whether a *k*-profile model yields better fit to the data than a *k-1*-profile model: A significant *p* value supports the superiority of the *k*-profile model. Additional details on all analyses conducted in this study are provided in Appendix A of the online supplements.

Results

A Variable-Centered Perspective on Life Satisfaction Differentiation over Time

Separate analyses at each time point all converged on a 3-factor solution. This solution is illustrated in Figure 1, and the factor loadings from this solution are reported in Table 1 (model fit information is reported in Table S1 of the online supplements). Although the fit of a 4-factor model was slightly better than the fit of a 3-factor model, the difference in fit remained negligible according to the previously listed guidelines (e.g., ΔCFI/ΔCFI < 0.01), and the 4-factor solution was not always well-defined (for illustrative purposes, factor loadings from the 4-factor solutions are reported in Table S2 of the online supplements). Typically, the four-factor solutions resulted in the estimation of a factor solely defined by the item referring to individuals' satisfaction with their "wages". In contrast, this item equally served to define achievement, and family, satisfaction in the three-factor solution, which makes sense given that the family satisfaction factor also incorporates satisfaction towards one "standards of living". Interestingly, the item assessing individuals' satisfaction toward their own independence (i.e. being able to do what they want) also cross-loaded equally on the family, and leisure, satisfaction factors, which is also substantively meaningful

We thus retained the more parsimonious 3-factor model across time waves. This model proved to be highly similar across time waves, including 3 domain-specific life satisfaction factors: achievement, family and leisure satisfaction. The 3-factor structure is also consistent with previous research findings that achievement, family and leisure activity are three most important life domains for young adults. We then investigated the measurement invariance of this model across the seven time waves. The model fit information from the complete sequence of invariance tests is reported in Table 2. All models provided excellent fit to the data (CFIs and TLIs > .95 and RMSEA < .06) and were fully invariant (ΔCFI < .01 and ΔRMSEA < .015). These results show that the measurement model, as well as the structural relations, latent variances, and latent means are fully invariant across waves. Taken together, these results support the factor validity of the life satisfaction measure used in this study, as well as it complete measurement invariance across time. Furthermore, it supports, from a variable-centered perspective, the superiority of a domain-specific approach to life satisfaction measure over a global life satisfaction approach (as shown by the systematically lower fit of a one-factor model). Finally, these results suggest that, as least from a variable-centered standpoint, developmental differences regarding the domain-specificity of life satisfaction are few.

A Person-Centered Perspective on Life Satisfaction Differentiation over Time

Life Satisfaction Profiles. The FMA estimated life satisfaction profiles based on the three domains of satisfactions previously identified, while incorporating a control for global levels of life satisfaction. This model is illustrated in Figure 2. Summary of fit statistics for these FMA are presented in Table S3 of the online supplements. All indicators of fit (AIC, CAIC, BIC, ABIC) systematically decreased as the number of estimated latent profiles increased. Given the sample-size dependency of these indices, this is to be expected with a sample size of 24,721 (e.g., Marsh, Lüdtke et al., 2009; Morin & Marhs, 2015). Therefore, elbow plots (presented in Figure S1 of the online supplements) were drawn to help in model selection. Across time waves, these plots support the superiority of the 6 or 7 profiles solutions, which were selected for further investigation and the examination of the more computationally-intensive LMR and BLRT. While all BLRTs proved to be significant, the

LMRs supported the 7-profile solution in four out of the seven waves, versus only once for the 6-profile solution. Examinations of the alternative solutions confirmed the statistical adequacy, and greater interpretability, of the 7-profile solution, which was retained as the final solution. This solution is illustrated in Figure 3.

The extracted profiles differ from one another according to both *shape* and *level* already in the first wave (when participants are in grade 12). For instance, at wave 1, profiles 1, 3, 5, and 7 respectively show *very low* (7% of the participants), *moderately-low* (26%), *high* (10%), and *low* (10%) levels of life satisfaction across the three domains – thus showing mainly level-based differences. In contrast, some *shape* differences can be observed across domains in profiles 2 (14%; with a moderately-high level of family and leisure satisfaction, and a moderate level of achievement satisfaction, referred to as the *family/leisure-satisfied* profile), 4 (20%; with a slightly higher level of achievement satisfaction and a moderate level of family and leisure satisfaction, referred to as the *achievement-satisfied* profile), and 6 (14%; with a moderate level of family and leisure satisfaction, and a moderately-low level of achievement satisfaction, referred to as the *achievement-dissatisfied* profile).

Developmental Differences on Life Satisfaction Profiles. The 7-profile solution reveals that most life satisfaction profiles remain highly similar across time waves, although *shape* differences become slightly more pronounced after the transition into adulthood has been completed. This tendency is especially marked for the *achievement-satisfied* profile (Profile 4), where the dominance of satisfaction with the achievement domain over that of the other domains becomes more pronounced over time). In contrast, Profiles 1 (*very low satisfaction*), 2 (*family/leisure-satisfied*), and 5 (*high satisfaction*) remain essentially unchanged over time. In contrast, the remaining profiles apparently change in shape over the course of development, showing that the post-school transition does indeed influence the nature of life satisfaction profiles. Thus, the seventh profile, which presents *low satisfaction* across domains in waves 1, 2, 3, and 4 (10%-13% of the participants across waves), presents *moderate satisfaction* across domains in waves 6 and 7 (26%-27%) – with a slightly different profile in wave 5 (10%; moderate levels of achievement and leisure satisfaction but high levels of family satisfaction, referred to as *family-satisfied*). Similarly, profile 3 presents a *moderately-low satisfaction* across domains in waves 1 and 2 (22-26%) but then becomes smaller (2%-10%) and characterized by *moderately high satisfaction* across domains in waves 3 to 7. Finally, the remaining profile (Profile 6) is initially characterized by an *achievement-dissatisfied* profile at waves 1 to 4 (14% to 29%) then increases in size after wave 4 (32% to 35%) and becomes mainly characterized by *moderately-low* satisfaction across domains (similar to Profile 3 at Waves 1 and 2).

These results support the value of a domain-specific approach to life satisfaction, at least starting in grade 12, but also suggest that this value may slightly increase with age. Furthermore, these results show that, although the nature of the life satisfaction profiles identified in this study remains mostly stable over time, some changes apparently occur as participants leave high school and enter adulthood, at least for 4 of the 7 extracted profiles (profiles 3, 4, 6, and 7).

How Do Weights of Life Satisfaction Domains on Global Life Satisfaction Change Over Time? The estimated factor mixture models include a global life satisfaction factor on which the three domain-specific life satisfaction indicators are allowed to load and that is itself controlled for in the estimation of the profiles. These factor loadings, at each wave, are reported in Table 3. These results show that individuals in grade 12 apparently weight family as more important than achievement and leisure in the determination of their global life satisfaction. As they get older, the relative importance of family gradually decreases to a level more similar to achievement and leisure. These results suggest that the balance of life domains thus appears to take a few years to emerge, and that a shift occurs in the relative importance of various life domains in the determination of global life satisfaction during the post-school transition. It is reasonable to consider that domain differentiation found in our study might be due to the changes in the importance of life domains. Moreover, the weights change shown the tendency for a more balanced life. With more life domains included, future research might be able to validate these findings.

The Stability of the Life Satisfaction Profiles

To further explore the stability of the profiles at the individual level, we extracted the most likely class membership of each participant at each time wave and computed their manifest transition probabilities across time waves. Results are presented in Table S4 of the online supplements and show moderate stability across time waves. An average of 49% of people in one profile at wave *w-1* remained in the same profile at wave *w*. Percentages of people remaining in the same profile ranged from 1.0% to 85.2%. Interestingly, the lowest levels of stability are associated with changes in the nature of the profiles, for example, only 1.0% of the participants associated with profile 3 at wave 2 remained in this profile at wave 3 when its shape changed. Similarly, only 1.2% of the participants associated with profile 7 at wave 4 remained in this profile at wave 5 when its shape changed. Without these lower indicators of stability, the percentage of people remaining in the same profile ranged from 29.1% to 85.2%. Interestingly, the indicators of stability seem to be highest at the last wave (44.7% to 85.2%) when entry into adulthood is likely to have been completed for many participants. When participants move from one profile to another, they tend to move into profiles presenting a similar pattern of life satisfaction results, typically moving from more extreme to less extreme profiles consistent with a regression to the mean phenomenon.

Discussion

We have presented evidence for the superiority of a domain-specific approach for life satisfaction measure. Life satisfaction ratings during the post-school transition can be decomposed into three major domains (achievement, leisure, family) and 7-profiles, each with unique patterns of domain satisfactions, at each time point. These results indicate that young people, even while still in secondary school settings, already present differentiated levels of life satisfaction across life domains, evidencing both shape and level differences in the life satisfaction profiles.

Unidimensional versus Multidimensional Approaches to Life Satisfaction

Cummings (1996) note that life satisfaction research has typically defined the construct as either unidimensional and global or consisting of multiple domains. In the current research we suggest that there is considerable value in considering a multidimensional perspective. In particular, at each time point, when a global life satisfaction was extracted, we still observed unique life satisfaction profiles with differential *level* and *shape* patterns in domain satisfactions. While we found value in a multidimensional perspective, the issue of which domains to measure remains an important consideration. On the issue of what domains of life to measure, Cummins (1996, p. 304) notes "if each term describing some aspect of the human condition is regarded as separate, then their number is very large indeed. But a more parsimonious view is that many terms share a great deal of their variance." Thus, it is difficult to know which domains should be included, excluded, or combined and for whom (i.e., should different groups and developmental stages use different domains) in order to adequately capture the experience of young people. As Cummins notes, there is value in a parsimonious approach and the domains used here emerge from the long running *International Well-being Group* which aims to ascertain which domains are relevant for the majority of people (Tomyn et al., 2013). Furthermore, research suggests that the domains used here appear to be the most critical to this life period (Bachman & Schulenberg, 1993; Basuil & Casper, 2012; Fredricks & Eccles, 2006; Milyavskaya et al., 2009; Larson, 2000). Nevertheless, ongoing research is needed to further clarify these issues. Likewise there is a need to consider how these domains should be weighted when global life satisfaction is of interest (Wu, 2008).

Developmental Trends

Examination of developmental differences reveals that identified profiles remain generally similar, but still slightly change or evolve over time for at least 4 of the 7 profiles. Similarly, and individuals' classifications into the profiles also shows a high level of stability. Such findings suggest that the post high-school transition is not accompanied by any large scale change in life satisfaction construct for young people; rather changes in structure emerge slowly as young people enter their early to mid-20s. As noted in the literature review, developmental research on self-concept has found evidence of important age-related differentiation between self-concept domains. However, such research has traditionally focused on the period from childhood to adolescence and in particular the transition from elementary to secondary schools (see Marsh et al., 2014 for a review). As such it is possible that earlier, or later, developmental transitions have more dramatic effects on the structure of life satisfaction. These possibilities should be more thoroughly considered in future research. Demographic profiles for each life satisfaction profiles stayed the same over time (see online supplements Table S5 and Figure S3).

While there was relatively little differentiation in life satisfaction for most profiles, at least four of the identified profiles are observed to change (Profile 7, changing from a profile of *low satisfaction* to a profile of *moderate satisfaction*; Profile 3, changing from a profile of *moderately-low satisfaction* to a profile of *moderately-high satisfaction*; Profile 6, changing from an *achievement-dissatisfied* profile to a profile of *moderately-low satisfaction)* or evolve (Profile 4, where the dominance of *achievement-satisfaction becomes more pronounced*) over time. This differentiation provides and important background for us to explore the underlying course of adaptation to developmental tasks during transition to adulthood. Possibly important questions could be related, for instance, to the causes of the observed increase in family satisfaction occurring at wave 5 for profile 7. Considering that most people are aged around 22-23 at this wave, it is possible around 10% of population will establish their own family at this age (ABS, 2013). This novel experience might change the way people evaluate their life, but soon the life satisfaction ratings return to the baseline. However, comparing with *level* of life satisfaction at the previous four waves, what happened at wave 5 seems to have significantly increased family satisfaction for this profile. In contrast, the differentiation of profile 4 gradually becomes more pronounced over time. The question that then emerges concerns the likely determinants of this increasing domination of achievement satisfaction. A possibility is that this group could have fond a great person-environment fit in terms of their careers or university pathways. However, these possibilities remains to be more systematically explored in future studies. In practice, if we could identify specific determinants of the emergence of differentiated ratings, it would become possible to use this knowledge to guide the development of more efficient transition support strategies for targeted groups presenting a risk in this regard. We believe the statistical approach we presented here would be powerful tool for such studies.

Similarly, weights on domain satisfaction appeared to slightly change over time, suggesting a shift in relative importance of life domains during the post-school transition. This might be the precursor of subsequent changes in domain satisfaction ratings. It is reasonable to consider that domain differentiation found in our study might due to the changes in the importance of life domains. Weighting the domain score perhaps is necessary in the future administration of domain-specific measure (Wu, 2014). Moreover, the weights change shown the tendency for a more balanced life. With more life domains included, future research might be able to validate these findings.

Our results underline the importance of considering life span development when considering whether to adopt a global or domain-specific approach. For the age groups studied here, a domain-specific perspective is clearly more informative than a global one and becomes more informative as adolescents move into adulthood. For other age groups, and particularly younger age groups, global measures might perform well or better. This would indeed be consistent with developmental research on related multi-dimensional constructs such as self-concept (see Marsh, 2007a). Future research on younger and older age groups and covering different transitions points will significantly increase our understanding on the structure of life satisfaction across the life-span.

Limitations and Directions for Future Research

Although the current research is based on an extremely large and representative sample covering a number of time waves and three historical periods, it is important to note that the issue of generalization to other cultures and developmental periods remains an area in need of further research. In particular, our results suggest that the domain-specificity of life satisfaction may increase with age across the transition into adulthood. However, future studies would be needed to verify whether this trend is maintained or transformed as youth get older than 25 years old, start their own family, finish their University studies, and get more settled into their work.

Second, as is often the case with secondary data analyses of large scale demographic data, on has to do with measures that are already available in the data set. Here, we decided to focus our effort on describing the developmental trends in life satisfaction that could be observed when applying both variable-centered and person-centered methodologies to the LSAY data set. Although we believe our results provide a very rich starting point for future investigation of these issues, it did not prove realistic (due in part to the unavailability of theoretically meaningful covariates, but also to the multiplicity and complexity of the models considered) to explore in more details the determinants of these profiles. This should clearly be investigated in future studies.

Third, as noted above, when estimating multidimensional life satisfaction it is inevitable that some compromises will need to be made between coverage of a large number of domains, the need for parsimony, and ensuring that the chosen domains are relevant for the whole sample. One critical compromise that was made was the combination of two important domains (i.e., work and study) into a single item. This was likely done in LSAY in order to make the items valid for individuals embarked on different developmental pathways (i.e., those who are studying and not working or those that are working but not studying). Likewise, peer and romantic relationships were not separated. There are good reasons for doing this, however, future research may want to consider young people on different developmental pathways separately. Thus, an important direction for future research would be to ascertain whether, and the extent to which, current results can generalize when using life satisfaction measures covering a broader range of life domains.

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Table 1

Factor Loadings: 3-factor ESEM Solutions Based on Responses to 11 items

Items	**Wave1(Gr.12)**	**Wave2**	**Wave3**	**Wave4**	**Wave5**	**Wave6**	**Wave7**
Leisure Satisfaction							
Work	0.02	0.01	0.12	0.01	0.04	0.05	0.00
Leisure	**0.55**	**0.65**	**0.67**	**0.63**	**0.72**	**0.69**	**0.68**
Relationship	**0.45**	**0.47**	**0.51**	**0.42**	**0.47**	**0.47**	**0.47**
Wages	-0.04	-0.07	-0.03	-0.10	-0.10	-0.09	-0.08
Social-Life	**0.95**	**0.92**	**0.96**	**0.92**	**0.93**	**0.92**	**0.91**
Independence	**0.31**	**0.30**	**0.32**	**0.26**	**0.27**	**0.32**	**0.29**
Career-Prospects	-0.07	-0.11	0.00	-0.09	0.00	0.00	0.00
Future	0.02	0.03	0.16	0.03	0.16	0.16	0.15
Home-Life	0.04	0.07	0.12	0.07	0.12	0.14	0.14
Living-Standard	0.01	0.07	0.08	0.00	0.04	0.01	0.02
Residence	-0.01	-0.02	-0.02	-0.01	-0.02	0.00	0.00
Achievement Satisfaction							
Work	**0.38**	**0.42**	**0.46**	**0.45**	**0.57**	**0.61**	**0.63**
Leisure	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00
Relationship	0.04	0.05	0.03	0.08	0.05	0.14	0.13
Wages	**0.22**	**0.25**	**0.28**	**0.25**	**0.35**	**0.37**	**0.40**
Social-Life	-0.15	-0.10	-0.16	-0.09	-0.09	-0.08	-0.07
Independence	0.01	0.03	0.03	0.04	0.06	0.07	0.11
Career-Prospects	**0.89**	**0.94**	**1.01**	**0.94**	**1.08**	**1.06**	**1.06**
Future	**0.74**	**0.69**	**0.69**	**0.62**	**0.68**	**0.71**	**0.72**
Home-Life	-0.01	-0.02	-0.02	-0.03	-0.01	-0.01	0.00
Living-Standard	0.01	0.01	0.05	0.02	0.11	0.12	0.14
Residence	-0.08	-0.07	-0.05	-0.09	-0.05	-0.06	-0.09
Family Satisfaction							
Work	0.30	0.26	0.11	0.24	0.06	0.04	0.08
Leisure	0.20	0.13	0.11	0.15	0.08	0.10	0.11
Relationship	0.27	0.28	0.25	0.29	0.28	0.21	0.20
Wages	**0.36**	**0.34**	**0.27**	**0.38**	**0.29**	**0.28**	**0.26**
Social-Life	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Independence	**0.34**	**0.36**	**0.36**	**0.41**	**0.41**	**0.39**	**0.39**
Career-Prospects	-0.01	0.00	-0.20	0.00	-0.30	-0.27	-0.28
Future	0.09	0.13	0.01	0.23	0.01	0.01	0.01
Home-Life	**0.78**	**0.76**	**0.74**	**0.77**	**0.74**	**0.72**	**0.71**
Living-Standard	**0.79**	**0.74**	**0.70**	**0.76**	**0.66**	**0.68**	**0.65**
Residence	**0.79**	**0.81**	**0.82**	**0.82**	**0.81**	**0.81**	**0.82**

Note. The main factor loadings are bolded, whereas the cross-loadings are in regular font.

Table 2

Fit statistics for invariance tests

Model	$\chi^2(df)$	CFI	TLI	RMSEA(90%CI)	MD$\Delta\chi^2(df)$	ΔCFI	ΔRMSEA
Configural Invariance	8505.324*(2296)	0.993	0.991	0.010(0.010, 0.011)	NA	NA	NA
Weak Invariance	8816.848*(2440)	0.993	0.991	0.010(0.010, 0.011)	555.509*(144)	0.000	0.000
Strong Invariance	10538.043*(2620)	0.991	0.990	0.011(0.011, 0.011)	1767.182*(180)	-0.002	0.001
Strict Invariance	11789.664*(2686)	0.990	0.989	0.012(0.011, 0.012)	1087.695*(66)	-0.001	0.001
Variance-Covariance Invariance	12838.305*(2722)	0.989	0.988	0.012(0.012, 0.012)	591.630*(36)	-0.001	0.000
Latent Mean Invariance	14248.465*(2740)	0.987	0.986	0.013(0.013, 0.013)	796.767*(18)	-0.002	0.001

Note: $*p < .01$; χ^2: Robust weighted least square chi-square; *df*: Degree of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; CI: Confidence interval; MD$\Delta\chi^2$: Change in χ^2 relative to the preceding model from Mplus DIFFTEST; ΔCFI: Change in CFI; ΔRMSEA: Change in RMSEA.

Table 3

Factor Loadings on Global Life Satisfaction: Factor Mixture Analysis 7-profile solution

Domain Satisfaction	Wave1(Gr.12)	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Achievement	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Family	1.96	1.50	1.49	1.42	1.35	1.31	1.28
Leisure	1.18	1.23	1.35	1.26	1.31	1.28	1.26

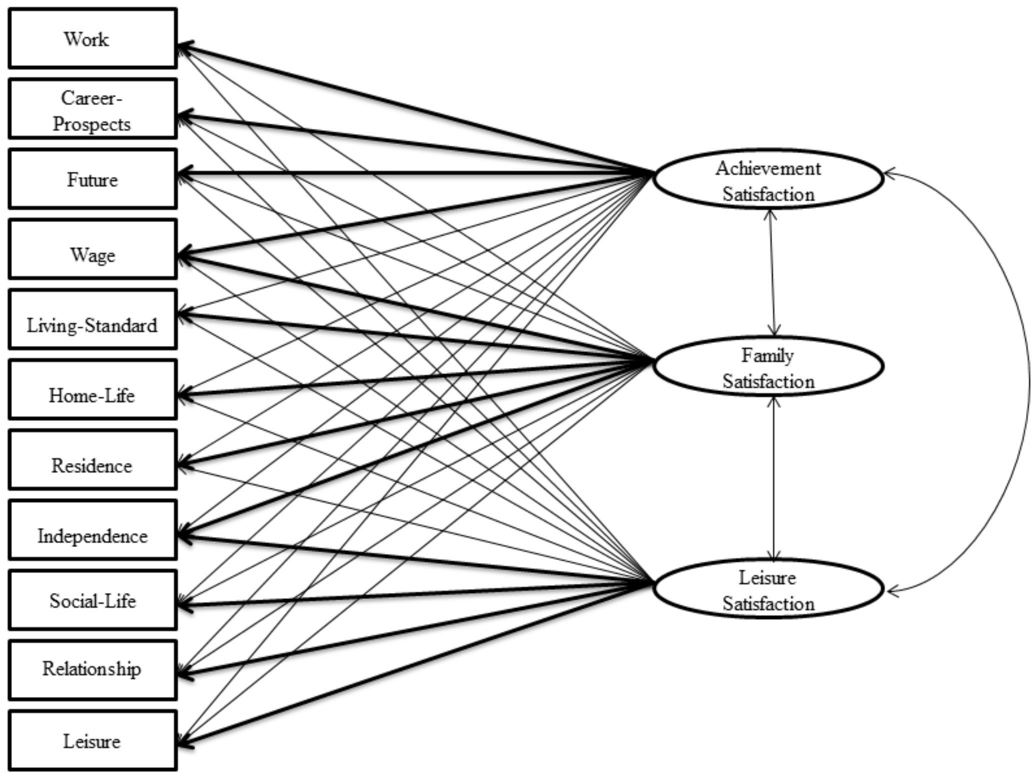

Figure1. 3-factor ESEM solution.

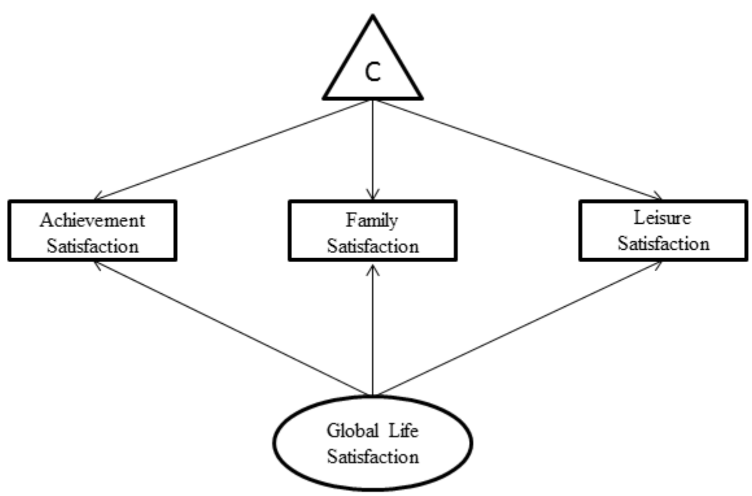

Figure2. Factor mixture analysis with one class-invariant global-component; C = Class.

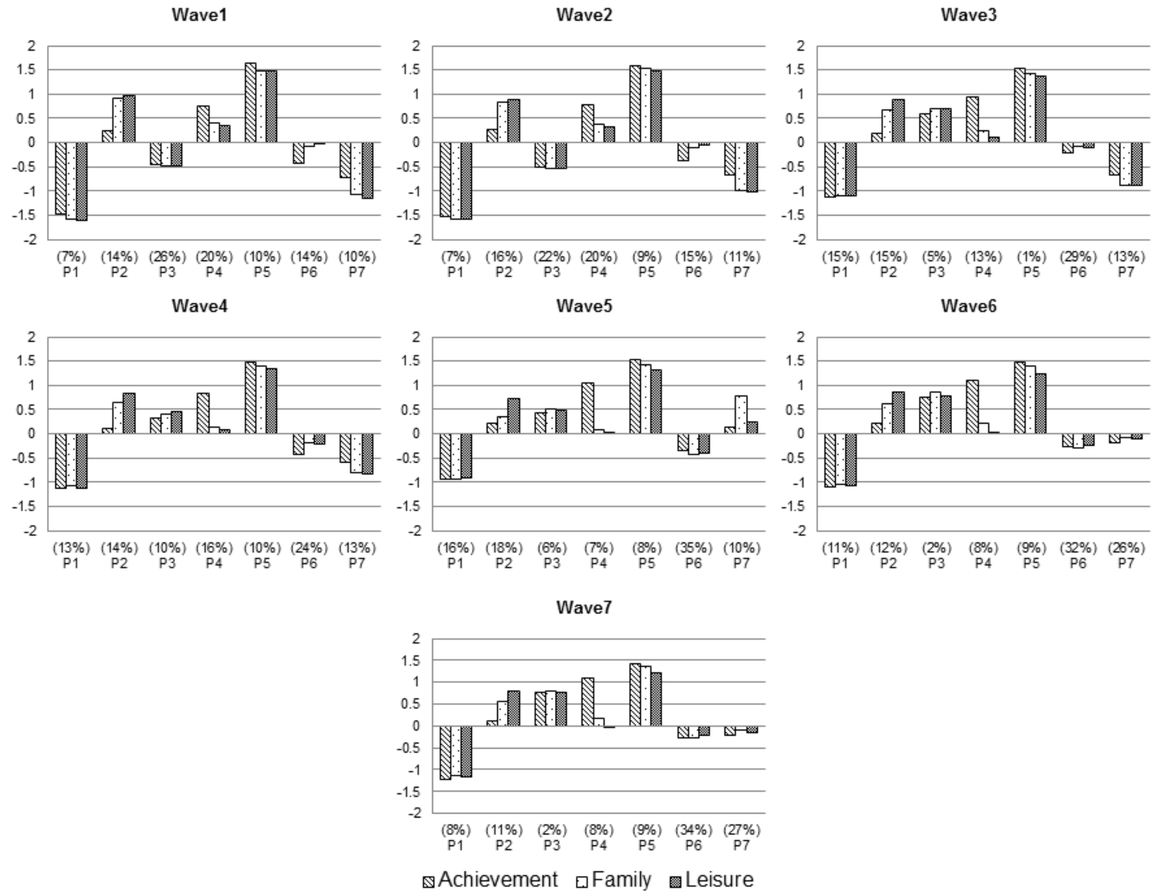

Figure 3. Characteristics of latent profiles for final solution; P = Profile.

Online Supplements for:

Developmental Investigation of the Domain-Specific Nature of the Life Satisfaction Construct Across the Post-School Transition

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Authors' note:

These online technical appendices are to be posted on the journal website and hot-linked to the manuscript. If the journal does not offer this possibility, these materials can alternatively be posted on one of our personal websites (we will adjust the in-text reference upon acceptance).

We would also be happy to have some of these materials brought back into the main manuscript as Appendices if you deem it useful. We developed these materials mostly to provide additional technical information and to keep the main manuscript from becoming needlessly long.

Appendix A

Analyses

Factor Analyses

Initial factor analyses were conducted using Exploratory Structural Equation Models (ESEM) using Geomin rotation based on ε value of .5 (Marsh et al., 2009; Morin et al. 2013). The final models was then replicated using more confirmatory target rotation, which was then used throughout the tests of longitudinal measurement invariance and to save the factor scores for the subsequent profile analyses.

ESEM is an overarching framework that incorporates the advantages of both EFA, CFA and SEM into a single framework (Marsh, Morin, Parker, & Kaur, 2014; Morin, Marsh, & Nagengast, 2013). Compared to traditional EFA, ESEM: (a) can be confirmatory when based on target rotation as it is the case in this study (e.g., Marsh et al., 2014; Morin et al., 2015), and indeed most applications of ESEM so far have been confirmatory in nature (e.g., Guay et al., 2015; Marsh et al., 2014); (b) allows for goodness-of-fit assessment (e.g., Guay et al., 2015; Marsh et al., 2014; Morin et al., 2015); (c) allows for systematic tests of measurement invariance (e.g., Guay et al., 2015; Marsh et al., 2014; Morin et al., 2015). As noted by Morin et al. (2013): "the only "*critical difference between EFA and CFA is that all cross loadings are freely estimated in EFA. Due to this free estimation of all cross loadings, EFA is clearly more naturally suited to exploration than CFA. However, statistically, nothing precludes the use of EFA for confirmatory purposes*", p.396)." But even more importantly, recent simulations studies show that ignoring true cross-loadings present at the population level (even when they are as small as .10-.25) leads to biases in the estimation of the factor correlations (Asparouhov & Muthén, 2009; Marsh et al., 2013; Morin et al., 2015; Sass, & Schmitt, 2010; Schmitt & Sass, 2011), which in turns affect the discriminant validity of the factors (i.e., bias the meaning of the factors) and creates artificial multicollinearity in subsequent analyses where these factors are used in prediction. In contrast, using an EFA or ESEM measurement model allowing for the free estimation of all possible cross-loadings has been shown to result in generally unbiased estimates of the factor correlations, even when the true population models includes not cross loadings.

Measurement Invariance

In these models, a priori correlated uniquenesses between matching items at the different time-points were included to avoid converging on inflated stability estimates (Jöreskog, 1979; Marsh, 2007b). This inclusion reflects the fact that indicators' unique variance is emerges in part from shared sources over time.

We adopted following sequence to test the invariance of the measurement model across time waves (e.g., Meredith, 1993; Millsap, 2011): (1) configural invariance; (2) weak invariance (invariance of the factor loadings); (3) strong invariance (invariance of the factor loadings and items' thresholds); (4) strict invariance(invariance of the factor loadings, items' thresholds and items' uniquenesses); (5) invariance of the factor variances and covariances (invariance of the factor loadings, items' thresholds, items' uniquenesses and latent variances-covariances); (6) latent mean invariance (invariance of the factor loadings, items' thresholds, items' uniquenesses, latent variances-covariances and latent means). Evidence for invariance was evaluated using the following widely used criteria: ΔCFI < 0.01, ΔRMSEA < 0.015 (Chen, 2007; Cheung & Rensvold, 2002).

Factor Mixture Analyses

Models including 1 to 9 classes were estimated using the robust Maximum Likelihood (MLR) estimator. The latent construct was constrained to be the same across classes according to Morin and Marsh's (2015) specifications. Each model was estimated using 5000 random starts, with the best 500 retained for final optimization (Hipp & Bauer, 2006). The variances of the indicators were freely estimated across profiles (see Morin et al., 2011; Peugh & Fan, 2013).

However, since these tests are variations of tests of statistical significance, the outcome of the class enumeration procedure is still heavily influenced by sample size (Marsh, Lüdtke, Trautwein, & Morin, 2009). Thus, with sufficiently large sample sizes, these indicators may keep on improving without ever reaching a minimal point with the addition of latent profiles. In these cases, information criteria should be graphed through “elbow plots” illustrating the gains associated with additional profiles (Morin et al., 2011; Petras & Masyn, 2010). In these plots, the point after which the slope flattens indicates the optimal number of profiles.

Transition Probabilities.

Given the number of time waves and the complexity of the models, it was not possible to conduct latent transition analyses (see Nylund, Muthén, Nishina, Bellmore, & Graham, 2006). Although the current method presents limitations (i.e., it is not possible to formally test the equivalence of the profiles over time and the direct assignment of participants to a single profile ignores their probabilities of membership into the other profiles), it still provides valuable information regarding the stability of classifications over time.

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Appendix B

Table S1

Summary of model fit statistics for ESEM at 7 time waves

Model	χ^2	*df*	CFI	TLI	RMSEA(90%CI)
Wave 1 (Grade 12)					
1 factor_ESEM	12193.509*	44	0.918	0.897	0.106(0.104, 0.107)
2 factor_ESEM	3686.078*	34	0.975	0.960	0.066(0.064, 0.068)
3 factor_ESEM	676.585*	25	0.996	0.990	0.032(0.030, 0.035)
4 factor_ESEM	212.024*	17	0.999	0.996	0.022(0.019, 0.024)
Wave 2					
1 factor_ESEM	11518.817*	44	0.925	0.907	0.109(0.107, 0.110)
2 factor_ESEM	4069.852*	34	0.974	0.958	0.073(0.072, 0.075)
3 factor_ESEM	778.762*	25	0.995	0.989	0.037(0.035, 0.039)
4 factor_ESEM	347.249*	17	0.998	0.993	0.030(0.027, 0.032)
Wave 3					
1 factor_ESEM	9967.762*	44	0.929	0.911	0.107(0.106, 0.109)
2 factor_ESEM	3600.101*	34	0.975	0.959	0.073(0.071, 0.075)
3 factor_ESEM	698.599*	25	0.995	0.989	0.037(0.035, 0.040)
4 factor_ESEM	205.365*	17	0.999	0.996	0.024(0.021, 0.027)
Wave 4					
1 factor_ESEM	8435.542*	44	0.930	0.913	0.105(0.103, 0.107)
2 factor_ESEM	3227.311*	34	0.973	0.957	0.074(0.072, 0.076)
3 factor_ESEM	633.839*	25	0.995	0.989	0.038(0.035, 0.040)
4 factor_ESEM	225.191*	17	0.998	0.994	0.027(0.024, 0.030)
Wave 5					
1 factor_ESEM	8089.686*	44	0.932	0.915	0.109(0.107, 0.111)
2 factor_ESEM	3050.723*	34	0.975	0.959	0.076(0.074, 0.078)
3 factor_ESEM	918.925*	25	0.992	0.983	0.048(0.046, 0.051)
4 factor_ESEM	217.512*	17	0.998	0.995	0.028(0.025, 0.031)
Wave 6					
1 factor_ESEM	7574.469*	44	0.931	0.913	0.112(0.110, 0.114)
2 factor_ESEM	2699.687*	34	0.975	0.960	0.076(0.074, 0.078)
3 factor_ESEM	658.962*	25	0.994	0.987	0.043(0.040, 0.046)
4 factor_ESEM	186.467*	17	0.998	0.995	0.027(0.024, 0.031)
Wave 7					
1 factor_ESEM	6419.222*	44	0.928	0.910	0.110(0.108, 0.112)
2 factor_ESEM	2178.719*	34	0.976	0.961	0.072(0.070, 0.075)
3 factor_ESEM	683.777*	25	0.993	0.984	0.047(0.044, 0.050)
4 factor_ESEM	184.418*	17	0.998	0.994	0.029(0.025, 0.032)

Note: *$p < .01$; χ^2: Robust weighted least square chi-square; *df*: Degree of freedom; CFI: Comparative fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation; RMSEA 90% CI: 90% Confidence interval for the RMSEA point estimate.

Table S2

Factor Loadings: 4-factor ESEM Solutions Based on Responses to 11 items

Items	**Wave1(Gr.12)**	**Wave2**	**Wave3**	**Wave4**	**Wave5**	**Wave6**	**Wave7**
Factor1							
Work	0.04	0.08	0.05	0.08	0.08	0.07	0.10
Leisure	**0.54**	**0.65**	0.01	**0.64**	0.02	0.02	0.03
Relationship	**0.44**	**0.47**	-0.01	**0.42**	-0.02	-0.02	-0.04
Wages	-0.03	-0.02	**1.99**	0.00	**1.75**	**1.51**	**1.21**
Social-Life	**0.90**	**0.91**	0.00	**0.91**	0.01	0.01	0.02
Independence	0.31	0.30	0.01	0.25	0.01	0.01	0.02
Career-Prospects	-0.03	-0.05	0.00	-0.05	-0.01	0.00	-0.01
Future	0.05	0.06	-0.01	0.06	-0.01	-0.01	0.01
Home-Life	0.04	0.05	-0.01	0.03	-0.01	-0.01	-0.02
Living-Standard	0.01	0.05	0.04	0.02	0.07	0.09	0.12
Residence	-0.01	-0.05	-0.01	-0.04	-0.01	-0.01	0.00
Factor2							
Work	**0.50**	0.00	0.13	0.11	0.09	0.06	0.02
Leisure	0.18	0.07	**0.64**	0.03	**0.69**	**0.65**	**0.64**
Relationship	-0.01	0.24	**0.47**	-0.03	**0.41**	**0.41**	**0.43**
Wages	**0.50**	0.05	0.00	**1.07**	0.00	0.00	0.00
Social-Life	-0.01	-0.03	**0.91**	0.01	**0.90**	**0.92**	**0.90**
Independence	**0.25**	0.31	0.28	0.00	0.22	0.27	0.24
Career-Prospects	0.04	-0.03	-0.05	0.00	-0.06	-0.06	-0.05
Future	0.00	0.13	0.11	0.00	0.10	0.10	0.10
Home-Life	0.13	**0.75**	0.06	-0.03	0.04	0.07	0.06
Living-Standard	0.00	**0.69**	0.05	**0.10**	0.04	0.02	0.04
Residence	0.00	**0.83**	-0.08	0.01	-0.09	-0.06	-0.07
Factor3							
Work	0.23	0.24	**0.42**	**0.42**	0.15	**0.51**	**0.48**
Leisure	0.01	0.01	0.05	0.03	0.08	0.03	0.02
Relationship	0.14	0.08	0.08	0.13	0.34	0.15	0.15
Wages	0.04	-0.01	0.00	0.01	0.00	0.00	0.00
Social-Life	-0.01	-0.03	-0.06	-0.04	-0.02	-0.04	-0.04
Independence	-0.02	0.03	0.06	0.08	0.46	0.07	0.10
Career-Prospects	**0.84**	**0.86**	**0.97**	**0.95**	-0.03	**0.97**	**0.96**
Future	**0.75**	**0.72**	**0.64**	**0.61**	0.23	**0.64**	**0.61**
Home-Life	0.00	0.03	0.00	0.02	**0.80**	0.00	0.01
Living-Standard	0.07	0.02	0.04	0.02	**0.68**	0.06	0.06
Residence	-0.02	-0.02	-0.04	-0.05	**0.86**	-0.06	-0.08
Factor4							
Work	-0.02	**0.44**	0.15	0.15	**0.44**	0.13	0.18
Leisure	0.05	0.06	0.10	0.11	0.03	0.12	0.13
Relationship	0.25	0.02	0.26	0.28	0.07	0.27	0.27
Wages	0.07	**0.57**	0.00	0.00	0.00	0.00	0.00
Social-Life	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Independence	0.17	0.08	0.37	0.40	0.06	0.43	0.44
Career-Prospects	-0.02	0.06	-0.05	-0.04	**0.98**	-0.05	-0.04
Future	0.07	-0.03	0.13	0.21	**0.57**	0.19	0.21
Home-Life	**0.67**	0.00	**0.78**	**0.80**	-0.01	**0.78**	**0.79**
Living-Standard	**0.76**	0.08	**0.71**	**0.70**	0.06	**0.68**	**0.64**
Residence	**0.77**	-0.01	**0.86**	**0.81**	-0.05	**0.85**	**0.85**

Note. The main factor loadings are bolded, whereas the cross-loadings are in regular font.

Table S3

Summary of model fit statistics for Factor Mixture Modeling at 7 time waves

Model	LL	# Parameters	AIC	CAIC	BIC	ABIC	Entropy
FMA							
Wave 1 (Grade 12)							
One profile	-65932	9	131882	131963.8	131955	131926	NA
Two profiles	-64357	16	128747	128892.4	128876	128826	0.635
Three profiles	-63432	23	126909	127118.8	127096	127023	0.670
Four profiles	-62129	30	124317	124590.6	124561	124465	0.697
Five profiles	-61352	37	122777	123114.3	123077	122960	0.721
Six profiles	-60746	44	121579	121980.3	121936	121797	0.685
Seven profiles	-60313	51	120729	121193.8	121143	120981	0.684
Eight profiles	-59849	58	119814	120343	120285	120101	0.716
Nine profiles	-59513	65	119156	119748.4	119683	119477	0.705
Wave 2							
One profile	-66007	9	132033	132115	132106	132077	NA
Two profiles	-64767	16	129565	129711.3	129695	129644	0.539
Three profiles	-63804	23	127653	127863.1	127840	127767	0.589
Four profiles	-62900	30	125861	126134.4	126104	126009	0.678
Five profiles	-62344	37	124761	125098.5	125061	124944	0.661
Six profiles	-62001	44	124090	124490.8	124447	124307	0.619
Seven profiles	-61799	51	123700	124164.9	124114	123952	0.613
Eight profiles	-61624	58	123364	123892.3	123834	123650	0.593
Nine profiles	-61441	65	123012	123604.6	123540	123333	0.598
Wave 3							
One profile	-64075	9	128169	128251	128242	128213	NA
Two profiles	-62284	16	124600	124745.7	124730	124679	0.425
Three profiles	-61641	23	123328	123537.8	123515	123442	0.579
Four profiles	-61087	30	122233	122506.9	122477	122382	0.600
Five profiles	-60738	37	121551	121888.1	121851	121734	0.590
Six profiles	-60459	44	121006	121407.6	121364	121224	0.548
Seven profiles	-60270	51	120643	121107.5	121056	120894	0.591
Eight profiles	-60126	58	120368	120896.8	120839	120655	0.618
Nine profiles	-60005	65	120141	120733	120668	120461	0.642
Wave 4							
One profile	-61043	9	122103	122185.5	122177	122148	NA
Two profiles	-58539	16	117109	117255	117239	117188	0.432
Three profiles	-58007	23	116061	116270.3	116247	116174	0.556
Four profiles	-57583	30	115225	115498.9	115469	115374	0.502
Five profiles	-57375	37	114825	115162.1	115125	115008	0.515
Six profiles	-57135	44	114359	114759.8	114716	114576	0.492
Seven profiles	-56934	51	113971	114435.6	114385	114223	0.551

Model	LL	# Parameters	AIC	CAIC	BIC	ABIC	Entropy
Eight profiles	-56833	58	113783	114311.6	114254	114069	0.567
Nine profiles	-56713	65	113557	114149	114084	113877	0.557
Wave 5							
One profile	-58164	9	116346	116428.3	116419	116391	NA
Two profiles	-54816	16	109664	109810.1	109794	109743	0.453
Three profiles	-54327	23	108700	108909.7	108887	108814	0.579
Four profiles	-54041	30	108143	108416.3	108386	108291	0.505
Five profiles	-53797	37	107669	108005.9	107969	107851	0.568
Six profiles	-53601	44	107290	107691.3	107647	107508	0.543
Seven profiles	-53499	51	107099	107564.1	107513	107351	0.578
Eight profiles	-53287	58	106690	107218.8	107161	106976	0.593
Nine profiles	-53191	65	106513	107105.4	107040	106834	0.600
Wave 6							
One profile	-55961	9	111940	112022.4	112013	111985	NA
Two profiles	-51915	16	103861	104007.2	103991	103940	0.460
Three profiles	-51428	23	102901	103111	103088	103015	0.588
Four profiles	-51172	30	102404	102677.1	102647	102552	0.520
Five profiles	-50946	37	101966	102303.2	102266	102149	0.597
Six profiles	-50729	44	101545	101946.3	101902	101762	0.580
Seven profiles	-50556	51	101214	101678.9	101628	101466	0.559
Eight profiles	-50467	58	101049	101577.7	101520	101335	0.556
Nine profiles	-50385	65	100901	101493.3	101428	101222	0.561
Wave 7							
One profile	-51976	9	103971	104052.8	104044	104015	NA
Two profiles	-47303	16	94639	94784.81	94768.8	94718	0.467
Three profiles	-46878	23	93801.9	94011.59	93988.6	93915.5	0.586
Four profiles	-46580	30	93219.9	93493.39	93463.4	93368.1	0.560
Five profiles	-46314	37	92702.2	93039.5	93002.5	92884.9	0.615
Six profiles	-46093	44	92273.3	92674.33	92630.3	92490.5	0.607
Seven profiles	-45916	51	91933.9	92398.81	92347.8	92185.7	0.571
Eight profiles	-45831	58	91778.4	92307.08	92249.1	92064.8	0.572
Nine profiles	-45674	65	91477.3	92069.84	92004.8	91798.3	0.588

Note: LL: Log Likelihood; AIC: Akaike Information Criterion; BIC: the Bayesian Information Criterion; CAIC: the Consistent Akaike Information Cariterion; ABIC: Adjusted BIC.

Table S4a

Percentages of people in one profile at wave 1 transit to another profile at wave 2

	Wave1						
Wave2	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.357**	0.006	0.085	0.014	0.001	0.024	0.071
profile2	0.017	**0.484**	0.077	0.094	0.261	0.140	0.032
profile3	**0.299**	0.084	**0.356**	0.135	0.024	0.138	0.134
profile4	0.053	0.102	0.181	**0.457**	0.220	0.140	0.112
profile5	0.003	0.146	0.018	0.102	**0.389**	0.037	0.039
profile6	0.078	0.149	0.167	0.127	0.058	**0.402**	0.103
profile7	0.193	0.030	0.115	0.071	0.046	0.118	**0.508**

Table S4b

Percentages of people in one profile at wave 2 transit to another profile at wave 3

	Wave2						
Wave3	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.604**	0.033	0.275	0.045	0.003	0.065	0.103
profile2	0.013	**0.354**	0.072	0.071	0.129	0.108	0.018
profile3	0.002	0.181	**0.010**	0.061	0.086	0.021	0.017
profile4	0.033	0.034	0.157	**0.317**	0.126	0.054	0.064
profile5	0.003	0.114	0.013	0.119	**0.539**	0.038	0.037
profile6	0.160	0.256	**0.370**	**0.340**	0.087	**0.596**	0.195
profile7	0.186	0.027	0.102	0.046	0.030	0.119	**0.567**

Table S4c

Percentages of people in one profile at wave 3 transit to another profile at wave 4

	Wave3						
Wave4	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.441**	0.042	0.009	0.066	0.006	0.063	0.073
profile2	0.051	**0.466**	0.064	0.031	0.087	0.074	0.013
profile3	0.009	0.113	**0.710**	0.045	0.114	0.139	0.030
profile4	0.113	0.060	0.043	**0.585**	0.159	0.129	0.067
profile5	0.008	0.121	0.077	0.120	**0.542**	0.039	0.025
profile6	0.257	0.182	0.068	0.100	0.061	**0.449**	0.151
profile7	0.121	0.016	0.030	0.053	0.031	0.107	**0.642**

Table S4d

Percentages of people in one profile at wave 4 transit to another profile at wave 5

	Wave4						
Wave5	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.552**	0.077	0.011	0.103	0.010	0.109	0.067
profile2	0.060	**0.595**	0.082	0.165	0.199	0.168	0.023
profile3	0.001	0.026	**0.326**	0.008	0.065	0.007	0.006
profile4	0.054	0.007	0.021	**0.291**	0.081	0.020	0.022
profile5	0.009	0.051	0.047	0.106	**0.490**	0.021	0.019
profile6	0.248	0.115	**0.502**	**0.241**	0.106	**0.548**	**0.852**
profile7	0.077	0.128	0.012	0.086	0.049	0.127	**0.012**

Table S4e

Percentages of people in one profile at wave 5 transit to another profile at wave 6

	Wave5						
Wave6	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.406**	0.023	0.004	0.042	0.003	0.037	0.077
profile2	0.045	**0.316**	0.037	0.021	0.090	0.014	0.134
profile3	0.000	0.004	**0.341**	0.001	0.020	0.003	0.003
profile4	0.086	0.066	0.005	**0.544**	0.098	0.025	0.083
profile5	0.007	0.089	0.064	0.109	**0.596**	0.026	0.065
profile6	0.137	0.186	**0.526**	0.080	0.120	**0.745**	0.069
profile7	0.319	**0.317**	0.023	0.202	0.073	0.151	**0.569**

Table S4f

Percentages of people in one profile at wave 6 transit to another profile at wave 7

	Wave6						
Wave7	profile1	profile2	profile3	profile4	profile5	profile6	profile7
profile1	**0.447**	0.028	0.000	0.041	0.004	0.014	0.042
profile2	0.055	**0.537**	0.014	0.028	0.054	0.009	0.058
profile3	0.001	0.007	**0.690**	0.000	0.018	0.008	0.001
profile4	0.073	0.029	0.004	**0.560**	0.092	0.014	0.066
profile5	0.006	0.110	0.065	0.113	**0.623**	0.020	0.041
profile6	0.148	0.125	0.214	0.050	0.113	**0.852**	0.167
profile7	0.270	0.163	0.013	0.208	0.095	0.082	**0.625**

Table S5

Demographic statistics for life satisfaction profiles across 7 waves

	Profile1	Profile2	Profile3	Profile4	Profile5	Profile6	Profile7
Wave1							
Age	17.46	17.49	17.44	17.44	17.49	17.46	17.42
Gender							
Male	691	1539	2683	2403	1324	1873	1472
Female	852	1799	2934	2550	1299	1987	1292
Aboriginal or Torres Strait Islander							
No	1398	3129	5236	4667	2454	3631	2594
Yes	63	86	179	124	69	95	87
Country of Birth							
Australia	1237	2922	4740	4309	2301	3282	2300
Other	257	334	738	544	259	488	407
Wave2							
Age	18.43	18.49	18.46	18.46	18.5	18.44	18.41
Gender							
Male	653	1730	2146	2575	1125	1999	1757
Female	755	2125	2232	2558	1242	2176	1625
Aboriginal or Torres Strait Islander							
No	1292	3603	4066	4837	2229	3923	3159
Yes	49	101	133	133	65	103	119
Country of Birth							
Australia	1135	3346	3694	4493	2098	3538	2787
Other	228	425	574	537	217	526	520
Wave3							
Age	19.43	19.47	19.48	19.46	19.5	19.83	19.42
Gender							
Male	1414	1259	711	1601	1329	3850	1821
Female	1624	1621	692	1632	1347	4083	1714
Aboriginal or Torres Strait Islander							
No	2795	2708	1306	3063	2512	7445	3280
Yes	101	52	50	68	72	227	133
Country of Birth							
Australia	2483	2540	1206	2821	2356	6753	2932
Other	465	273	163	339	260	1001	526
Wave4							
Age	20.47	20.46	20.47	20.45	20.47	20.45	20.44
Gender							
Male	1172	1130	1513	2072	1312	2815	1971
Female	1291	1420	1492	2076	1408	3170	1856

Aboriginal or Torres Strait Islander							
No	2300	2402	2798	3922	2566	5582	3539
Yes	69	47	103	103	65	170	146
Country of Birth							
Australia	2050	2223	2608	3613	2391	5064	3142
Other	343	270	318	454	269	784	589
Wave5							
Age	21.48	21.46	21.46	21.43	21.45	21.45	21.47
Gender							
Male	1389	2010	642	928	1102	5112	802
Female	1561	2218	679	919	1161	5128	1047
Aboriginal or Torres Strait Islander							
No	2756	3977	1223	1758	2137	9492	1766
Yes	74	90	48	37	56	361	37
Country of Birth							
Australia	2443	3707	1110	1638	2014	8591	1588
Other	427	428	171	180	198	1385	238
Wave6							
Age	22.5	22.47	22.47	22.44	22.45	22.45	22.46
Gender							
Male	900	970	299	1068	1158	5002	2588
Female	1011	1172	254	1100	1256	5060	2860
Aboriginal or Torres Strait Islander							
No	1788	2018	513	2072	2265	9325	5128
Yes	51	32	20	43	57	359	141
Country of Birth							
Australia	1602	1876	475	1915	2133	8431	4659
Other	258	219	62	222	226	1353	687
Wave7							
Age	23.49	23.47	23.5	23.45	23.45	23.45	23.46
Gender							
Male	660	840	294	1081	1169	5270	2671
Female	721	1027	239	1063	1293	5257	3113
Aboriginal or Torres Strait Islander							
No	1297	1759	493	2061	2311	9755	5433
Yes	34	39	21	34	67	367	141
Country of Birth							
Australia	1155	1638	461	1863	2181	8859	4934
Other	194	193	58	249	233	1385	715

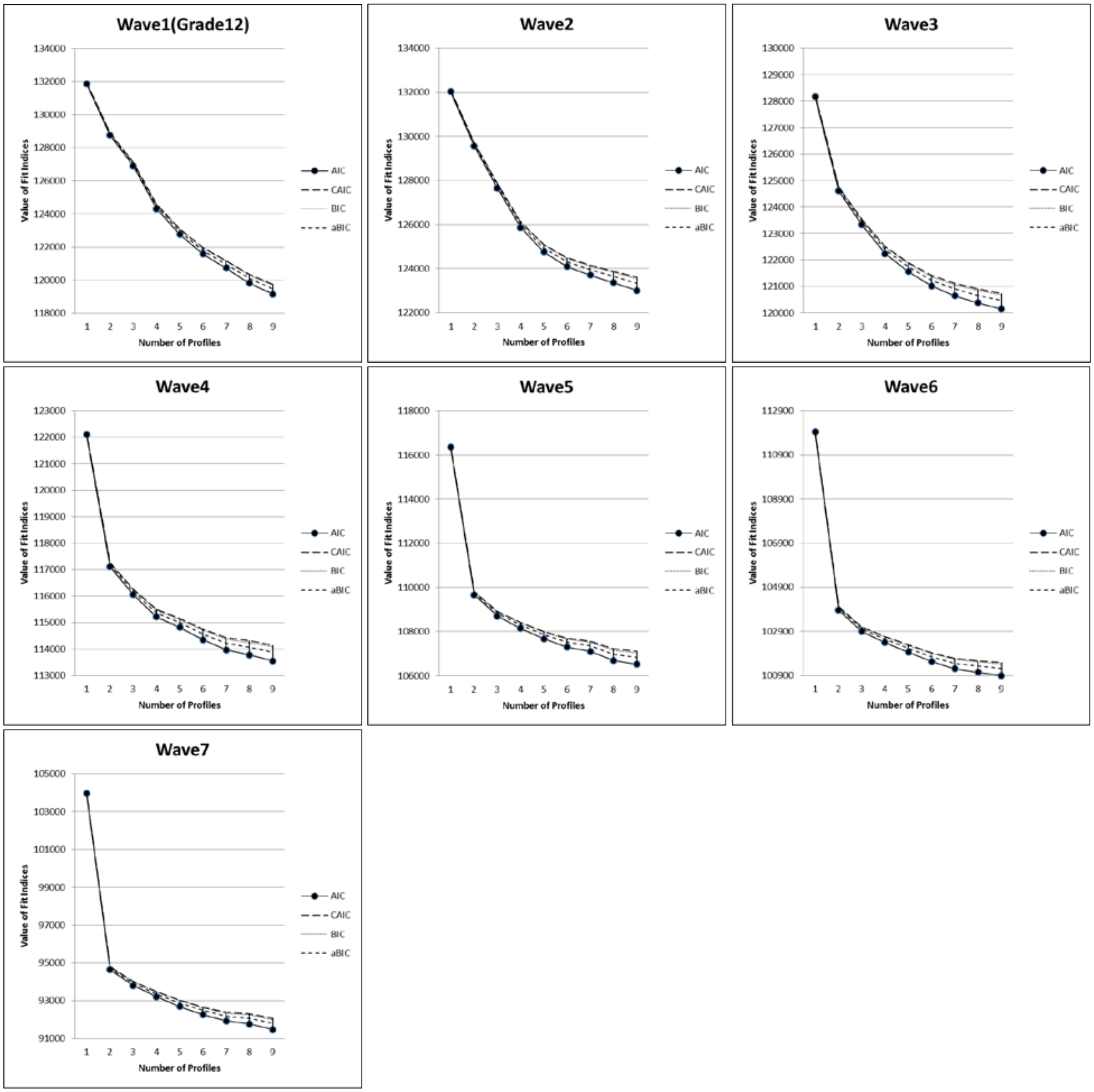
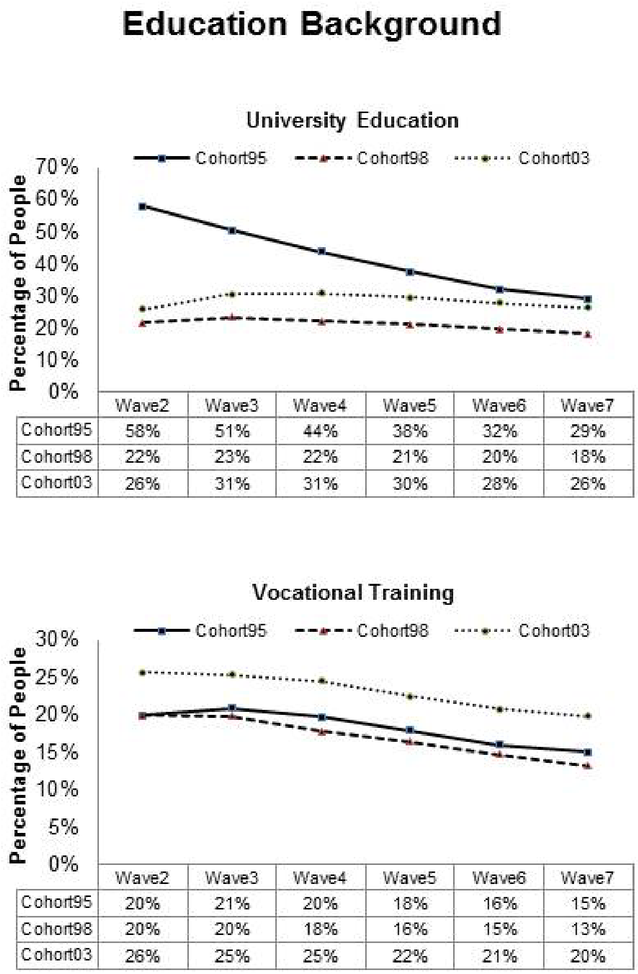


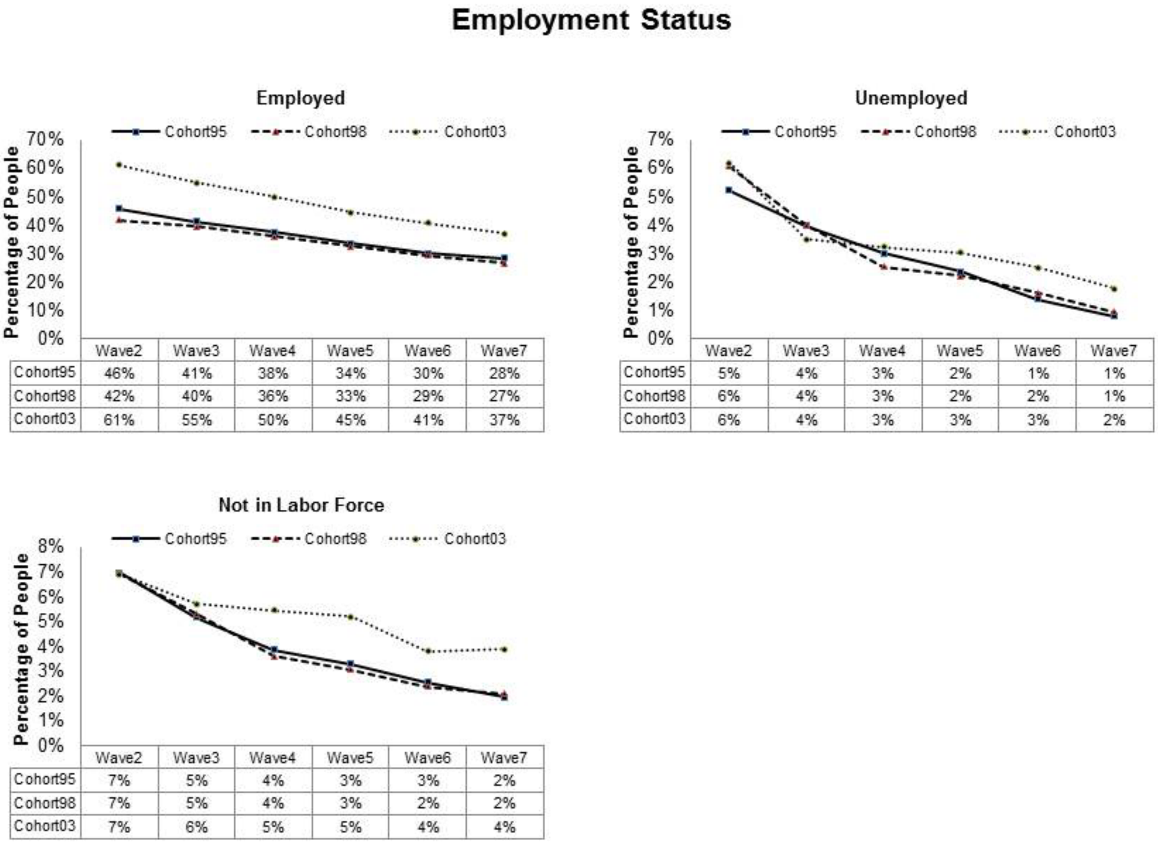
***Figure S1*. Elbow plots for 7 waves.**



	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	58%	51%	44%	38%	32%	29%
Cohort98	22%	23%	22%	21%	20%	18%
Cohort03	26%	31%	31%	30%	28%	26%

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	20%	21%	20%	18%	16%	15%
Cohort98	20%	20%	18%	16%	15%	13%
Cohort03	26%	25%	25%	22%	21%	20%

Figure S2a. **Education background for 3 cohorts**.



Employed

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	46%	41%	38%	34%	30%	28%
Cohort98	42%	40%	36%	33%	29%	27%
Cohort03	61%	55%	50%	45%	41%	37%

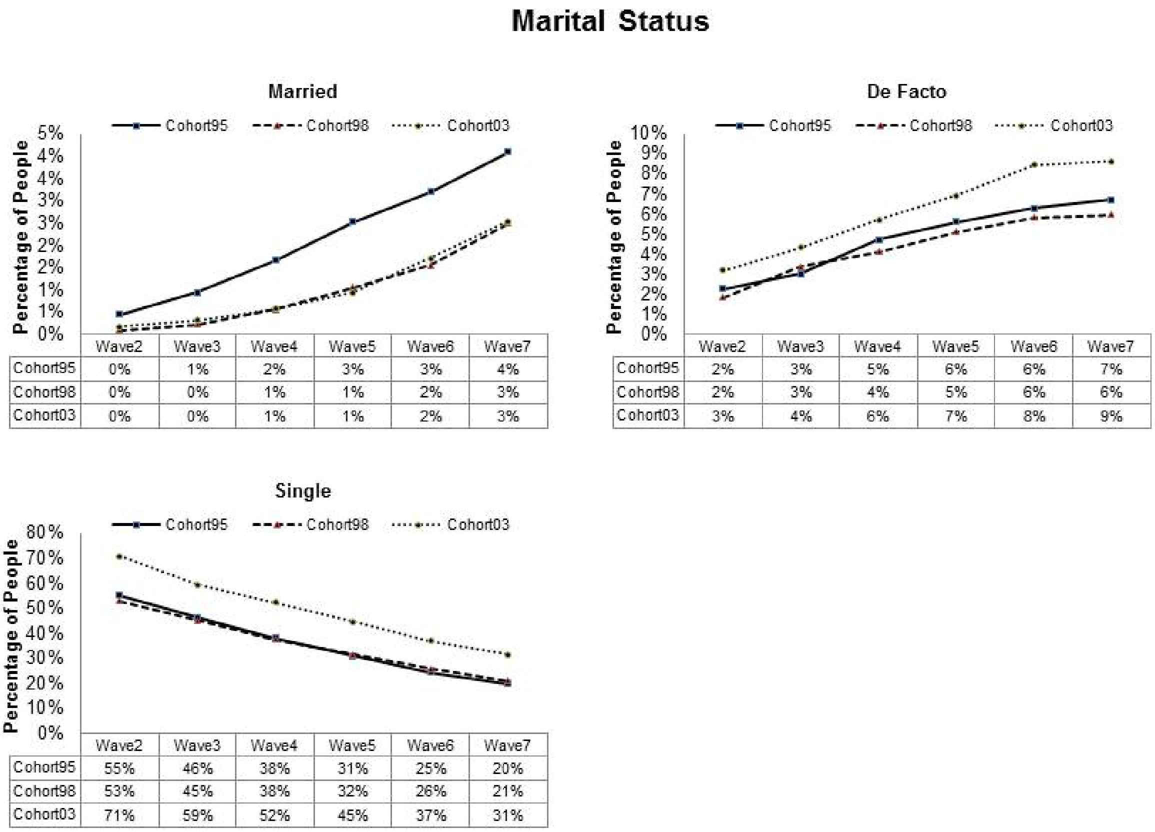
Unemployed

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	5%	4%	3%	2%	1%	1%
Cohort98	6%	4%	3%	2%	2%	1%
Cohort03	6%	4%	3%	3%	3%	2%

Not in Labor Force

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	7%	5%	4%	3%	3%	2%
Cohort98	7%	5%	4%	3%	2%	2%
Cohort03	7%	6%	5%	5%	4%	4%

Figure S2b. **Employment Status for 3 cohorts**.



Married

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	0%	1%	2%	3%	3%	4%
Cohort98	0%	0%	1%	1%	2%	3%
Cohort03	0%	0%	1%	1%	2%	3%

De Facto

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	2%	3%	5%	6%	6%	7%
Cohort98	2%	3%	4%	5%	6%	6%
Cohort03	3%	4%	6%	7%	8%	9%

Single

	Wave2	Wave3	Wave4	Wave5	Wave6	Wave7
Cohort95	55%	46%	38%	31%	25%	20%
Cohort98	53%	45%	38%	32%	26%	21%
Cohort03	71%	59%	52%	45%	37%	31%

Figure S2c. **Marital Status for 3 cohorts**.

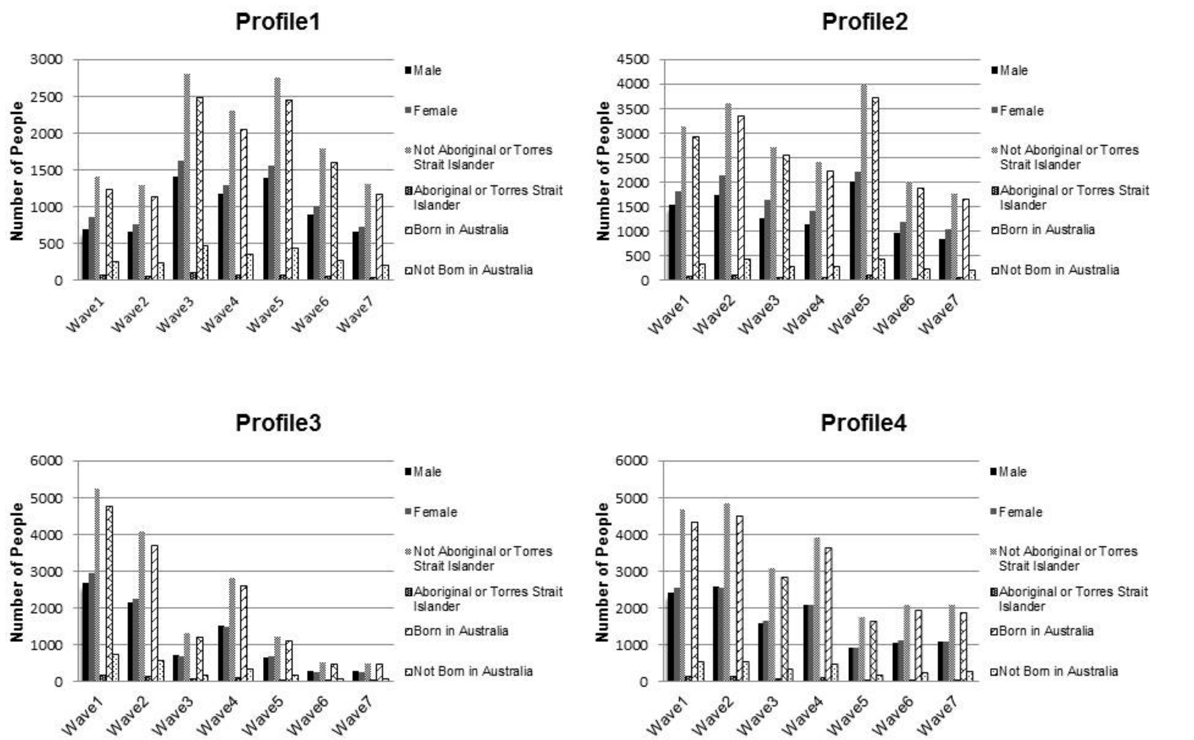


Figure S3a. **Demographic profiles for life satisfaction profile1, 2, 3 and 4 across 7 waves**.

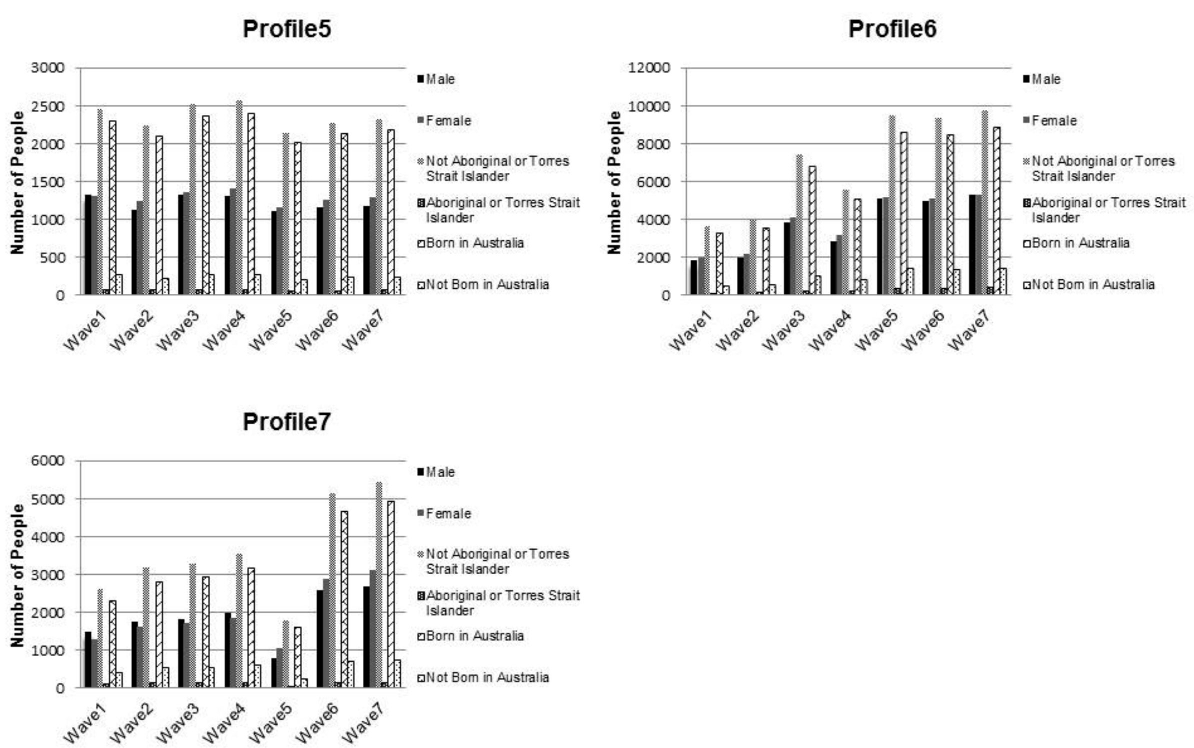


Figure S3a. **Demographic profiles for life satisfaction profile5, 6, and 7 across 7 waves**.