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European Child Cohort Network and SLLS International Conference

FIAP Jean Monnet, Paris, France, 29-31 October 2012

The third conference of the ***Society for Longitudinal and Life Course Studies (*SLLS*)*** is being held jointly with the final conference of the **ESF-funded *European Child Cohort Network* (EUCCONET)**. It will feature reports and research from the teams following the multi-purpose child cohort studies in EUCCONET, as well as wider in research on the whole life course and longitudinal methodology from an international and interdisciplinary perspective.

Keynote addresses:

Dr Marie-Aline Charles, Epidemiologist, INSERM, Director of the French child cohort ELFE, *'Early origins of obesity'*

Jane Waldfogel, Professor of Social Work, Columbia University, *'Socio-economic inequality in childhood and beyond: international evidence from cohort studies'*

Professor Ian Deary, Centre for Cognitive Ageing and Cognitive Epidemiology University of Edinburgh, '*From 11 to 90: following up the Scottish Mental Surveys of 1932 and 1947'*

- Paris is the home of the 2011-launched *Growing Up in France Study* ELFE.
- The conference venue is the FIAP Jean Monnet, an international accommodation and conference centre, located in a quiet area on the *rive gauche*, with easy access from airports and train stations.
- The city centre and its many activities are just a few metro stations away and various hotel rates can be found in the area.

More information:
http://www.longstudies.longviewuk.com/pages/conference.shtml

Editorial

John Bynner
Executive Editor

Open Access for All (AFA)

These are turbulent times for journal publishing. Under the economic restraints of university budget cuts, the costs to university libraries of purchasing downloading rights to papers published in commercially-produced journals is becoming more than many can bear. Over one million dollars per annum is not uncommon, leading Harvard's Chief Librarian to announce that 'enough is enough'. The 3.5 million dollars Harvard currently spends on academic journals is 'unsustainable'[i].

The alternative approach is to bypass commerce by publishing research in open access on-line journals of which LLCS is a typical example. Our contribution to the debate is to argue for some diversion of library funds to support such journals[ii].

Despite the huge help of the *Creative Commons* license for free access to *Open Journal System (OJS)* software, article processing costs (APCs) - ranging from managing peer review, to layout and proof reading - still have to be met. The funding model advocated for Open Access journals typically relies on the principle of 'payment to publish', i.e. meeting APCs through payment: first, to submit a paper and second, if the paper is accepted, payment to publish it in the journal. Such fees can range from a few hundred to a few thousand dollars per article and may be waived in special cases but only at the publisher's discretion.

Many Research Councils and major Foundations such as the Wellcome Trust are already including in their research grants, a funding component to meet the APC. But this approach still risks excluding those without access to similar funding, especially researchers in developing countries. It also hands over an element of control of what's published to the research funder, at the expense of the research community in partnership with the journals that serve it.

LLCS was fortunate in benefiting from a three year development grant from the Nuffield Foundation to help the journal get established. But now in the third year of publication, and on the ninth issue, we have had to seek alternative sources of support. The new *Society for Longitudinal and Life Course Studies*[iii], now publisher of the journal, is one such source that will, over time, build membership to a point where fee income meets costs. In the interim we are most grateful for the support coming through three year co-sponsorship agreements with the VU (Free University) of Amsterdam Medical Center (Department of Psychiatry) and the Institute of Social and Economic Research, University of Essex – and we hope, more to come. As one other safeguard, it has been decided that, beginning with the next issue in October 2012, a small annual reader registration fee of £20 (or Euro and Dollar equivalents) will be introduced from which Society members will be exempt.

The more general point is that new on-line journals need to be supported to meet the communication needs of an ever-broadening spectrum of research interests. To achieve the highest academic and publishing standards, such journals need much nurturing in their early years, to establish reputation and build the readership and authorship base on which the journal's long-term viability will depend. Every LLCS reader and writer is urged to join us in the campaign to make the free and universal circulation of research knowledge a reality.

Current Issue

This *Issue* exemplifies the wide range of content and modes of communication that the LLCS has to offer. The scene is set with a *Special Section*, the origins of which were papers from a co-ordinated programme of secondary analysis of longitudinal data presented at the society's first annual conference in Clare College, Cambridge. The theme is 'Transition to adulthood in the UK, US and Finland': the form it takes in the domains of education, employment, partnership and family formation and the changes taking place in it over a twelve year interval. The focus of analysis is on role statuses in the mid-twenties as outcomes of the transition using latent class analysis to identify their main configurations. Multinomial logistic regression is used to model antecedent conditions and wellbeing outcomes later in life. A key contribution of the Section is to signal the value of such

configurational analysis for comparative life course research within and across countries over comparable timeframes, as part of an ever-widening cross-national research agenda.

The following *Individual Paper*, focuses on a particular part of this broader landscape using the UK Millennium Cohort Study to investigate the role of fathers in moderating the effects of adverse life events and family economic disadvantage on early behavioural and emotional difficulties in infancy (9 months and three years). The findings point to economic disadvantage and emotional difficulty as where the main connections lie.

The next paper under our *Study Profiles* section heading is devoted to the University of Michigan-based *Panel Study of Income Dynamics (PSID). With 44 years of data collection behind it,* the PSID is the foundation stone of all household panel studies worldwide and the harmonized 'Cross-National Equivalent File (CNEF) combining eight of them. The rich profile describes both the origins of and future plans for PSID - a benchmarking document for the field. LLCS is looking forward to many more examples of such profiles, so do keep sending them in. Guidance on writing them is available on the Journal's 'ABOUT' page[iv]

Finally, we complete the *Issue* under another of the journal's section sub-heads – *Comment and Debate*. An important paper published three issues back challenged the idea of 'income returns' to higher education in favour of 'social class returns' as measured by entry into the salariat. A statistician and two labour market sociologists discuss from their different perspectives, methodological and substantive issues raised by the study to which the authors respond. The product is a fascinating debate raising key social science issues such as establishing causality and the concept of social mobility - not to be missed!

Over to you

LLCS thrives on the flow of communications between authors, reviewers and editors, where surpluses if not excessive are generally a good thing. We welcome papers across the whole range of the journal's interests especially those that began life in an SLLS conference where member involvement has been part of the process of their production. Peer review is the life blood of the first class academic journal and we need to broaden continually our panel for doing it especially in the field of inter-disciplinary life course science and internationally. If you are interested, write to me or any of the other Section Editors, with details of your reviewing interest and experience – find us at http://www.llcsjournal.org/index.php/llcs/about/editorialTeam We look forward to hearing from you.

[i] http://www.guardian.co.uk/science/2012/apr/24/harvard-university-journal-publishers-prices
[ii] http://www.guardian.co.uk/science/blog/2012/may/09/open-access-publishing-deep-pockets
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European Child Cohort Network and SLLS International Conference, PARIS, 29-31 October 2012

'Childhood and beyond: tracing cohorts across the lifecourse'

The third conference of the *Society for Longitudinal and Life Course Studies (SLLS)* is being held jointly with the final conference of the European Science Foundation-funded *European Child Cohort Network* (EUCCONET).

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Professor Ian Deary, Centre for Cognitive Ageing and Cognitive Epidemiology University of Edinburgh, 'From 11 to 90: following up the Scottish Mental Surveys of 1932 and 1947'

More information: http://www.longstudies.longviewuk.com/pages/conference.shtml

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The transition to adulthood across time and space: overview of Special Section

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Introduction

In this Special Section of Longitudinal and Life Course Studies, we provide complementary findings from four well-established national and community-based studies about distinct patterns of social role combinations in early adulthood, along with the antecedents and health and well-being correlates of the distinct patterns (Maggs et al 2012, Räikkönen, Kokko and Pulkkinen 2012, Salmela-Aro, Ek and Chen 2012, Schoon et al 2012). Collectively, our data span two birth cohorts (born 1958-59 and 1966-70) and three countries including Great Britain (GB), the United States (US), and Finland, with each birth cohort represented in each country. This opportunity to compare and contrast patterns of transition outcomes across time and across cultures provides us with leverage on the understanding of the transition to adulthood not typically available.

Across the studies, longitudinal data span childhood through early adulthood. Each study focuses on identifying distinct patterns of role combinations by ages 25-27 in terms of the "big 5" transition markers (Settersten 2007) comprising educational attainment, work status, independent living, romantic partnership, and parenthood. It has been argued that country differences in completing the five transition markers are largest around age 25 and relatively small before age 20 and after age 35 (Cook and Furstenberg 2002). Examining transition outcomes and role combinations of cohort members in their mid-20s thus provides a unique snapshot and important insights into similarities and differences in transition experiences of young people growing up in different cultural contexts and in different historical periods. For example, consistent with previous research (Osgood et al 2005, Ross et al 2009), some common patterns we found include "traditional family" (limited college, full-time employed or homemaker, independent from parents, married or cohabiting, and with children) and "work orientation without children" (college graduate, full-time employed, independent from parents, average rates of marriage and cohabitation, and no children).

Each study also examines the demographic and educational antecedents and psychosocial correlates/outcomes of the patterns (including well-being and substance use). As will be shown, we find some expected differences across countries and cohorts in terms of configurations and prevalences of the distinct patterns, along with some remarkable similarities across time and space in these patterns and their antecedents and correlates. To set the stage for the empirical papers in this Special Section, we provide an overview regarding the transition to adulthood in developmental, historical, and international context. We furthermore discuss methodological opportunities and challenges involved in describing life course patterns and doing comparative research. We conclude with consideration of theoretical and methodological implications.

Key issues in the study of the transition to adulthood in developmental, historical and international context

International and interdisciplinary comparisons and collaborations

Cross-study comparisons in general, and international comparisons in particular, are essential for theory advancement in our understanding of the transition to adulthood. Such studies assist in matters of generalizability as well as in considering how country-level culture and expectations play out in terms of developmental opportunities and constraints (Jensen 2011). Despite many similarities across GB, the US, and Finland, there are some clear differences in educational opportunities and independence expectations. In particular, the three countries differ regarding academic and vocational tracking in secondary school (explicit split at age 16 in GB and Finland; opaque and less formal tracking in the US) and public funding of post-secondary college (fully funded in GB until 1998, fully funded in Finland, and largely self-funded in the US). Furthermore, the Finnish welfare state supports the move to independent living among young people, and post-secondary students are entitled to social security support; this is not the case in GB and the US. As we will see, a consequence is that by age 25-27, most Finns - in both birth cohorts - live independently from their parents, while in GB and US we find, in both cohorts, a distinct group of young people who at age 25-27 are living with one or both parents (having either never left, or returning to the parental home after difficulties in launching). When looking across countries, similarities and differences in the transition to adulthood can be examined in terms of the distinct patterns (regarding the number of distinct patterns, the transition configurations that make up the distinct patterns, and the prevalences of distinct patterns) and/or in terms of the antecedents, correlates, and outcomes of the patterns. Of course, cross-country comparisons depend on similarities in methods; for us, although constructs are remarkably similar across countries, sampling frames are not, especially in the two Finnish studies.

Because the transition to adulthood covers such a wide set of domains at multiple levels, spanning neurological development underlying improved executive functioning (e.g. Burt and Masten 2010; Spear 2010) to cultural expectations about "developmental timetables" (e.g. Heckhausen 2010), a fuller understanding of this period in life demands an inter-disciplinary perspective (Schoon and Silbereisen 2009; Schulenberg and Maggs 2002; Settersten 2007). In this inter-disciplinary collaboration we take into account social structuring of the life course, agency in the form of educational aspirations, objective transition markers, and subjective experiences in terms of well-being and life satisfaction; in particular, we give attention to both social structure and individual development, illustrating the notion of bounded agency (Heinz 2009; Shanahan 2000). Ultimately, we believe that this collaboration represents the gains that can come from developmental scientists and sociologists “playing well together” to examine how this time of life is experienced across countries and cohorts.

Interplay of historical change and individual development

In many ways, the qualities of the transition to adulthood, particularly the density of potential life changes (Shanahan 2000), make it an important nexus of individual development and historical change, how historical change influences individual development and how individual development in the aggregate can influence historical change (Johnson, Crosnoe and Elder 2011). For example, the age of first marriage has increased by several years over the past few decades, and this no doubt was partly an interactive process whereby the shifting norms about marriage contributed to individual behavior which then aggregated to constitute a new historical context for following cohorts. Furthermore, there has been an expansion and elongation of education participation, especially among women and those from less privileged backgrounds (Schoon and Silbereisen 2009); likewise, there has been increasing participation of women in the labour market, reflecting the changing nature of job opportunities and a labour market characterized by an increasing demand for skilled labour and non-manual, non-routine occupations (Blossfeld 2005). Again, this reflects an interactive process, as shifting

opportunities and norms set the stage for individual behaviors which then aggregate to form a new historical context for subsequent cohorts.

As is true regarding cross-country comparisons in the transition patterns, an important consideration when examining historical change in the transition to adulthood is the extent to which there is historical variation in the patterns (in terms of the number and configurations of the distinct patterns, as well as the prevalences of distinct patterns) and/or in the antecedents, correlates, and outcomes of the patterns. It has been argued that since the 1970s traditional pathways into adult life have become de-standardised, more heterogeneous and differentiated, suggesting for us an increase in the number of distinct patterns and changes in the configuration of roles in the patterns across cohorts. It has also been argued that there is an increase in individualisation across cohorts, with individual agency serving a greater role in shaping the life course (Beck 1992; Giddens 1991); for us, this suggests an increase across cohorts in the power of agency, taking the form of educational aspirations, to predict the distinct transition patterns. Within each country, these considerations are undertaken across the two cohorts with evidence suggesting cohort similarities in numbers and configurations of patterns, but some changes in prevalences of patterns across cohorts; in addition, educational aspirations are found to gain more power across cohorts in the US, but so does parental education, suggesting that increases in agency are balanced by increases in social structure. Of course, much depends on similarities in methods across cohorts, and as we see, there is variation in samples and measurement across history, especially in the two Finnish studies.

The importance of the transition to adulthood

Among the many global life transitions across the lifespan, this transition ranks very high in terms of importance, complexity, and uniqueness. It is when educational and life plans formulated up through adolescence - often with considerable individual and societal investment - meet the opportunities and constraints of post-adolescent life. In particular, it is when one typically confronts, or at least becomes familiar with, the necessity of compromise in the interplay of competing life goals. This helps make it a potentially critical life transition in terms of ongoing health and well-being (Schulenberg, Maggs and O'Malley 2003). It is also a demographically dense period (Shanahan 2000) with multiple transitions related to social role, residence, work, and education, all within a relatively short time. A common-sense belief about transitions, and one that works well in understanding the global transition into adolescence, is that multiple simultaneous transitions result in reduced health and well-being (Coleman 1989; Schulenberg and Maggs 2002). Yet, this is not what is found regarding the transition to adulthood; indeed, evidence from the four studies in this Special Section suggests that those who by age 26 successfully negotiate the multiple transitions that comprise the global transition to adulthood, end up looking better than their age-mates in terms of health and well-being (Maggs et al 2012; Räikkönen et al 2012; Salmela-Aro 2012; Schoon et al 2012). Similar findings have been reported by other studies conducted in the US (e.g. Schulenberg, Bryant and O'Malley 2004) and in Britain (Sacker and Cable 2010). For most, by the mid-20s, educational pursuits and exit from the parental home are complete. Yet, there is still considerable heterogeneity in experiences that reflect the pace of one's progression along adult social role transitions, experiences, and responsibilities. We were fortunate to have in each study, data collections at ages 25-27 to assess commonalities and variations in transition outcomes across countries and across different historical periods.

Placing the transition to adulthood within a developmental context

Another important aspect of the four studies is that they attend to how experiences connect across the life course, whereby childhood and adolescent experiences and decisions set the course for transitions experienced during the middle 20s, and likewise how these transition patterns set the stage for continued health and well-being. Key gaps in the literature pertain to the failure to view this period from adolescence to adulthood in a longer-term developmental perspective (Bynner 2005). For example, despite the needed attention that the concept of emerging adulthood (Arnett 2000) has brought to the age period, especially among some psychologists, much of the relevant research has

focused only on experiences during this age period, with little regard for developmental and socio-demographic antecedents and long-term consequences. As a result, the extent to which experiences during this age period reflect developmental continuity or discontinuity remains a critical gap. Thus the four studies in this Special Section, by focusing on socio-demographic and adolescent predictors of the different transition patterns, contribute to understanding how pathways through this period are embedded within the life course.

Heterogeneity in life paths and the fanning of health and well-being trajectories

The transition to adulthood is characterized by increased heterogeneity in life paths (Ross et al 2009; Schulenberg et al 2003). During adolescence, life roles tend to be fairly homogenous; with the conclusion of secondary education, diversity in pathways becomes more manifest, as many young people enjoy greater selection of contexts and experiences along with increased agency. Our studies clearly illustrate this heterogeneity, showing that there is not one normative way to negotiate this global life transition. At the same time, it is quite clear that structural forces, as mediated by the family and local opportunity structures, and agency, as represented by educational aspirations, help create this heterogeneity by shaping the timing and sequencing of transitions to independent adulthood.

Along with the increased heterogeneity of pathways during the transition to adulthood, there is increased heterogeneity in health and well-being trajectories. This increased "fanning" is sometimes referred to as the “Matthew Effect” whereby those who are already doing well have the psychological and social resources to rise to the occasion and successfully negotiate the various transitions, and those already having difficulties fall further behind as they try to negotiate the transitions (Dannefer 1987; Schulenberg and Zarrett 2006). The present set of studies sheds light on the importance of, and mechanisms embedded within, the transition to adulthood in terms of the increasing heterogeneity in health and well-being. Clearly, embedded within this global transition are mechanisms for both continuing and interrupting ongoing trajectories of health and well-being (Schulenberg and Maggs 2002), and as the studies here show, making firm commitments and getting on with adulthood tend to be associated with higher life satisfaction and well-being.

Methodological opportunities and challenges

Conceptualising life course patterns

Within life course theory (Elder 1985) transitions denote changes in status or social roles, such as leaving school and entering full-time employment. Transitions are usually short in duration and indicate a change in a single state, moving from one social role or status to another. Transitions are embedded within trajectories that give them a distinctive form and meaning. Trajectories take place over an extended period of time and capture sequences of roles and experiences. The life course is, however, not defined by transitions and trajectories as such, but is characterized by the interplay of multiple role transitions and trajectories. The combination of multiple social roles at a given time has been conceptualised by the notion of role or status configurations to describe age-specific matrices of discrete social roles that individuals occupy at given points in the life course (Macmillan and Eliason 2003).

Although the transition to adulthood has attracted much research, most studies have concentrated on only one type of transition at a time, such as the transition from education into employment, or the transition into parenthood (Rindfuss 1991; Shanahan 2000). Typically these studies have used event-history models to examine the timing of and the precursors to these transition markers. The unfolding of the life course however, necessitates the assumption of multiple new social roles, such as leaving full-time education, entry into paid employment, settling down with a partner, and becoming a parent (Buchmann and Kriesi 2011; Modell, Furstenberg and Hershberg 1976; Shanahan 2000). Transitions such as leaving school, entry into the labour market, and timing of first birth are not discrete, clearly bounded events - but are inter-dependent, often requiring compromises and coordination of different demands (Shanahan and Elder 2006). Failure to recognize this

interdependence constitutes a key gap in the literature, and addressing this gap is at the core of the four studies in this Special Section, conceptually and methodologically.

Dependencies among social role transitions set the stage for analysis of distinct patterns.

The interdependence of education, work and family-related transitions suggests the need for empirical methods that account for the multi-dimensional associations between variables, enabling the simultaneous consideration of multiple dimensions, which interact in important ways. In particular, each study takes a pattern-centered approach to account for functioning within individuals across multiple domains, using latent class analysis (LCA) to uncover the distinct patterns showing the different ways that the social roles fit together. Thus, together, these studies provide a more holistic understanding of the interdependence and combinations of social roles within individuals and the social structuring of the life course. LCA is a statistical method that enables us to examine latent structures among a set of categorical scored variables and to identify underlying types, groups, or classes (Goodman 1974; Lazarsfeld and Henry 1968). The usefulness of the latent class approach to map out diversity and heterogeneity in role configurations has been demonstrated in a number of previous studies (Macmillan and Copher 2005; Osgood et al 2005; Ross et al 2009; Sandefur, Eggerling-Boeck and Park 2005). Each of the four papers in this Special Section identifies 3 to 5 distinct role combinations, describing the coordination of work and family-related roles and independent living. The profiles of the different groups can be summarized as those characterized as work orientation without children, traditional families, highly educated, slow starters, and fragile families.

In interpreting the findings, one has to be aware that the status configurations of cohort members in their mid-20s represent only a snapshot in time, and do not capture the dynamics of transition processes. For example, "Slow Starters" living with their parents, might have returned to the parental home following a relationship breakdown or a career break. Of course, extending the one-time assessment with longitudinal data following individuals as they experience the various transitions, can provide a stronger case for mapping transitions (say with latent transition analysis) and examining their effects (Macmillan and Copher 2005; Macmillan and Eliason 2003; Muthén and Muthén 2000); such approaches bring in new problems (e.g. attrition). In any event, future research building on ours presented here, can bring a more dynamic approach to comparative analyses. Another limitation of latent class analysis lies in the temptation to attach too much meaning to a latent class or the label assigned to it (Sandefur et al 2005). One has to remain cautious in interpreting the group allocations, especially in regard to reifying labels assigned to the classes for easier interpretations. However, being able to identify similar groupings of role combinations across cohorts and across countries, indicates robustness of the approach and generalizability of findings.

Comparative research

Comparative research methods are used in cross-cultural studies to identify, analyse and explain similarities and differences across societies. A major issue to be addressed concerns the agreement over conceptual and functional equivalence of the research parameters (Hantrais and Mangen 1996; Ragin 1991). Attempts to find solutions to these problems involve negotiation and compromise and a sound knowledge of different national contexts. The studies represented in this Special Section are not based on a harmonised data set. The data collection in the different countries was not designed for comparative analysis, and is strongly influenced by national conventions. Furthermore, the sampling frames for data collection were not similar in the different countries, involving large scale prospective cohort and panel data, as well as, in the Finnish case, a small scale community sample. The purpose for which the data were gathered, the criteria used and the method of collection varied considerably from one country to another, and the criteria adopted for coding data has changed over time. For example, regarding the coding of educational attainment, differences in the

structure of the three countries' education system make a direct comparison difficult. Furthermore, because post-secondary education sometimes extends throughout the 20s in the US, current college attendance at age 26 is coded as a separate variable in the US study, in addition to information on employment status and highest qualifications achieved. In addition, in the 1966 Northern Finland Study, no information on part-time employment has been collected, and no differentiation between single, cohabiting, divorced, or widowed family status has been coded. Identifying comparative indicators of social roles was thus not always as straightforward as we hoped for, and in some cases the available information is limited. As a solution, we reduced the classifications of the transition markers to a common base, jointly agreeing on the parameters and units of comparison, and using the best possible data for comparison within and across countries. Regarding predictors, all studies have indicators of parental social status and family structure. Regarding outcomes, the different studies use different indicators of health and well-being, ranging from indicators of depression to marijuana use. All four studies have indicators of life satisfaction though, which is the comparative indicator of well-being.

Conclusions and implications

This Special Section represents an important step in placing the transitions from adolescence to adulthood within the appropriate context. Together, the four studies show the relevance of structural, developmental, national, and historical factors in shaping transitions; the variation and diversity in the transition to adulthood; developmental continuities from adolescence; the importance of objective markers and their combination as predictors of well-being; and the need for a broader definition of what comprises a "successful" transition to adulthood. Although the later-born cohorts in each country are better educated and more likely to be single and without children at age 26 compared to the earlier-born cohorts, the distinct patterns of role combinations largely remains unchanged within each country, not supporting the assumption of an increasing destandardization of the transition patterns. What we do see, however, is a polarization of fast versus slow transition prevalences, with those from less privileged backgrounds making the transition to parenthood earlier than others, consistent with the increased marginalization of those without sufficient resources to take advantage of educational opportunities during this transition (Heinz 2009; Macmillan 2005; Schoon and Silbereisen 2009). There are differences between and within the three countries regarding the patterns of role combinations as well as access to and selection of different pathways, depending on institutional filters (e.g. welfare systems), structural factors (e.g. social-economic background, family stability and gender), and individual characteristics and life plans, highlighting the importance of a contextualized and developmental understanding of transition experiences. Across the three countries and two birth cohorts, there is more than just one pattern of role configurations corresponding to high life satisfaction and well-being. In particular, the active engagement in and commitment to meaningful social roles predict higher levels of life satisfaction and well-being, highlighting the importance of reaching objective developmental tasks during the transition to adulthood (Schulenberg et al 2004). The timetable when to achieve certain tasks, however, appears to be variable and depends on the resources available to the individual.

For good reason, developmental scientists rarely talk anymore about universality of stages and sequences of development. The understanding and demonstration that the occurrence and meaning of developmental milestones depend on the multi-level context in which the individual is embedded, yield little justification for conceptualizing universalities in development (e.g. Conger, Conger and Martin 2010). Yet, when we find, as we do across the four papers in this Special Section, that there are many points of commonality in the experience of the transitions from adolescence to adulthood across three countries, with distinct customs and expectations about this transition, and across two birth cohorts who grew up in quite different economies, we gain an appreciation for some coherence and consistency of individual experiences, especially within social demographic groups. This coherence of

experiences across time and space highlights the clear advantage of cross-country and cross-cohort comparisons, for they allow more convincing conclusions about commonalities and uniqueness of experiences across the transition to adulthood.

What we show here is one way to conduct cross-study and cross-national comparisons in terms of parallel analyses. Replication of research findings across independent longitudinal studies is essential for advancing developmental science. Other more intensive approaches (integrative or pooled data analysis) become available when there are common measures across studies (Curran and Hussong 2009). However, the complexity of longitudinal designs and cross-study differences in sample composition and measurements often impede or lessen the utility of such approaches. Nonetheless, a collaborative, coordinated analytic approach can provide needed leverage and a broad foundation for cumulating scientific knowledge, by facilitating efficient analysis of multiple studies in ways that maximize comparability of results, and permit evaluation of study differences (Hofer and Piccinin 2009). Future steps, building on what we have here, include extending this framework across other countries, time periods, and constructs, to get a fuller multi-level understanding of this pivotal time of life.

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Becoming adults in Britain: lifestyles and wellbeing in times of social change

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Abstract

This study examines variations in the combination of social roles in early adulthood and their association with mental health, subjective wellbeing, and alcohol use in two nationally representative British birth cohorts, born in 1970 (n=9,897) and 1958 (n=9,171). Using latent class analysis (LCA) we develop a typology of variations in the combination of educational attainment, employment status, housing, relationship and parenthood status of cohort members in their mid-twenties. We also assess the role of early socialisation experiences and teenage life planning as predictors of these status role combinations, and link transition outcomes by age 26 to measures of alcohol use, mental health and wellbeing. In both cohorts we identified five distinct profiles: 'work-orientation without children', 'traditional families', 'fragile families', 'highly educated without children', and 'slow starters'. These profiles are predicted by family social background, gender, own educational expectations and exam performance at age 16. The findings suggest that in both cohorts, high levels of life satisfaction are associated with either 'work orientation without children' or 'traditional family' life, suggesting that there are different transition strategies enabling individuals to become well-adjusted adults.

Introduction

The aim of this paper is to understand successful transitions to independent adulthood. In particular, we assess the extent to which variations in developmental transitions are associated with markers of subjective wellbeing, i.e. variations in levels of life satisfaction, psychological distress, and alcohol use. We ask in what circumstances diverging life courses and new demands on young people's resources are too extensive and sometimes overwhelming, or when are they are opening up new opportunities and life chances. The research is guided by assumptions formulated within a life course theory of human development in context (Bronfenbrenner 1979), taking into account multiple influences from across domains, as well as mutual selection and accommodation of individuals and their contexts (Baltes 1990; Elder 1998; Schulenberg, Sameroff and Cicchetti 2004).

In previous research, the association between variations in developmental transitions and mental health has been examined on the basis of the 'developmental match/mismatch model', specifying variations in the match between person-context characteristics (Eccles, Lord, Roeser, Barber and

Hernandez-Jozefowicz 1997; Schulenberg and Maggs 2002; Schulenberg O'Malley, Bachman and Johnston 2005). According to this model, transitions that provide a progressive increase in developmentally appropriate challenges, through which young people can experience competence, enable the individual to successfully master the transition. If, however, the demands of the developmental transitions are not matched to the capabilities of the individual, or if they amplify previous difficulties, then there can be a negative effect on mental health and wellbeing. This can, for example, be the case if there is an 'overload', overwhelming the young person's coping capacities; if the transition exacerbates pre-existing differences (increased heterogeneity); or if it increases vulnerability to chance events exposure (heightened vulnerability). For a more detailed description of variations in how young people negotiate multiple developmental transitions - see Schulenberg and Maggs (2002).

While previous research has mostly focused on only one transition, in this study we examine how transitions across different domains weave together in people's lives by using a person-centred approach (Magnusson, Bergmann and El-Khouri 2003). We seek to identify a typology of transition patterns, and furthermore, aim to establish the meaning of distinct patterns of transitions by comparing different groups on a range of background variables (i.e. gender, ethnicity, family social status), individual characteristics (education aspirations, school motivation and academic attainment), as well as indicators of alcohol use and subjective wellbeing in adulthood (life satisfaction and psychological distress).

The transition to independent adulthood

The transition to independent adulthood is a developmentally dense period, involving multiple and inter-related social role changes across the 'big five' role transitions, including completion of full-time education, entry into paid employment, independent living arrangements, and the step into family formation and parenthood (Shanahan 2000). These transitions are strongly interrelated, and completing most, if not all of these role transitions is often considered to be the marker for reaching independent adulthood (Macmillan and Eliason 2003; Shanahan, Porfeli, Mortimer and Erickson 2005; Schulenberg, Bryant and O'Malley 2004). Recent studies have adopted a person-centred approach to gain a better understanding of how different roles combine within individuals at a particular life stage (Garrett and Eccles 2009; Oesterle, Hawkins, Hill and Bailey 2010; Osgood, Ruth, Eccles, Jacobs and Barber 2005; Ross, Schoon, Martin and Sacker 2009; Sandefur, Eggerling-Boeck and Park 2005; Schoon, Ross and Martin 2009). These studies were able to identify theoretically meaningful patterns of role combinations, and were able to show that these patterns relate to differences in social background variables and the wider socio-historical context.

Transitions in context

Life course transitions are set in a socio-cultural context and therefore can vary in timing, content and meaning (Elder and Shanahan 2007; Schoon and Silbereisen 2009). There are culturally based, age-related expectations regarding the timing and sequencing of major life transitions, providing a normative timetable (Heckhausen 1999) or scripts of life (Buchmann 1989). Such normative patterns are, however, subject to change, often brought about through influences from the wider socio-historical context in which these transitions are embedded (Elder, Johnson and Crosnoe 2004). For example, since the mid-1970s, young people in industrialised nations have experienced rapid and profound social and cultural transformations, associated with an extended period of full-time education and delay in family formation (Blossfeld 2005; Bynner 2001; Shanahan 2000). The period between ages 18 and 25 years, during which young people explore new social roles, has been identified as a distinct developmental stage of emerging adulthood (Arnett 2000), although there is some debate as to whether all young people do indeed follow a similar time-table in their transition to independence, or whether there is a differentiation of transition experiences due to persisting social structures (Bynner 2005; Cohen, Kasen, Chen, Hartmark and Gordon 2003). It has been argued that there is a differentiation between those who take a slower route, i.e. those who participate in higher education and postpone adult transitions, and those who follow the traditional fast track transitions of leaving school early (Bynner 2005; Jones 2002; Schoon et al 2009). While many studies have focused on 'delayed transition', less is known about how those who leave school early succeed in

life, and they have been referred to as the 'forgotten half' (Birdwell et al 2011; Halperin 1998; Symonds et al 2011).

Predictors of life course transitions

In this study we use two nationally-representative birth cohorts born in 1958 and 1970, focusing on the transitions made by age 26, to gain a better understanding of experiences of young people coming of age in a changing socio-historical context.

According to the theory of the second demographic transition, there has been an 'ideational shift' since the 1970s, characterised by changing social practices and the breakdown of many class, gender, and age-based constraints shaping demographic events (Lesthaeghe 1995). The 1958 cohort was born just before this major demographic shift, while the 1970 cohort grew up during this period, enabling us to take into account changing demands and opportunities.

It has been argued that individual biographies have become more removed from traditional life scripts and more dependent on individual decision making (Beck and Beck-Gernsheim 2002; Giddens 1991). The notion of individual choice has however been questioned, as there is persisting evidence of unequal access to educational and career opportunities (Bynner 2005; Furlong and Cartmel 1997; Heinz 2002). Young people from less privileged family backgrounds, especially women, tend to make work and family-related transitions earlier than their more privileged peers, with reduced career opportunities in later life (Osgood et al 2005; Ross et al 2009; Sandefur et al 2005; Schoon, Martin and Ross 2007). They furthermore have lower aspirations regarding education and employment transitions, show lower levels of school motivation, and obtain fewer educational qualifications (Schoon 2007). There is also evidence that family instability, indicated for example by parental divorce or separation, influences the timing and sequencing of transition experiences and adult outcomes (Amato and Booth 1997; Furstenberg 2000; Ross et al 2009). This interplay between structural factors and individual choice has been described by the term 'bounded agency' (Shanahan 2000). Although social change has affected all young people, it has not affected all in the same way. Based on previous research we expect a persisting influence of social background characteristics on both individual agency processes as well as status attainment in early adulthood (Ross et al 2009; Schoon et al 2009).

Variations in wellbeing

Developmental progression and the mastery of age-specific role transitions has been linked to increased levels of subjective wellbeing and low symptomatology (Schulenberg, Bryant et al 2004; Seiffge-Krenke and Gelhaar 2008). The more success and less stalling in the domains of work and romantic involvement, the greater the likelihood of maintaining high levels of wellbeing (Schulenberg et al 2004). Problems in establishing oneself in the labour market or making the transition into independent living, have been associated with lower levels of life satisfaction and health (Kins et al 2010; Schoon et al 2009) and potentially harmful behaviour, such as frequent alcohol use (Schulenberg et al 2005; Staff et al 2010). Romantic involvement with a partner is generally associated with higher levels of wellbeing, while early parenthood has been associated with negative effects on wellbeing (Nomaguchi and Milkie 2003; Kiernan 1997; Henretta 2007), largely due to relationship instability and fewer socio-economic resources. On the other hand, it has been argued that early transitions can be beneficial for certain individuals (Booth et al 2008), and the effects of parenthood on wellbeing depend on gender and marital status, as well as other circumstances in life (Nomaguchi and Milkie 2003; Woo and Raley 2005; Keeton et al 2008). Furthermore, the time frame for achieving most of the developmental demands might have expanded for the later-born cohort (Arnett 2000), and the more recent cohort might feel more relaxed about not fulfilling all five transition demands by age 26, in particular, regarding the step into parenthood. For example, in a recent study drawing on data from the Seattle Social Development Project, childlessness has been shown to have few costs for psychological wellbeing, and has even been associated with enhanced wellbeing (Umberson et al 2010).

The socio-historical context in which transitions are embedded shapes the expectations, meaning and experience of transition outcomes, and for a better understanding of what makes a 'successful transition' we have to examine multiple interacting transitions in context. In the present study, we examine two indicators of subjective wellbeing: life

satisfaction and low levels of psychological distress, as well as frequency of alcohol use, capturing key positive aspects of transition outcomes, i.e. being satisfied with one's life and the absence of major disorders or problem behaviours.

Aims and Hypotheses

This study has four aims:

First we aim to identify patterns and variations in the combination of social roles in early adulthood, taking into account interactions between transition outcomes in education, work, housing, family formation and parenthood. We expect to find meaningful combinations of transition outcome across the 'big five' domains. In particular we expect to find evidence of 'fast' versus 'slow' transitions to adulthood.

Second, we assess the role of early precursors in predicting variations in role combinations. We expect that variations in transition outcomes are associated with social background factors, such as gender, family background and family stability, as well as individual aspirations and school attainment. Young people from less privileged backgrounds, in particular women, are expected to be more likely to undergo fast transitions, i.e. leaving school after completion of compulsory schooling and making the step into family formation at an earlier age, while young people from more privileged backgrounds are expected to be more likely to follow slow track transitions, characterised by extended education and delay of partnership and parenthood.

Third, we expect that levels of wellbeing vary for different subgroups in the population and are associated with variations specified according to the developmental match/mismatch model. In cases where the developmental transitions are matched to the capabilities and resources of the individual, we expect high levels of wellbeing. In cases where there is a mismatch or overload, we expect reduced levels of wellbeing.

Fourth, we examine whether: a) similar patterns of role combinations apply in two birth cohorts born 12 years apart: b) there is a shift towards more extended or slower transitions in the later-born cohort: c) in the later-born cohort a delay in assumption of adult roles, or a moratorium period, is associated with higher levels of wellbeing than the traditional fast track transitions.

Method

Sample

The study used data collected for the 1958 National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS70), two of Britain's richest research resources for the study of human development (Ferri, Bynner and Wadsworth 2003). NCDS took as its subjects, all persons living in Great Britain who were born in one week in March 1958. In six follow-up surveys, data were collected on the physical, psycho-social and educational development of the cohort at age 7, 11, 16, 23, 33, 42, 46 and 50 years. The BCS70 has followed children born in one week in April 1970. Follow-up surveys have taken place when the cohort members were aged 5, 10, 16, 26, 30, 34, and 38 years. In both cohorts, the sample population is predominantly white (about 3 to 4 per cent are from Indian, Pakistani, Bangladeshi, African, Caribbean, Chinese or mixed origin), reflecting the ethnic diversity of the UK population at the time (Ferri et al 2003).

The analysis is based on cohort members with complete data on transition outcomes at age 26, including 9,171 cohort members in NCDS and 9,897 in BCS70. An analysis of response bias showed that the achieved samples in the age 30/33 sweeps did not differ from the target sample across a number of critical variables (social class, parental education, and gender), despite a slight under-representation of males, and of the most disadvantaged groups (Plewis et al 2004).

Measures

Status indicators in the mid-20s include partnership status, parenthood, housing, economic activity, and highest qualifications (see Table 1). The information was derived from retrospective education-, employment-, housing- and family history data, collected from cohort members in their early 30s (i.e. at age 33 in NCDS and age 30 in BCS70).

Predictor Variables

Parental social status at birth was measured by the Registrar General's measure of occupational social class (RGSC), assessed by the current or last-held job of the cohort member's father. Where the father was absent, the social class (RGSC) of the mother was used. For the purpose of this analysis, RGSC is coded as: I and II- managerial and professional; III - skilled manual or non-manual; IV

and V - semi- or unskilled (Leete and Fox 1977). We also included a measure of mother's and father's education, differentiating between parents who left school at the minimum age or stayed on.

Family stability indicating whether the cohort member had experienced parental divorce, separation or death of a parent by age 10 for BCS70, and age 11 for NCDS.

Educational plans of the cohort members when aged 16, indicated whether they wished to continue in further education.

School motivation at age 16 was assessed with a 5-item academic motivation scale (e.g. "school is largely a waste of time"; "I do not like school"). Items were measured on a 5-point Likert scale. Internal consistency of the scale is satisfactory (Cronbach's alpha: α = .77 in NCDS, and α =.76 in BCS70), and scores were z-standardised. The validity of the school motivation scale has been established in previous studies, showing significant correlations between school motivation and educational aspirations (Schoon et al 2007) and time spent in education (Schoon 2008). A high score indicates positive school motivation, and a low score, school disengagement.

Academic attainment at age 16 is measured by an overall *'exam score',* calculated for both cohorts from their examination performance at age 16. The examination system was the same for both cohorts. The overall exam scores range from 0 to 94 in NCDS, and from 0 to 97 in BCS70.

Indicators of Adult Wellbeing include measures of mental health and life satisfaction. These measures were obtained for BCS70 cohort members at age 26 and 30, while for NCDS they are only available at age 33, but not age 26. We are thus able to assess concurrent associations between transition outcomes and wellbeing in BCS70, and use transition outcomes at 26 to predict wellbeing at a later time point in both cohorts.

Adult mental health was measured with the Malaise Inventory (Rutter, Tizard and Whitmore 1970), a self-completion measure of psychological distress, or depression, which has been widely used in general population studies (McGee et al 1986; Rutter and Madge 1976; Rodgers et al 1999). The internal consistency of the scale has been shown to be acceptable and the validity of the inventory shown to hold in different socio-economic groups (Rodgers et al 1999). The overall scale score ranges from 0 to 24. Individuals scoring affirmatively on 8 or more of the 24 items are considered to be at risk of depression.

Life satisfaction was assessed with one item: 'On a scale from 0 to 10 how satisfied are you about the way your life has turned out so far?' (0=extremely unsatisfied to 10=completely satisfied).

Frequency of alcohol use was measured with a question that asked respondents, 'How often do you have an alcoholic drink of any kind?' From the responses, a dichotomous variable was created in which respondents who reported daily drinking were compared to those who drank on fewer occasions.

Data analysis

We use Latent Class Analysis (LCA) as implemented in MPlus 6.1 (Muthén and Muthén 2007) to identify how different indicators of adult roles combine within individuals. LCA is a statistical method that enables us to examine latent structures among a set of categorical scored variables, and to identify underlying types or classes (Goodman 1974; Lazarsfeld and Henry 1968). A number of latent classes are identified that adequately capture the structure in the data, and parameters estimated that give the proportions of individuals within each of the latent classes (latent class probabilities) and their distribution across the indicator variables within these classes (conditional probabilities). Parameters are estimated using maximum likelihood criterion where the estimates are those most likely to account for the observed data (Clogg 1995). The model fit is determined by the Schwarz's Bayesian Information Criterion (BIC) (Schwarz 1978), a commonly-used fit index that balances model fit with model parsimony, adjusting for the size of the sample. The model with the lowest BIC is considered optimal (Muthén and Muthén 2000). We also consider the quality of the classification. The entropy index, an aggregate measure of classification, uncertainty-based on the average posterior probabilities (i.e. probability of an observations to be classified in a given class), is used to indicate how well a model classifies individuals (Dias and Vermunt 2006). It ranges from 0 to 1, with 1 indicating that all individuals have a probability of 1 for being in one class, and a probability of zero for being in all other classes. For well-separated latent classes, the entropy index is close to 1, while for ill-separated classes it is close

to 0. We furthermore consider the usefulness of the solution in practice, determined by the interpretability of the classes, the number of individuals in each class, and the emergence of distinct patterns regarding associated predictors and consequences.

The associations between predictors and class memberships were estimated by multinominal logistic regression. The association between class membership and indicators of wellbeing were assessed using analysis of variance. To address the issue of missing data, the analysis was run using the full information maximum likelihood (FIML) approach as implemented in Mplus6 (Muthén and Muthén 2009) using full information maximum likelihood (FIML) estimation to handle any item non-response (Asparouhov and Muthén 2009). FIML is preferable to maximum likelihood estimation based on complete data (the listwise deletion (LD) approach) since FIML estimates will tend to show less bias and be more reliable than LD estimates, even when the data deviate from missing at random and are non-ignorable (Arbuckle 1996).

Results

Table 1. Observed role characteristics at age 26

	NCDS in 1984 %	BCS70 in 1996 %
Education		
No qualifications	12.1	15.1
Up to GCSE/O-level	49.0	44.2
A-level (baccalaureate)	17.3	13.3
Degree level	21.7	27.4
Employment status		
Unemployed/Out of the labour force	4.4	4.1
Full-time home maker	12.2	9.4
Full-time education	1.1	3.2
Works part-time	5.7	7.6
Works full-time	76.6	75.7
Living arrangements		
Lives with parents	18.7	19.8
Rented accommodation	31.4	38.0
Own home	49.9	42.2
Relationship status		
Married	54.9	27.7
Cohabiting	12.3	31.6
Single	32.8	40.7
Parental status		
Childless	63.3	70.1
1-2 children	33.2	27.4
3 or more children	3.5	2.5
Total N	9,171	9,897

Table 1 gives distributions of the five status indicators of education, employment, living arrangements, relationship and parenthood status at age 26 for each of the cohorts. The later-born BCS70 cohort achieved higher academic qualifications than the earlier-born NCDS cohort at the same age, yet also had more young people leaving education without any qualifications. The later-born cohort comprises fewer full-time home makers, more part-time workers, or cohort members still in full-time education at age 26. In both cohorts about the same percentage of young people are living with their parents at age 26. In the 1958 cohort, more young people own their own home by age 26, while in the 1970 cohort, more are living in rented accommodation. Fewer in the later-born cohort are married and have children. The findings seem to indicate a trend towards delayed assumption of family roles in the later-born cohort, yet also an increasing polarization regarding education and housing transitions.

Table 2. Model fit indices and entropy by number of classes from exploratory latent class analysis (LCA) of role configurations

	NCDS 1984 (N=9,171)				BCS70 1996 (N=9,897)			
Class	LL	# Par	BIC	Entropy	LL	# Par	BIC	Entropy
2	-40773	27	81792	0.836	-46481	27	93210	0.826
3	-39397	41	79167	0.813	-45134	41	90645	0.786
4	-39138	55	78778	0.784	-44808	55	90122	0.754
5	**-38916**	**69**	**78461**	**0.764**	**-44558**	**69**	**89751**	**0.759**
6	-38863	83	78483	0.761	-44483	83	89729	0.742
7	-38823	97	78532	0.699	-44426	97	89745	0.741

Notes.
LL: Log-Likelihood value for the k^{th} model
 # Par: Numbers of parameters in the k^{th} model
CF: Scale correction factors for MLR in the k^{th} model
BIC: Bayesian Information Criteria

Identification of (latent) class membership

Table 2 gives the indicators of model fit for the different k-class solutions. Although the lowest BIC was represented by a 6-class solution for BCS70, there was little relative improvement beyond a 5-class solution for both cohorts, differentiating between 'traditional families', 'career orientation without children', 'slow starters', 'fragile families', and those who are 'highly educated without children'. Inspection of solutions with greater than five classes did not reveal any qualitatively different configurations, or they were simply not interpretable. For example, in both cohorts we find a 'single mothers' group emerges from the group of fragile families, which although it differs from the former according to partnership status and gender, showed no further variation amongst the other predictors in the model. In addition, some further classes revealed a splitting of both traditional families and fragile families into male and female equivalent classes. Simulation studies have shown that BIC tends to overestimate the optimum number of classes (Nylund, Asparouhov and Muthen 2007). To test the reliability of our solution, we re-ran the model with different starting values and with a randomly-selected sample of approximately 25% (2,500 cases) in both cohorts. We were able to replicate the 5-class solutions exactly, while solutions with additional classes were not stable. In addition, with a reduced sample, BIC also supported the 5-class solutions.

Table 3. Proportion of cohort members allocated to each of the five classes

	NCDS in 1984 %	BCS70 in 1996 %
Work orientation without children (WWC)	31.4	32.2
Traditional families (TF)	20.1	15.9
Highly educated without children (EWC)	18.0	23.1
Slow starters (SS)	17.4	15.9
Fragile families (FF)	13.0	12.9
N	9,171	9,897

Table 3 indicates the proportion of cohort members that were allocated with the highest probability to each of the five classes (the class size parameters fitted by the model). In both cohorts 'work orientation without children' is the largest group, especially in later-born 1970 cohort, followed by those in 'traditional families' for the 1958 cohort and the 'highly educated without children' in the 1970 cohort. There are similar rates of 'slow starters' and 'fragile families' in both cohorts.

Table 4. Latent class probabilities for both cohorts

	NCDS at age 26 in 1984 (N=9,171)					BCS70 at age 26 in 1996 (N=9,897)				
	WWC	TF	EWC	SS	FF	WWC	TF	EWC	SS	FF
Education										
No qualifications	.047	.118	.047	.139	.392	.092	.179	.098	.134	.401
Up to GCSE/O-level	.470	.659	.313	.498	.523	.425	.617	.294	.450	.516
A-level (baccalaureate)	.235	.099	.214	.187	.057	.169	.117	.119	.145	.062
Degree level	.249	.123	.426	.176	.028	.313	.087	.489	.271	.022
Employment status										
Unemployed/Out of labour force	.009	.034	.042	.077	.103	.005	.011	.075	.043	.120
Full-time home maker	.021	.388	.000	.001	.293	.000	.218	.001	.002	.479
Full-time education	.004	.001	.043	.005	.001	.010	.005	.098	.030	.010
Works part-time	.033	.131	.020	.021	.100	.027	.241	.037	.028	.113
Works full-time	.932	.447	.894	.896	.502	.958	.524	.789	.897	.278
Living arrangements										
Lives with parents	.010	.003	.058	.906	.086	.042	.031	.080	1.000	.105
Rented accommodation	.095	.226	.622	.049	.891	.129	.214	.881	.000	.850
Own home	.895	.771	.320	.046	.023	.829	.755	.039	.000	.046
Relationship status										
Married	.858	.938	.071	.025	.656	.367	.702	.023	.001	.243
Cohabiting	.142	.041	.242	.016	.175	.422	.272	.331	.024	.410
Single	.000	.021	.686	.959	.169	.211	.027	.646	.974	.346
Parental status										
Childless	.851	.000	.990	.968	.106	.943	.126	.963	.951	.021
1-2 children	.149	.929	.010	.032	.730	.057	.841	.037	.049	.812
3 or more children	.000	.071	.000	.000	.164	.000	.032	.000	.000	.166
Class sizes (N)	2,884	1,847	1,653	1,593	1,194	3,187	1,574	2,285	1,577	1,274

Note. WWC: Work-orientation Without Children; TF: Traditional Families; EWC: Highly educated without children; SS: Slow Starters; FF: Fragile Families

Typology of role configurations in young adulthood

Table 4 presents the latent class and conditional probabilities of the final 5-class solutions in both cohorts. Whilst membership proportions have slightly changed from NCDS to BCS70, conditional probabilities and gender distributions follow a similar pattern, justifying the use of the same labels across cohorts:

Work orientation without children (WWC). Members of this group are typically full-time employed, have no children, and own their own home. Partnership status is different in the two cohorts, with most of those in the 1958 cohort being married, while in the later-born cohort this class includes married, cohabiting, and single individuals. Cohort members in this group are, on average, relatively well-educated, yet not as highly as the 'highly educated without children'.

Traditional Families (TF). Members of this group are typically married (although there are more cohabiting cohort members in the later-born cohort), own their own home, and have one or two children. The level of educational attainment varies, with the majority having obtained their O-level qualifications. Whilst nearly half of the members in this class are in full-time employment (mostly males), considerable proportions are full-time home makers or working part-time (mostly females).

Highly Educated Without Children (EWC). This group is the most highly educated (i.e. with degree level qualifications). Most of them are single with no children, working full-time, and living in rented accommodation (especially in the later-born cohort).

Slow Starters (SS). Slow starters are typically single, childless, and live with their parents. Most of them work full-time. Furthermore, their educational profile has slightly changed, with more individuals in the later-born cohort having degree-level qualifications. This group is however not as well-educated as those cohort members on the 'highly educated without children', or those in the class 'work without children'.

Fragile Families (FF). This class is characterized primarily by parenthood status, combined with a high likelihood of living in rented accommodation, and poor educational attainment. This class contains more people without any formal qualification than any other class. Compared to all other classes (except for 'traditional families' in the 1958 cohort), individuals in 'fragile families' are least likely to be in full-time employment.

Antecedents of class membership

Multinominal regression models were run to establish the association between the predictor variables and membership in any of the five groups. For ease of interpretation, the standard multinomial regression coefficients have been converted into relative risks, which eliminate the need for a reference class. The estimates presented in table 5 summarise the change in probabilities for being a member of each group, associated with a level change on the predictor variable (holding all other predictors constant at their means).

In both cohorts females are more likely to be grouped into the 'traditional family' or the 'fragile family' group than males. Additional predictors of entering the 'traditional family' group include having relatively low-educated parents and low educational plans. While NCDS members in this group show average exam scores, in BCS70 they are more likely to have low exam scores, indicating a shift in predictors and maybe different characteristics of the two groups. Regarding the 'fragile family' group, significant predictors besides gender include low parental social class, low parental education, low educational plans, low school motivation, and poor exam results at age 16.

In both cohorts, 'work-orientation without children' is associated high educational plans and good exam scores. Entry into the 'highly educated without children' group is predicted by being male, stemming from relatively advantaged family background with educated parents, having high educational plans and good academic attainment. Entry into the 'slow starter' group is significantly associated with being male, relatively privileged family background, experience of family break-up, and average, yet not low exam scores.

Table 5. The estimated relative risks of being in a given class, computed from multinomial logistic regressions of class memberships at age 26 on early predictors for NCDS and BCS70

	NCDS (N=9171)					BCS70 (N=9897)				
	WWC	**TF**	**EWC**	**SS**	**FF**	**WWC**	**TF**	**EWC**	**SS**	**FF**
gender: male (1) vs female (0)	1.09	**.41**	**1.36**	**2.03**	**.72**	1.05	**.54**	**1.50**	**1.54**	**.33**
ethnicity: nonwhite (1) vs white (0)	.86	1.09	.96	.74	1.61	.54	1.12	1.41	1.28	1.34
RGSC: Skilled workers (1) vs prof/managerial (0)	.91	1.17	**.74**	**.78**	1.40	.95	1.08	**.72**	**.94**	1.48
RGSC: Semi/unskilled (1) vs prof/managerial (0)	.82	1.19	**.68**	**.73**	**1.78**	.78	1.22	**.74**	**.79**	**1.93**
Mother education: had further ed.(1) vs no (0)	1.11	**.76**	**1.52**	1.04	**.72**	1.06	**.85**	**1.22**	.97	**.81**
Father education: had further ed (1) vs no (0)	1.14	.85	1.28	1.08	**.61**	.98	1.05	1.09	.98	**.87**
Intact family by age 10: nonintact (1) vs intact (0)	.78	1.24	1.17	**.59**	1.25	.94	.92	1.27	**.70**	1.35
Educational plans at age 16:										
Wants further ed(1)versus no further ed(0)	**1.23**	**.67**	**1.56**	1.01	**.68**	**.98**	**.73**	**1.55**	1.15	**.62**
School motivation at age 16 :										
1 sd below (1) vs average (0)	.92	1.06	.94	.92	**1.26**	.90	1.07	1.04	.92	**1.22**
School motivation at age 16:										
1 sd above (1) vs average (0)	1.08	.94	1.05	1.08	**.78**	1.10	.92	.95	1.07	**.81**
Exam score at age 16: 1 sd below (1) vs average (0)	**.82**	**.92**	**.76**	1.05	**2.13**	**.75**	**1.19**	**.67**	1.00	**1.93**
Exam score at age 16: 1 sd above (1) vs average (0)	**1.13**	1.01	**1.21**	**.88**	**.44**	**1.20**	.76	**1.34**	**.90**	**.46**

Note.

WWC:Work-orientation Without children; TF: Traditional Families; EWC: Highly educated without children; SS: Slow Starter; FF: Fragile Families

Bold relative risks are significant at .01 level based on 99% confidence interval of the estimated relative risk coefficients

Table 6. Sample means and standard deviation of adult outcomes by class memberships and by cohorts

Classes Adult Outcomes	Overall Mean (std)	WWC Mean (std)	TF Mean (std)	EWC Mean (std)	SS Mean (std)	FF Mean (std)	F-value (and p-value) for class differences
			NCDS				
Life satisfaction at 33	7.49	7.72	7.66	7.36	7.33	7.03	43.00
	(1.66)	(1.48)	(1.67)	(1.60)	(1.67)	(1.99)	(.000)
Malaise at 33	2.30	1.87	2.48	2.17	2.17	3.45	66.04
	(2.87)	(2.47)	(2.98)	(2.74)	(2.59)	(3.72)	(.000)
Daily alcohol use at 33	.12	.14	.07	.19	.13	.07	36.40
	(.33)	(.35)	(.26)	(.39)	(.34)	(.26)	(.000)
			BCS70				
Life satisfaction at 26	7.29	7.71	7.79	6.92	6.78	6.63	104.46
	(1.85)	(1.58)	(1.71)	(1.94)	(1.92)	(2.10)	(.000)
Life satisfaction at 30	7.35	7.62	7.54	7.18	7.36	6.71	60.41
	(1.82)	(1.68)	(1.76)	(1.86)	(1.74)	(2.07)	(.000)
Malaise at 26	3.74	3.41	3.68	3.67	3.67	5.41	43.76
	(3.26)	(2.94)	(3.11)	(3.35)	(3.29)	(3.90)	(.000)
Malaise at 30	3.49	3.01	3.37	3.60	3.35	4.89	63.99
	(3.44)	(2.97)	(3.25)	(3.61)	(3.26)	(4.23)	(.000)
Daily alcohol at 26	.09	.09	.05	.13	.08	.04	17.18
	(.28)	(.29)	(.22)	(.34)	(.27)	(.19)	(.000)
Daily alcohol at 30	.13	.14	.10	.19	.11	.06	34.91
	(.34)	(.35)	(.30)	(.39)	(.31)	(.24)	(.000)

Note: WWC: Work-orientation Without Children; TF: Traditional Families; AT: Highly educated without children
SS: Slow Starter; FF: Fragile Families

Adult outcomes

Analyses of variance were run to test differences in the wellbeing indicators across the five groups. In table 6, the mean and standard deviation of the outcome variables are given for both cohorts, and for each of the five groups in each cohort. Life satisfaction is highest among cohort members in the 'work no children' class and those in the 'traditional families' class, followed by the 'highly educated without children' and the 'slow starter' classes. In NCDS, levels of distress are lowest among cohort members in the 'work no children' class, followed by the 'highly educated without children' and 'slow starters'. In BCS70, low levels of distress are reported also by cohort members in the 'work no children' class, followed by the 'slow starters', those in 'traditional families', and the 'highly educated without children'. In both cohorts those in the 'fragile families' class report the lowest levels of life satisfaction and the highest levels of distress. Daily alcohol use is highest among the 'highly educated without children' and lowest among cohort members who have made the step into parenthood, i.e. the 'traditional' and the 'fragile families'.

In interpreting these findings, it has to be kept in mind that information regarding adult outcomes in the 1958 cohort was collected seven years after the role combinations were assessed, i.e. at age 33 and not at age 26. In the 1970 cohort, by contrast, all information was assessed at age 26 and again at age 30. We can thus examine concurrent associations between the outcome variables and the role combinations in BCS70, and in both cohorts we assess associations between transition outcomes at age 26 and later wellbeing. The pattern observed for the 1958 cohort can largely be confirmed in the later-born cohort: individuals grouped into the 'work no children' class at age 26 reported the highest level of life satisfaction and the lowest psychological distress later on, and those in the 'fragile families' class, the highest levels of distress and lowest levels of life satisfaction. Relatively low levels of distress are furthermore reported by the 'highly educated without children' and the 'slow starters', however the 'highly educated without children' reported more daily alcohol use than the other four groups. At age 26, life satisfaction is highest among cohort members in the 'traditional families' class, followed by those in the 'work no children', then the 'highly educated without children', then the 'slow starter' class.

Summary and Conclusion

In both cohorts, five distinct and meaningful groups could be identified, which relate well to earlier studies using LCA (Osgood et al 2005; Sandefur et al 2005; Ross et al 2009). The five groups have been labeled as 'work orientation without children', ' highly educated without children', 'traditional families', 'slow starters', and 'fragile families'. The most prevalent pattern in both cohorts is 'work orientation with no children', which also involves home ownership. In the later-born cohort there are more cohort members identified as 'highly educated without children' and fewer 'traditional families'. Both cohorts contain similar proportions of cohort members grouped into 'slow starters' and 'fragile families'. As in previous studies, our groups are characterized by variations in academic attainment, employment status and family formation – yet our groups are, in addition, clearly defined by their housing situation.

The five groups differed in their level of wellbeing. Those groups who reported the highest levels of life satisfaction, i.e. the 'work no children' and the 'traditional family' group, also owned their own homes, suggesting that home ownership plays a role in shaping wellbeing. The association between home ownership and wellbeing might be a particular British phenomenon, yet it illustrates the need of young people to establish their independence. 'Fragile families' as well as the 'highly educated without children', typically lived in rented accommodation, suggesting that home ownership is a possible indicator of having achieved financial security. 'Slow starters' still lived in, or had returned to, their parental home by age 26. The group of 'slow starters' can possibly be seen to representing those cohort members who are in an extended period of exploration characterizing emerging adulthood (Arnett 2000). This group is however not a majority pattern, and has not increased for the later-born cohort (comprising about 18 per cent in the 1958 cohort and 15% in the 1970 cohort). Neither do they show the highest levels of wellbeing, suggesting that delaying the step into independence is associated with reduced life satisfaction.

Regarding cohort differences, we find that the later cohort is growing up with better educated parents and are better educated themselves, i.e. have obtained higher level qualifications. In the later-born cohort, family formation has been delayed and fewer young people are home owners by age 26. We also find higher levels of psychological distress and lower levels of life satisfaction in the later-born cohort, which might be associated with the reduced likelihood of home ownership or delays in partnership formation. There were no large cohort changes regarding daily alcohol use. Generally, our findings suggest only slight cohort changes regarding role combinations by age 26, driven particularly by extended education participation and delay in family formation. However, by age 26 the majority of young people in the UK are living together as a couple (i.e. are married or cohabiting). We therefore cannot confirm the assumption of a new normative stage of non-commitment as suggested by Arnett (2000), neither is there a majority of young people with extended education, i.e. the 'highly educated without children'. The findings rather point towards a polarization of fast versus slow transitions, with the fragile and traditional families having made an early step into parenthood (before the age of 26), and the 'slow starters' and the 'highly educated without children' having delayed the assumption of adult responsibilities. Those who are 'work oriented without children' are in-between. As predicted, cohort members with delayed transitions were more likely born into relatively privileged families, in particular the 'highly educated without children'. Fast transitions, in contrast, are associated with a less privileged family background and being female. Furthermore, compared to those with extended transitions, those on the fast track show relatively fewer individual resources, as for example lower levels of education aspirations, school motivation, and academic attainment.

It is thus no surprise that cohort members in the 'fragile family' group report low levels of wellbeing, i.e. low levels of life satisfaction and high levels of psychological distress. Their transition fits the overload model (Schulenberg and Maggs 2002), where the experience of multiple transitions over a relatively short period of time has possibly overwhelmed their coping capabilities. Fast track transitions can however also be successfully mastered, as indicated by the high levels of life satisfaction among individuals in the 'traditional family' group. Individuals in the 'traditional family' group have successfully navigated all five transitions, suggesting the experience of a progressive increase in developmentally appropriate demands. They have successfully negotiated the step into financial independence, have established a stable relationship, overcame the risks associated with relatively early parenthood, and have succeeded in getting onto the property ladder. They report slightly higher levels of distress than the 'work no children' group, possibly reflecting the strain of looking after young children.

Those grouped into the 'work-orientation without children' group have mastered four out of five transitions, i.e. all transitions but the step into parenthood. Their experience can possibly also be conceptualized as a progressive increase in role demands: for young people in this group, the timing and sequencing of transition to adult roles appears to match their capabilities and resources, and has opened up developmentally appropriate challenges. In both cohorts, this group shows high life satisfaction and low levels of distress. They are also less likely to drink daily than the 'highly educated without children', maybe another indicator of less distress.

Delaying commitment to adult roles is, in our study, associated with slightly reduced levels of wellbeing. Compared to the 'traditional family' and 'work no children' groups, the 'highly educated without children' might have channeled their energies in pursuing a trajectory that enabled them to focus on maximizing existing strengths within one domain. As teenagers they already showed a preference for an academic career: they wanted to pursue further education and achieved good exam results at age 16. They furthermore grew up in relatively privileged families with highly educated parents. Their transition could thus be characterized by the increased heterogeneity model (see Schulenberg and Maggs 2002), where transitions magnify existing strengths. By age 26 they express moderate to low levels of wellbeing, especially in the later-born cohort, and are most likely to drink daily. It could be that focusing on only two transitions, i.e. education and work, without establishing a stable relationship or making the step onto the housing ladder does not provide a

sufficiently sturdy base for wellbeing (see also Garret and Eccles 2009). Furthermore, in both cohorts the 'slow starter' group shows relatively low levels life satisfaction, possibly indicating conflicting demands or a problematic childhood. They grew up in relatively privileged families, yet might have experienced the separation of their parents. Their academic attainment was average, suggesting that the transition demands might not have matched their psycho-social capabilities. They only 'succeeded' in making two of the 'big five' transitions, i.e. completing education and entering paid employment.

The findings suggest that delay in commitment as well as a mismatch between transition demands and individual capabilities and resources, is associated with lower levels of wellbeing. Thus we find no evidence to support the assumption that a moratorium period, or delayed transitions, are associated with increased levels of wellbeing. Too few - or too many unsupported transitions (as in the case of the 'fragile families') are not beneficial for wellbeing. Engaging in developmentally appropriate transitions, even if they might be perceived as 'risky' (as in the case of early parenthood), can open up opportunities for young people to experience competence and accomplishment, as illustrated in the case of 'traditional families'. The timetable for achieving certain transition markers appears to be variable and depends on the resources available to the individual. Family background, gender, individual capabilities and preferences play an important role in shaping transition behaviours, and young people have to balance demands and resources.

In interpreting the findings, one has to be aware of a principal limitation of latent class analysis, which lies in the temptation to attach too much meaning to a latent class or the label assigned to it (Sandefur et al 2005). One has to remain cautious in interpreting the group allocations, especially in regard of reifying labels assigned to the classes for easier interpretations. The final model provides only a summary of the many ways in which role configurations may occur in society. For both cohorts, the five key status indicators had been measured at age 26. In the 1958 cohort, however, the outcomes have been collected seven years later. It is possible that changes in role combinations have occurred in that time period, as the role configurations of cohort members in their mid-20s only represent a snapshot in time, and do not capture the dynamics of transition processes. However, being able to compare the associations between role combinations and indicators of subjective wellbeing for the two cohorts, reveals a similar pattern in associations between transition experiences, antecedents and associated outcomes. Future research should control for prior levels of wellbeing, and use latent transition analysis to study changes in class membership and associated outcomes over time (Macmillan and Copher 2005; Macmillan and Eliason 2003; Oesterle et al 2010).

The analyses presented here, provide evidence of changes and similarities in role combinations in two birth cohorts born 12 years apart and regarding their antecedents and associated outcomes, contributing to a better understanding about the interdependencies of transitions to adult roles in times of social change. The results show heterogeneity and persistent social structuring of transition experiences. There is a differentiation between fast versus slow transitions, with young people from less privileged backgrounds being less likely to participate in higher education than their more privileged peers, and women making the step into family formation earlier than men.

Not all young people follow the same script, and there are five distinct groups characterized by different role combinations at age 26. The majority of young people in both British cohorts were attached to the labour market and have established a committed relationship. Changes in life course patterns are only slight between the two cohorts, and in both cohorts we could identify five comparable groups. The level of wellbeing across these five groups appears to depend less on the timing of transitions, but on the developmental match of transition demands and individual resources and capabilities, as illustrated by the 'traditional family' group who successfully navigated all five role transitions by age 26. The life course perspective and latent class approach provide a better understanding of consistency and change in the way new social roles combine in individual lives, and provide useful information about how to support young people in their transition to independence.

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Social role patterning in early adulthood in the USA: adolescent predictors and concurrent wellbeing across four distinct configurations

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Abstract

The decade following secondary school is pivotal in setting the stage for adulthood functioning and adjustment. We identify four social role configurations of early adults in their mid-20s using latent class analyses in two nationally representative samples of American youth in their last year of secondary education (modal age 18) who were followed longitudinally into adulthood (age 25/26). We focus on the big five social role domains of early adulthood: education, residential status, employment, cohabitation/marriage, and parenthood. Aims were to identify latent classes of social role configurations in early adulthood, examine demographic and late adolescent educational predictors of these classes, and explore contemporaneous health and adjustment correlates focusing on life satisfaction, economic independence, and substance use. Four classes with very similar characteristics and prevalence were identified in the two cohorts who were born 12 years apart: ***Educated Students without Children*** *(8% in 80s cohort/9% in 90s cohort);* ***Working Singles Living with Parents*** *(16%/18%); Educated* ***Workers without Children*** *(45%/46%); and* ***Married Workers with Children*** *(31%/27%). Late adolescent demographic and educational variables and mid-20s variables were related to class membership. Results evidenced notable similarities (and some differences) across cohorts. Discussion focuses on how roles facilitate or inhibit each other and the potential diversity of optimal patterns of transitions to adulthood.*

Introduction

The decade following high school is pivotal in setting the stage for adulthood functioning and adjustment. In descriptions of the nature of the transition to adulthood in contemporary Western societies, psychological models tend to emphasize self-directed exploration (e.g. Arnett 2000), demographic traditions highlight the impact of social structure on the life course (e.g. Fussell and Furstenberg 2005), and interdisciplinary approaches focus on the interaction of historical, cultural, and structural constraints with personal agency in the creation of individualized life courses (e.g. Beck 1992; Bynner 2005; Côté and Bynner 2008; Schulenberg et al 2003; Schulenberg and Zarrett 2006; Settersten 2007a, 2009; Settersten et al 2005; Shanahan 2000).

Despite some differences, dominant models of

the decade following the completion of mandatory education share three important areas of agreement. First, it is broadly agreed that the last 50 years have heralded (a) later median ages at the initiation of traditional adult roles (Amato et al 2007; Arnett 2000; Bynner 2005; Settersten 2007); (b) greater within- and between-country heterogeneity in the timing, order, and resulting patterns at any given point in time (Bell et al 2007; Bynner 2005; Cook and Furstenberg 2002; Cooksey and Rindfuss 2001; Fussell and Furstenberg 2005; Schulenberg et al 2003); and (c) increased individualization of the life course, resulting in more choices and a correspondingly greater need for personal agency and soft skills such as teamwork and networking (Beck 1992; Bynner 2005; Cook and Furstenberg 2002). Second, dominant models note that formal social institutions and informal social norms provide less structure after the end of secondary school, with individuals able to take on a diverse set of potential life changes, including school completion, employment, residential independence, intimate cohabitation or marriage, and parenthood (Cook and Furstenberg 2002; Fussell and Furstenberg 2005; Schulenberg and Zarrett 2006; Settersten 2007). Third, scholars agree that the 20s are dense with transitions to adult work and family roles, and are pivotal for developing healthy and fulfilling lifestyles (Schulenberg et al 2003; Settersten et al 2005; Shanahan 2000). As a result, Settersten (2007) concluded that this decade is both formative and risk-laden, a period that contributes to the accumulation of advantage and disadvantage over the life course (Côté and Bynner 2008; Dannefer 2003; Danziger and Rouse 2007).

In this paper, we focus on role configurations of early adults in their mid-20s. We explore the heterogeneity of social roles and how these are combined in the lives of participants in two nationally representative samples of American youth in their last year of secondary education, who were followed longitudinally into adulthood. Data are drawn from the ongoing Monitoring the Future study, focusing here on two cohorts who graduated from high school 12 years apart. We focus on the big five social role domains of early adulthood (Settersten 2007): education, residential status, employment, cohabitation/marriage, and parenthood. We focus on ages 25 to 26 because most young adults have completed formal education by this point, freeing them from the constraints that the pursuit of formal education places on marriage, parenthood, and employment, because considerable heterogeneity in configurations of roles is both possible and likely (Cooksey and Rindfuss 2001), and because this age focus facilitates comparability with three related studies (Räikkönen et al 2012; Salmela-Aro et al 2012; Schoon et al 2012). Our three aims are to: (1) identify heterogeneity in social role configuration during early adulthood using latent class analysis; (2) examine whether demographic and educational aspirations and performance assessed during the senior year of high school (modal age 18) predict social role configurations at ages 25/26; and (3) examine concurrent health and adjustment correlates of the configurations, including substance use, economic independence, and life satisfaction. The introduction focuses on the background to each of the three aims in turn.

Role patterns in young adulthood (Aim 1)

What is known about prototypic role configurations for young adults? Osgood and colleagues (2005) classified young adults in a longitudinal study of a regional sample of white working- and middle-class youth, based on their role involvement in five adult social roles at age 24 (in approximately 1996), identifying six paths to adulthood. “Fast starters” tended to be partners, parents, living independently, and in long-term employment, with a low likelihood of having completed a college degree. “Parents without careers” had similar spousal and parental roles as well as independence from their own parents and low education, but differed from Fast starters primarily by having lower levels of employment. “Educated partners” lived with partners rather than parents, but had not become parents themselves. They tended to be employed and to have higher levels of education. “Educated singles” (the largest group at 37%) did not live with romantic partners, but rather with parents or in rented housing. They had the highest levels of education. “Working singles” were not yet parents or partners, and tended to live with parents and be employed full-time. Their typical level of education was to have attained some college, but not a degree. Finally, “Slow starters” tended to have made the

fewest transitions, live at home, not be partnered, have low education, and be unemployed or in short-term jobs. Thirty percent of this group were parents, compared to 20% in the full sample. Osgood et al (2005) provide an important foundation for the present analyses due to its person-centered approach, identification of cohesive role-based configurations in early adulthood, and examination of correlates of role combinations. In Aim 1, we seek to extend their analyses in a longitudinal community-based sample by using similar indicators of social roles with the addition of current student status, employing a nationally representative US sample of high school seniors followed longitudinally, examining contemporaneous correlates in the mid-20s, and replicating results among young adults in similar (1990s) and earlier (1980s) historical time periods.

Predictors of young adult role patterns (Aim 2)

Who is likely to inhabit specific configurations of social roles in young adulthood? Past research suggests the key importance of education in shaping the timing and sequence of adult role transitions (Sandefur et al 2005). Specifically, those who pursue higher education tend to initiate the adult roles of partner, parent, and employee later; during this time many receive significant assistance in the form of parental financial support and subsidies (Schoeni and Ross 2005). Education tends to confer significantly higher incomes (DeNavas-Walt et al 2010; Goldin and Katz 2007), and has arguably become more important historically as careers have become less secure and more variable and self-directed (Beck 1992; Settersten 2007). In this way, the more educated group may receive multiple benefits not experienced by all. Of course, opportunities to pursue higher education are, in turn, not randomly distributed in the population (Dannefer 2003). Due to the importance of education in shaping the transition to adulthood (Sandefur et al 2005), we focused on educational as well as demographic predictors, assessed at age 18, of age 25/26 role configurations. Specifically, for aim 2, we focus on two types of predictors: socio-demographics (gender, race/ethnicity, two-parent family, parent education) and educational background (high school academic performance, aspirations to attend college, aspirations to attend trade school). We ask the research question: to what extent do socio-demographic and educational background indicators assessed at the end of high school predict the role configurations participants inhabit at ages 25 to 26?

Wellbeing correlates of role patterns (Aim 3)

There are several concerns regarding how wellbeing relates to the role patterns. For example, is one role configuration ideally conducive to health and wellbeing? Or, do different configurations coincide with complex patterns of risk and benefits? We focus on three domains of wellbeing in young adulthood: life satisfaction, economic independence, and substance use. The mid-20s are a period of normative developmental changes toward greater health and independence. For example, subjective markers of adjustment and life satisfaction increase (Galambos et al 2006; Schulenberg et al 2004) as does economic independence (Bell et al 2007). On average, harmful substance use declines (Johnston et al 2011b), particularly among those who are presently partnered (Bachman et al 1997; Staff et al 2010; Staff et al 2012). Although the normative pattern is toward increased healthy lifestyles and greater wellbeing, this is not true for all. In the US, the third decade of life is when many substance use disorders and psychopathology manifest, unemployment is high, and access to health insurance is the lowest in the lifespan (Danziger and Rouse 2007; DeNavas-Walt et al 2010; Levy 2007; Osgood et al 2006; Settersten et al 2005; Zucker et al 1995). Historic declines in the availability of living wages and affordable housing have added to the challenges of launching adult independence. Thus, even though wellbeing tends to increase, so do serious difficulties highlighting the increased heterogeneity or "fanning" of individual differences during the third decade of life (Schulenberg and Zarrett 2006).

Recent depictions of the transition to adulthood and the young adult period have highlighted both the increased importance of exploration of roles before settling on permanent decisions (Arnett 2000) and the significant challenges faced in recent decades of negotiating the transition to adult roles (Danziger and Rouse 2007; Settersten et al 2005). In the present study, we examine whether indicators of contemporaneous wellbeing—such as substance use, economic independence, and life satisfaction—differ

among our observed role configurations. By doing so, we seek to explore whether alternate social role configurations represent diverse pathways to equivalent levels of health and happiness, or whether some configurations appear intrinsically more challenging or risk-laden.

Method

Sample

Longitudinal data were obtained from the ongoing Monitoring the Future (MTF) project, which has recruited nationally representative samples of about 16,000 students in final year of secondary school (12th grade; modal age 18 years) annually since 1975 (Johnston et al 2011a). Approximately 2,400 of these participants are selected each year for biennial follow-ups using mailed surveys. Illegal drug users are over-sampled for follow-up, thus sampling weights are used in analyses to best approximate population estimates. These longitudinal follow-ups begin one year after the baseline for a random half of the participants, and two years after the baseline for the other half; these two halves are combined in these analyses. Thus, longitudinal data collected at age 18 and at ages 25/26 (the fourth follow-up) are used in analyses reported here. Retention rates through the mid-20s typically exceed 60% for cohorts used here, and differential attrition analyses reveal that those retained are more likely to be female, to be white, to report higher high school grades/marks, to have more educated parents, and to report lower senior year drug use (e.g. Jager et al in press; Schulenberg et al 2005; Staff et al 2010)[i].

The cohort described here as the 80s cohort represented the high school graduating classes of 1976 and 1977 who were at modal ages 25 or 26 in 1983, 1984, or 1985 (*n*=2,614), and the cohort described as the 90s cohort represented the high school graduating classes of 1988 and 1989 who were at modal ages 25 or 26 in 1995, 1996, or 1997 (*n*=2,434). The 80s cohort roughly parallels the National Child Development Study in Britain (Schoon et al 2012) and the Jyväskylä Longitudinal Study of Personality and Social Development in Finland (Räikkönen et al 2012), and the 90s cohort roughly parallels the British Cohort Study (Schoon et al 2012) and the Northern Finland Birth Cohort 1966 (Salmela-Aro at al 2012).

Measures

Demographic and educational predictors (modal age 18)

Demographic indicators were assessed at age 18. These included gender, race, two-parent family, and parent education. *Gender* was coded such that male=0 and female=1. *Race* was coded with two dummy variables (for Black and Other race) with White as the reference group. Living with *two biological parents* (coded as 1) was distinguished from *other family forms* (0). *Parental education* was assessed with two questions, "What is the highest level of schooling your [mother/father] completed?" Responses were 1=Completed grade school or less, 2=Some high school, 3=Completed high school, 4=Some college, 5=Completed college, and 6=Graduate or professional school after college. If both parents responded to the question, the responses were summed and multiplied by 5. If only one parent responded, his/her answer was multiplied by 10, so that responses ranged from 10 to 60.

Educational background was assessed as high school grade point average (GPA) and educational aspirations. *High school GPA* was measured with the question, "Which of the following best describes your average grade so far in high school?" based on a range of responses from 1=D (69% or below) to 9=A (93%-100%). Grades of A are the highest possible in the US system and D is the lowest passing grade; one letter grade is obtained in each course each year and averaged.

Educational aspirations were based on the question, "How likely is it that you will do each of the following things after high school?" Responses included "Attend a technical or vocational school," "Serve in the armed forces," "Graduate from a two-year college program," "Graduate from college (four-year program)," and "Attend graduate or professional school after college" with a response choices for each of Definitely won't, Probably won't, Probably will, and Definitely will. *College aspirations* were coded to reflect clear intentions to pursue a 4-year college degree or attend graduate school. Individuals who responded that they definitely would graduate from a four-year college degree or attend graduate school were coded as 1 and all others were coded as 0. Among those who did not have college aspirations(i.e. college aspirations=0), *trade school aspirations* were coded as 1 for those who reported that they would definitely do technical school, armed forces, or graduate from a two-year college program and all others were coded as 0.

Social roles in early adulthood

Participation in the big five social roles of adulthood was assessed via self-report at age 25 or 26 using categorical indicators. The percents in each role are reported in the first columns of Tables 1 (80s cohort) and 2 (90s cohort). *Student* status was distinguished in three categories: Full-time student, Part-time student, and Non-student. *Educational attainment* was coded at four categorical levels: Completed high school, Some college, Associate's (2-year) degree, and Bachelor's (4-year) degree or higher. Four categories of *employment* were distinguished: Not employed, Homemaker, Part-time employee, and Full-time employee. Regarding *residential independence*, we distinguished cohort members who lived with parents from those who lived away from parents. Three categories of *partnership* were distinguished: Single, Cohabiting (but not married), and Married. Regarding *parenthood*, we distinguished cohort members who had no children, 1 child, and 2 or more children.

Table 1. Weighted frequencies of social roles in mid-twenties for 80s cohort: entire sample and four latent classes

	Entire Sample		Educated Students w/o Children (8%)		Working Singles, Living w/ Parents (16%)		Educated Workers w/o Children (45%)		Married Workers w/ Children (31%)	
	N	rel %	N	rel %	N	rel %	N	rel %	N	rel %
Number of cases	2,614	100	199	100	429	100	1,183	100	804	100
Living arrangements										
Lives with parents	482	18.88	33	17.22	401	100.0	25	2.13	23	2.96
Lives away from home	2,073	81.12	159	82.78	0	0.00	1,150	97.87	764	97.04
Relationship status										
Married	1,282	49.26	49	24.8	0	0.00	511	43.32	722	90.33
Cohabiting	212	8.15	12	6.30	3	0.60	158	13.37	39	4.92
Single	1,108	42.59	134	68.8	425	99.4	511	43.32	38	4.75
Parental status										
No children	1,723	66.21	181	92.81	347	81.06	1,165	98.73	31	3.83
1 child	503	19.32	11	5.82	58	13.56	15	1.27	418	52.29
2 or more children	377	14.48	3	1.37	23	5.38	0	0.00	351	43.88
Employment status										
Other (laid off or unemployed)	257	11.27	84	76.44	56	14.43	37	3.41	80	11.41
Full-time home maker	173	7.57	0	0.00	5	1.30	0	0.00	168	23.86
Works part-time	35	1.53	11	9.67	6	1.56	12	1.08	7	0.95
Works full-time	1,819	79.63	15	13.90	319	82.71	1,035	95.51	449	63.78
Current college attendance										
Full-time attendance	212	8.25	184	92.45	13	3.05	0	0.00	16	2.02
Part-time attendance	259	10.06	15	7.55	43	10.29	167	14.27	35	4.38
Not attending college	2,102	81.68	0	0.00	359	86.66	1,001	85.73	741	93.60
Education										
High-school or less	975	37.39	1	0.34	163	38.12	333	28.18	479	59.71
Some college	584	22.40	72	36.47	100	23.36	247	20.90	165	20.62
Associates/technical degree	321	12.33	31	15.80	55	12.97	150	12.71	85	10.56
Bachelor's or advanced degree	727	27.89	94	47.39	109	25.55	451	38.21	73	9.11

Note. Participants were in senior year of high school in 1976 or 1977, and age 25/26 in 1983, 1984 or 1985. Due to negligible amounts of missing data, most indicator counts do not add up to the total count.

Table 2. Weighted frequencies of social roles in mid-twenties for 90s cohort: entire sample and four latent classes

	Entire Sample		Educated Students w/o Children] (9%)		Working Singles Living w/ Parents (18%)		Educated Workers w/o Children (46%)		Married Workers w/ Children (27%)	
	N	rel %	N	rel %	N	rel %	N	rel %	N	rel %
Number of cases	2,434	100	229	100	433	100	1,124	100	648	100
Living arrangements										
Lives with parents	495	20.76	30	13.30	425	100.0	3	0.30	37	6.02
Lives away from home	1,891	79.24	198	86.70	0	0.00	1,116	99.70	577	93.98
Relationship status										
Married	970	39.99	42	18.27	23	5.32	398	35.54	508	78.55
Cohabiting	299	12.32	31	13.45	3	.62	195	17.38	71	10.99
Single	1,157	47.69	156	68.27	406	94.06	527	47.08	68	10.47
Parental status										
No children	1,733	71.34	225	98.25	381	87.99	1,118	99.82	9	1.39
1 child	393	16.17	2	0.87	41	9.55	2	0.18	347	53.68
2 or more children	303	12.49	2	0.87	11	2.46	0	0.00	291	44.93
Employment status										
Other (laid off or unemployed)	222	10.54	103	83.92	33	8.94	29	2.69	57	10.50
Full-time home maker	91	4.31	0	0.00	2	0.54	0	0.00	89	16.24
Works part-time	47	2.22	20	16.08	12	3.16	13	1.25	2	0.37
Works full-time	1,743	82.92	0	0.00	322	87.35	1,023	96.06	398	72.89
Current college attendance										
Full-time attendance	331	13.72	223	98.98	26	6.07	44	3.98	34	5.28
Part-time attendance	265	11.00	2	1.02	72	16.87	155	13.88	36	5.59
Not attending college	1,814	75.28	0	0.00	330	77.06	915	82.14	569	89.13
Education										
High-school or less	471	19.40	0	0.00	65	15.16	137	12.17	269	41.61
Some college	578	23.82	37	16.18	112	25.99	218	19.44	211	32.68
Associates/technical degree	284	11.70	25	10.88	65	15.16	120	10.65	74	11.51
Bachelor's or advanced degree	1,094	45.08	165	72.94	188	43.70	649	57.74	92	14.20

Note. Participants were in senior year of high school in 1988 or 1989, and age 25/26 in 1995, 1996 or 1997. Due to negligible amounts of missing data, most indicator counts do not add up to the total count.

Wellbeing at ages 25 to 26

To assess wellbeing and adjustment in the mid-20s, we focused on perceived global life satisfaction, economic independence, and lifestyle indicators of legal and illegal substance use.

Life satisfaction was based on the question, "How satisfied are you with life as a whole?" Responses ranged from 1=completely dissatisfied to 7=completely satisfied.

Economic independence. Participants were asked, "During all of last year (January 1 - December 31), how much of your financial support came from each of the following sources?" Responses were on a scale of 0=None (0%) to 6=All (100%) for a range of income sources (i.e. yourself, your spouse, your parents, unemployment compensation, welfare, and other). The proportion of income originating from the respondent and his or her spouse (if applicable) were summed to indicate economic independence, with responses ranging from 0% to 100%.

Cigarette use (12 month) was measured with the question, "Which best describes your cigarette smoking in the last 12 months?" Response options were 1=Have not smoked at all, 2=Smoked once or twice, 3=Smoked occasionally but not regularly, 4=Smoked regularly but stopped or cut back, and 5=Smoke regularly now.

Alcohol use (lifetime and 12 month). Participants were asked, "On how many occasions (if any) have you had any alcoholic beverage to drink–more than just a few sips…[in your lifetime/during the last 12 months]?" Response options for each timeframe were 1=0 occasions, 2=1-2 occasions, 3=3-5 occasions, 4=6-9 occasions, 5=10-19 occasions, 6=20-39 occasions, and 7=40 or more.

Heavy drinking (2 week) was reported by the question, "During the last two weeks, how many times (if any) have you had five or more drinks in a row?" Response options were 1=None, 2=Once, 3=Twice, 4=3 to 5 times, 5=6 to 9 times, and 6=10 or more times.

Marijuana use (lifetime and 12 month). Participants were asked, "On how many occasions (if any) have you used marijuana/hashish…[in your lifetime/during the last 12 months]?" Response options for each questions were 1=0 occasions, 2=1-2 occasions, 3=3-5 occasions, 4=6-9 occasions, 5=10-19 occasions, 6=20-39 occasions, and 7=40 or more.

Use of illegal drugs other than marijuana (lifetime and 12 month). Using similar questions for lifetime and past 12 month use of a series of other illegal drugs, participants were coded as 1=used an illicit drug other than marijuana, or 0=did not use an illicit drug other than marijuana. Note that this measure does not include marijuana use. Both those coded as "0" and "1" may or may not have used marijuana.

Plan of analysis

Latent class analyses are designed to empirically identify homogeneous subsets of a larger population (Muthén 2004). When solutions are clear, their utility is strongest if identified subgroups represent meaningful types or classes that have strong face validity, clear inter-group discrimination, and useful predictive validity (Nylund et al 2007; Muthén 2004). Here, confidence in generalizability beyond the specific sample is enhanced (over and above our use of national samples) by replication of the observed classes across varied samples, as well as the observation of similar antecedents and correlates. All analyses were conducted within Mplus, Version 5.2 (Muthén and Muthén 1998-2009), and used a maximum likelihood estimator that is robust to non-normality. All multigroup model comparisons involving non-categorical dependent variables were based on χ^2 difference tests (Kline 1998), and those involving categorical dependent variables were based on log likelihood ratio tests (Johnson and Wichern 2002).

Results

Latent class selection and description (Aim 1)

In latent class analyses of both the 80s and 90s cohorts, a four-class solution was selected as the best fitting model. The optimal number of latent classes was based upon three criteria as outlined by Muthén (2004), Muthén and Muthén (2000), and Nylund et al (2007): (1) the Bayesian information criterion (BIC) statistic (the lower the value the better the fit of the model); (2) the classification quality, which can be determined by examining both the posterior probabilities and entropy values (higher values indicate a greater distinctiveness among the latent classes as well as a superior model); and (3) solution interpretability (i.e. is the solution practical and understandable?). Because MTF oversamples drug

users for longitudinal follow-up, sampling weights were used in the latent class analyses to best approximate population estimates. Preliminary analyses indicated that the inclusion of sampling weights did not alter the latent class structure (i.e. number of classes extracted and the defining characteristics of each class were equivalent, whether or not sampling weights were applied).

Collectively, the different decision criteria clearly indicated that the optimal number of latent classes for both cohorts was four (see Table 3). For both cohorts, the BIC values decreased steadily through the 4-class solution, but then increased between the 4- and 5-class solutions. For the 90s cohort, entropy increased through the 4-class solution but then decreased between the 4- and 5-class solutions, and though the average posterior probability decreased across the 1- through 5-class solutions, it decreased most sharply between the 4-class and 5-class solutions. For the 80s cohort, entropy increased through the 4-class solution but then decreased between the 4- and 5-class solutions, and the average posterior probability decreased most sharply between the 4- and 5-class solutions. Finally, as we cover in more detail below, for both the 80s and 90s cohorts, the 4-class solution resulted in a set of social role configurations that were both interpretable and practical.

Table 3. Statistics for decision criteria to determine optimal number of latent classes

		number of classes extracted				
	Fit Index	1	2	3	4	5
90s cohort	BIC	27,539	26,208	25,861	**25,542**	25,557
	Entropy	NA	0.758	0.830	**0.866**	0.808
	Average posterior probability	NA	0.931	0.919	**0.917**	0.861
80s cohort	BIC	32,730	31,029	30,581	**30,268**	30,271
	Entropy	NA	0.671	0.823	**0.857**	0.767
	Average posterior probability	NA	0.893	0.931	**0.925**	0.860

Note: Optimal solutions are in bold.

Examination of the frequencies of the six indicators of adult social roles across the 4-class solutions revealed strong similarities in the patterns observed across the two cohorts. The order of presentation of the classes is based on two considerations: a rough conceptual ordering from fewer adult roles to more adult roles and the ordering that emerged in the latent class analyses.

As shown in Tables 1 and 2, the first two classes inhabited fewer adult role statuses, but differed in which adult roles they were engaged in. Members of the first class, *Educated Students without Children* (8% in 80s cohort/9% in 90s cohort), were typically full-time students, had little involvement in full-time employment, and did not have children. Over four-fifths lived independently from parents, and about two-thirds were single. The level of education they had already achieved was the highest of all the classes. All participants in both cohorts who were classified as *Working Singles Living with Parents* (16%/18%) reported living with their parents, almost all were single, and very few had children. Full-time employment was the norm, with small numbers in part-time education. Levels of education achieved were similar to sample levels in their respective cohorts.

The remaining two classes were engaged in more adult roles than the first two classes, but also differed from each other in important ways. Among both classes nearly all were living independently from parents and were not enrolled in education. In other respects, they evidenced different patterns. Those described as *Educated Workers without Children* (45%/46%) were working full-time, had no children, and had relatively high levels of achieved education. The proportions married, cohabiting, and single were similar to sample levels in both cohorts. In contrast the large majorities of those described as *Married Workers with Children* (31%/27%) were married or cohabiting and had at least one child. The majority

were working full-time, with an additional one-quarter/one-sixth being full-time homemakers. This group had the lowest levels of achieved education in both cohorts, with the modal response being a high school education.

Late adolescent predictors of early adult latent class membership (Aim 2)

The second objective was to examine age 18 demographic and educational predictors of class membership at age 25 to 26. To test for latent class differences in age 18 demographic and educational predictors, for each cohort the indicator of latent class membership was saved using the "Save data" command within Mplus, and used as a grouping variable in subsequent multigroup analyses. Results are shown in Tables 4 and 5. Odds (i.e. [(percent yes)/(percent no)]) are listed for all categorical age 18 demographic and educational predictors. In these and all subsequent tables, superscripted letters indicate rank order mean differences in each indicator across a cohort's four latent classes (i.e. "a" indicates that a latent class was highest overall on that indicator, "b" indicates a latent class was second highest overall on that indicator, and so forth; latent classes with equivalent scores on an indicator share the same superscripted letter). Also in these and all subsequent tables, each significant complex or pair-wise group difference among the latent classes and the model comparison carried out to test for that difference share the same superscripted number. For example, in Table 4 the first notable group comparison "4>1,2,3", which compares the odds of being female for Married Workers with Children to the odds of being female of the other three latent classes, has a superscripted "1". The model comparison at the bottom of the table that shares the superscripted "1" ($2\Delta LL(1) = 40.05$, $p < .01$) provides the results for this particular notable group comparison.

Table 4. Weighted latent class differences in adolescent predictors: 80s cohort

		Estimates by latent class				
	Entire sample	**(1) Educated Students w/o Children (8%)**	**(2) Working Singles Living w/ Parents (16%)**	**(3) Educated Workers w/o Children (45%)**	**(4) Married Workers w/ Children (31%)**	**Notable group comparisons**
Odds female	1.17 (1.08, 1.26)*	0.80 (0.61, 1.04)[b]	0.97 (0.81, 1.16)[b]	1.07 (0.96, 1.19)[b]	1.63 (1.43, 1.87)**[a]	4>1,2,3[1]; 1=2=3[2]
Odds black	0.11 (0.09, 0.12)**	0.08 (0.05, 0.13)**[c]	0.18(0.14, 0.23)**[a]	0.07 (0.05, 0.08)**[c]	0.14 (0.11, 0.17)**[a]	2,4>1,3[3]; 2=4[4]; 1=3[5];
Odds other race	0.06 (0.06, 0.08)**	0.09 (0.06, 0.15)**[a]	0.10 (0.74, 0.14)**[a]	0.05 (0.04, 0.06)**[c]	0.06 (0.05, 0.08)**[c]	1,2>3,4[6]; 1=2[7]; 3=4[8]
Odds intact family	4.97 (4.50, 5.48)**	5.33 (3.70, 7.67)**[a]	4.45(3.54, 5.60)**[c]	6.44 (5.50, 7.53)**[a]	3.75 (3.19, 4.41)**[c]	1,3>2,4[9]; 1=3[10]; 2=4[11]
Parents' average education	33.11 (11.65)	40.28 (13.13)[a]	31.51 (11.21)[c]	34.80 (11.30)[b]	29.50 (10.57)[d]	1>3[12]; 3>2[13]; 2>4[14]
High-school GPA	5.92 (1.87)	6.71 (1.74)[a]	5.53 (1.86)[c]	6.12 (1.80)[b]	5.65 (1.90)[c]	1>3[15]; 3>2,4[16]; 2=4[17]
Odds pursue college degree	0.39 (0.36, 0.43)**	1.13 (0.87, 1.47)[a]	0.37 (0.32, 0.42)**[c]	0.48 (0.43, 0.54)**[b]	0.20 (0.17, 0.24)**[d]	1>3[18]; 3>2[19]; 2>4[20]
Odds pursue trade school	0.18 (0.16, 0.20)**	0.10 (0.07, 0.16)**[d]	0.16 (0.12, 0.21)**[b]	0.17 (0.15, 0.20)**[b]	0.26 (0.22, 0.30)**[a]	4>2,3[21]; 2=3[22]; 2,3>1[23]

Note. For continuous outcomes, standard deviations in parentheses. Model comparison results (listed below) and notable group comparisons (listed in last column, above) are matched by superscripted number.
** p < .05;** p < .01. A significant odds estimate indicates an odds value that is different from 1.0 (i.e. a 50/50 odds).*

[1]ΔLL(1) = 40.05, p < .01 [5]2ΔLL(1) = 0.53, p = .47 [9]2ΔLL(1) = 23.99, p < .01 [13]Δχ2(1) = 24.63, p < .01 [17]Δχ2(1) = 1.34, p = .25 [21]ΔLL(1) = 8.49, p < .01
[2]2ΔLL(2) = 4.96, p = .08 [6]2ΔLL(1) = 13.16, p < .01 [10]2ΔLL(1) = 1.00, p = .32 [14]Δχ2(1) = 9.40, p < .01 [18]2ΔLL(1) = 39.35, p < .01 [22]2ΔLL(1) =0.17, p = .68
[3]2ΔLL(1) = 42.92, p < .01 [7]2ΔLL(1) = 0.22, p = .64 [11]2ΔLL(1) = 1.67, p = .20 [15]Δχ2(1) = 16.49, p < .01 [19]2ΔLL(1) = 6.30, p < .05 [23]2ΔLL(1) = 5.40, p < .05
[4]2ΔLL(1) = 2.63, p = .11 [8]2ΔLL(1) = 1.95, p = .16 [12]Δχ²(1) = 29.20, p < .01 [16]Δχ2(1) = 52.12, p < .01 [20]2ΔLL(1) = 23.39, p < .01

Table 5. Weighted latent class differences in adolescent predictors: 90s cohort

		Estimates by latent class				
	Entire sample	**(1) Educated Students w/o Children (9%)**	**(2) Working Singles Living w/ Parents (18%)**	**(3) Educated Workers w/o Children (46%)**	**(4) Married Workers w/ Children (27%)**	**Notable group comparisons**
Odds female	1.31 (1.21, 1.42)*	1.10 (0.86, 1.42)[b]	1.10 (0.92, 1.32)[b]	1.20 (1.07, 1.34)*[b]	1.87 (1.60, 2.19)**[a]	4>1,2,3[1]; 1=2=3[2]
Odds black	0.08 (0.07, 0.10)**	0.06 (0.03, 0.11)**[c]	0.12 (0.09, 0.16)**[a]	0.05 (0.04, 0.07)**[c]	0.11 (0.09, 0.14)**[a]	2,4>1,3[3]; 1=3[4]; 2=4[5]
Odds other race	0.12 (0.11, 0.14)**	0.12 (0.08, 0.18)**[b]	0.18 (0.14, 0.23)**[a]	0.09 (0.08, 0.12)**[b]	0.13 (0.10, 0.16)**[b]	2>1,3,4[6]; 1=3=4[7]
Odds intact family	3.64 (3.31, 4.00)**	3.44 (2.55, 4.65)**[a]	4.90 (3.85, 6.25)**[a]	4.14 (3.59, 4.78)**[a]	2.57 (2.17, 3.03)**[d]	1=2=3[8]; 1,2,3>4[9]
Parents' average education	38.39 (11.81)	45.24 (11.71)[a]	36.70 (12.02)[c]	40.25 (11.38)[b]	33.78 (10.37)[d]	1>3[10]; 3>2[11]; 2>4[12]
High-school GPA	6.17 (1.90)	7.08 (1.77)[a]	5.83 (1.89)[c]	6.46 (1.79)[b]	5.57 (1.91)[d]	1>3[13]; 3>2[14]; 2>4[15]
Odds pursue college degree	1.06 (0.98, 1.15)	3.35 (2.49, 4.50)**[a]	0.89 (0.74, 1.07)[c]	1.55 (1.38, 1.73)*[b]	0.42 (0.35, 0.49)**[d]	1>3[16]; 3>2[17]; 2>4[18]
Odds pursue trade school	0.19 (0.17, 0.21)**	0.08 (0.05, 0.12)**[d]	0.19 (0.15, 0.25)**[c]	0.15 (0.13, 0.18)**[c]	0.32 (0.27, 0.38)**[a]	4>2,3[19]; 2=3[20]; 2,3>1[21]

Note: For continuous outcomes, standard deviations in parentheses. Model comparison results (listed below) and notable group comparisons (listed in last column, above) are matched by superscripted number.
** p < .05;** p < .01. A significant odds estimate indicates an odds value that is different from 1.0 (i.e. a 50/50 odds).*

[1] $2\Delta LL(1) = 30.49$, $p < .01$
[2] $2\Delta LL(2) = 0.86$, $p = .65$
[3] $2\Delta LL(1) = 23.99$, $p < .01$
[4] $2\Delta LL(1) = 1.32$, $p = .25$
[5] $2\Delta LL(1) = 0.08$, $p = .77$
[6] $2\Delta LL(1) = 12.64$, $p < .01$
[7] $2\Delta LL(2) = 3.82$, $p = .15$
[8] $2\Delta LL(2) = 3.57$, $p = .17$
[9] $2\Delta LL(1) = 24.25$, $p < .01$
[10] $\Delta\chi^2(1) = 29.39$, $p < .01$
[11] $\Delta\chi^2(1) = 29.74$, $p < .01$
[12] $\Delta\chi^2(1) = 17.10$, $p < .01$
[13] $\Delta\chi^2(1) = 19.92$, $p < .01$
[14] $\Delta\chi^2(1) = 40.04$, $p < .01$
[15] $\Delta\chi^2(1) = 4.99$, $p < .05$
[16] $2\Delta LL(1) = 26.97$, $p < .01$
[17] $2\Delta LL(1) = 27.73$, $p < .01$
[18] $2\Delta LL(1) = 67.16$, $p < .01$
[19] $2\Delta LL(1) = 40.28$, $p < .01$
[20] $2\Delta LL(1) = 3.14$, $p = .08$
[21] $2\Delta LL(1) = 11.13$, $p < .01$

Observed results were similar across the two cohorts with some notable differences. In terms of age 18 demographics, females in both cohorts were more likely than males to be classified as being Married Workers with Children. In the 80s cohort, participants who were not from two-parent families were more likely to be classified as Married Workers with Children or Working Singles Living with Parents than classified as Educated Students without Children or Educated Workers without Children, and in the 90s cohort, they were more likely to be classified as Married Workers with Children than any other group. Turning to the educational background predictors, in both cohorts, the four latent classes were ordered similarly on their levels of parent education, student high school GPA, and aspirations to pursue a college degree. In their late adolescence, those classified as Educated Students without Children in early adulthood had the highest levels of these three predictors, followed by Educated Workers without Children, Working Singles Living with Parents, and then Married Workers with Children, in that order. Plans to pursue trade school were ordered differently, that is, Married Workers with Children had the highest odds of having said they aimed to pursue trade school, compared to the other three groups. These age 18 rankings for education were similar to the age 25/26 levels of education attained by the four classes, that is, individuals with higher parental education, high school GPA, and college aspirations at age 18 tended to be members of classes who achieved more education by ages 25/26. This pattern was observed in both cohorts, except that the differences between adjacently ranked groups were more distinct in the 90s cohort. That is, more pairwise comparisons were significant than in the 80s cohort.

Latent class differences in young adult correlates (Aim 3)

To test for latent class differences in young adult correlates, for each cohort we used the saved indicator of latent class membership as a grouping variable and conducted multiple-group analyses. Results are shown in Tables 6 and 7, which list odds (i.e. [(percent yes)/(percent no)]) for all categorical young adult correlates. In both cohorts, the two classes who were engaged in more adult social roles evidenced the highest economic independence as well as high life satisfaction. These groups reported annual cigarette use rates that were similar to the sample averages. In contrast, these two classes were the most dissimilar in terms of alcohol, marijuana, and other drug use. Specifically, the Educated Workers without Children class reported relatively high levels of use of these substances, and the Married Workers with Children class reported the lowest rates.

Table 6. Weighted latent class differences in mid-twenties well-being correlates: 80s cohort

		Estimates by latent class				
	Entire sample	**(1) Educated Students w/o Children (8%)**	**(2) Working Singles Living w/ Parents (16%)**	**(3) Educated Workers w/o Children (45%)**	**(4) Married Workers w/ Children (31%)**	**Notable group comparisons**
12-month cigarette use	2.26 (1.67)	2.00 (1.58)[d]	2.43 (1.72)[a]	2.22 (1.63)[b]	2.30 (1.70)[b]	2>3,4[1]; 3=4[2]; 3,4>1[3]
12-month alcohol use	4.93 (2.08)	5.26 (2.00)[a]	4.93 (2.07)[c]	5.38 (1.91)[a]	4.16 (2.13)[d]	3=1[4]; 3,1>2[5]; 2>4[6]
Lifetime alcohol use	6.28 (1.58)	6.35 (1.57)[b]	6.16 (1.68)[b]	6.50 (1.36)[a]	5.99 (1.75)[d]	3>1,2[7]; 1=2[8]; 1,2>4[9]
Heavy drinking	1.70 (1.17)	1.66 (1.07)[c]	1.83 (1.27)[a]	1.80 (1.23)[a]	1.47 (.99)[d]	2=3[10]; 2,3>1[11];1>4[12]
12-month marijuana use	2.43 (2.20)	2.54 (2.230)[a]	2.42 (2.17)[a]	2.64 (2.30)[a]	2.09 (2.02)[d]	1=2=3[13]; 1,2,3>4[14]
Lifetime marijuana use	4.13 (2.53)	4.11 (2.55)[b]	4.00 (2.51)[b]	4.38 (2.51)[a]	3.84 (2.54)[b]	3>1,2,4[15]; 1=2=4[16]
12-month OTM (odds)	0.43 (0.40, 0.46)**	0.43 (0.32, 0.58)**[b]	0.42 (0.35, 0.51)**[b]	0.55 (0.50, 0.62)**[a]	0.28 (0.24, 0.32)**[d]	3>1,2[17]; 1=2[18]; 1,2>4[19]
Lifetime OTM (odds)	1.09 (1.01, 1.17)*	1.14 (1.03, 1.32)*[a]	0.94 (0.79, 1.13)[c]	1.27 (1.13, 1.42)**[a]	0.92 (0.81, 1.05)[c]	1=3[20]; 2=4[21]; 1,3>2,4[22]
Economic independence	5.41 (1.27)	4.15 (2.01)[a]	4.99 (1.56)[d]	5.60 (0.97)[a]	5.66 (1.00)[a]	3=4[23]; 3,4>2[24]; 2>1[25]
Life satisfaction	4.89 (1.50)	5.01 (1.46)[a]	4.47 (1.52)[d]	4.98 (1.46)[a]	4.97 (1.52)[a]	1=3=4[26]; 1,3,4>2[27]

Note: For continuous outcomes, standard deviations in parentheses. Model comparison results (listed below) and notable group comparisons (listed in last column, above) are matched by superscripted number. OTM-Drugs Other than Marijuana.
** p < .05;** p < .01. A significant odds estimate indicates an odds value that is different from 1.0 (i.e. a 50/50 odds).*

[1] $\Delta\chi^2(1) = 4.87$, $p < .05$
[2] $\Delta\chi^2(1) = 1.52$, $p = .22$
[3] $\Delta\chi^2(1) = 3.89$, $p < .05$
[4] $\Delta\chi^2(1) = 0.74$, $p = .39$
[5] $\Delta\chi^2(1) = 16.99$, $p < .001$
[6] $\Delta\chi^2(1) = 35.88$, $p < .001$
[7] $\Delta\chi^2(1) = 90.41$, $p < .001$
[8] $\Delta\chi^2(1) = 1.54$, $p = .21$
[9] $\Delta\chi^2(1) = 4.39$, $p < .05$
[10] $\Delta\chi^2(1) = 0.16$, $p = .69$
[11] $\Delta\chi^2(1) = 4.06$, $p < .05$
[12] $\Delta\chi^2(1) = 7.70$, $p < .01$
[13] $\Delta\chi^2(2) = 3.64$, $p = .16$
[14] $\Delta\chi^2(1) = 41.77$, $p < .001$
[15] $\Delta\chi^2(1) = 23.39$, $p < .001$
[16] $\Delta\chi^2(2) = 2.68$, $p = .26$
[17] $2\Delta LL(1) = 7.84$, $p < .01$
[18] $2\Delta LL(1) = 0.01$, $p = .91$
[19] $2\Delta LL(1) = 15.70$, $p < .001$
[20] $2\Delta LL(1) = 0 .60$, $p = .44$
[21] $2\Delta LL(1) = 0 .04$, $p = .85$
[22] $2\Delta LL(1) = 17.74$, $p < .001$
[23] $\Delta\chi^2 (1) = 1.52$, $p = .22$
[24] $\Delta\chi^2(1) = 92.59$, $p < .001$
[25] $\Delta\chi^2(1) = 42.12$, $p < .001$
[26] $\Delta\chi^2(2) = 0.17$, $p = .92$
[27] $\Delta\chi^2(1) = 44.64$, $p < .001$

Table 7. Weighted latent class differences in mid-twenties well-being correlates: 90s cohort

		Estimates by latent class				
	Entire sample	**(1) Educated Students w/o Children (9%)**	**(2) Working Singles Living w/ Parents (18%)**	**(3) Educated Workers w/o Children (46%)**	**(4) Married Workers w/ Children (27%)**	**Notable group comparisons**
12-month cigarette use	1.92 (1.43)	1.69 (1.23)[d]	1.88 (1.43)[a]	1.93 (1.42)[a]	2.01 (1.52)[a]	2=3=4[1]; 2,3,4>1[2]
12-month alcohol use	4.42 (2.08)	4.70 (1.99)[b]	4.23 (2.08)[c]	5.04 (1.89)[a]	3.37 (1.99)[d]	3>1[3]; 1>2[4]; 2>4[5]
Lifetime alcohol use	6.07 (1.70)	6.19 (1.68)[b]	5.83 (1.84)[c]	6.43 (1.33)[a]	5.56 (1.99)[d]	3>1[6]; 1>2[7]; 2>4[8]
Heavy drinking	1.60 (1.09)	1.54 (0.97)[c]	1.66 (1.20)[a]	1.73 (1.17)[a]	1.34 (0.82)[d]	2=3[9]; 2,3>1[10]; 1>4[11]
12-month marijuana use	1.64 (1.55)	1.69 (1.58)[a]	1.53 (1.42)[c]	1.78 (1.68)[a]	1.46 (1.33)[c]	1=3[12]; 2=4[13]; 1,3>2,4[14]
Lifetime marijuana use	2.94 (2.29)	3.00 (2.33)[a|b]	2.49 (2.14)[d]	3.20 (2.35)[a]	2.79 (2.20)[b]	3>4[15]; 4>2[16]; 1>2[17]; 1=3[18]; 1=4[19]
12-month OTM (odds)	0.10 (0.92, 0.12)**	0.11 (0.08, 0.17)**[a]	0.09 (0.06, 0.12)**[a]	0.12 (0.10, 0.14)**[a]	0.10 (0.07, 0.12)**[a]	1=2=3=4[20]
Lifetime OTM (odds)	0.44 (0.41, 0.48)**	0.43 (0.33, 0.56)**[a]	0.31 (0.25, 0.38)**[d]	0.51 (0.45, 0.57)**[a]	0.45 (0.38, 0.52)**[a]	1=3=4[21]; 1,3,4 > 2[22]
Economic independence	5.33 (1.32)	3.74 (2.01)[d]	5.05 (1.44)[c]	5.55 (0.98)[b]	5.67 (0.95)[a]	4>3[23]; 3>2[24];2>1[25]
Life satisfaction	5.09 (1.40)	5.08 (1.42)[a]	4.87 (1.44)[d]	5.15 (1.35)[a]	5.13 (1.45)[a]	1=3=4[26]; 1,3,4>2[27]

Note: OTM- Drugs Other than Marijuana. For continuous outcomes, standard deviations in parentheses. Model comparison results (listed below) and notable group comparisons (listed in last column, above) are matched by superscripted number.
** p < .05;** p < .01. A significant odds estimate indicates an odds value that is different from 1.0 (i.e. a 50/50 odds).*

[1] $\Delta\chi^2(1) = 2.22$, $p = .33$
[2] $\Delta\chi^2(1) = 6.55$, $p < .05$
[3] $\Delta\chi?^2(1) = 6.78$, $p < .01$
[4] $\Delta\chi^2(1) = 7.93$, $p < .01$
[5] $\Delta\chi^2(1) = 45.81$, $p < .001$
[6] $\Delta\chi2(1) = 7.29$, $p < .01$
[7] $\Delta\chi^2(1) = 4.97$, $p < .05$
[8] $\Delta\chi^2(1) = 4.89$, $p < .05$
[9] $\Delta\chi^2(1) = 1.24$, $p = .27$
[10] $\Delta\chi^2(1) = 4.88$, $p < .05$
[11] $\Delta\chi^2(1) = 12.95$, $p < .001$
[12] $\Delta\chi^2(1) = 0.58$, $p = .45$
[13] $\Delta\chi^2(1) = 0.88$, $p = .35$
[14] $\Delta\chi^2(1) = 23.84$, $p < .001$
[15] $\Delta\chi^2(1) = 13.60$, $p < .001$
[16] $\Delta\chi^2(2) = 5.61$, $p < .05$
[17] $\Delta\chi^2(1) = 9.57$, $p < .01$
[18] $\Delta\chi^2(1) = 1.40$, $p = .24$
[19] $\Delta\chi^2(1) = 1.58$, $p = .21$
[20] $2\Delta LL(1) = 3.37$, $p = .34$
[21] $2\Delta LL(2) = 2.41$, $p = .30$
[22] $2\Delta LL(1) = 15.31$, $p < .001$
[23] $\Delta\chi^2(1) = 5.22$, $p < .05$
[24] $\Delta\chi^2(1) = 103.62$, $p < .001$
[25] $\Delta\chi^2(1) = 121.93$, $p < .001$
[26] $\Delta\chi^2(2) = 0.64$, $p = .73$
[27] $\Delta\chi^2(1) = 14.38$, $p < .001$

The Educated Students without Children and Working Singles Living with Parents classes also evidenced similar patterns across cohorts in terms of their economic independence and life satisfaction. Educated Students without Children in both cohorts had the lowest levels of economic independence, yet their life satisfaction was as high as both faster track groups. Working Singles Living with Parents had medium economic independence but the lowest life satisfaction in both cohorts. Patterns of substance use were less consistent across cohorts for Educated Students without Children and Working Singles Living with Parents, except that the Working Singles had higher annual smoking prevalence and Educated Students had the lowest. Levels of alcohol, marijuana, and other drug use for these two classes tended to fall in between the relatively high drug use of the Educated Workers without Children class and the relatively low drug use of the Married Workers with Children.

Discussion

The transition to adulthood in recent decades has lengthened and diversified (Arnett 2000; Bynner 2005; Settersten 2007), not least in the United States which has great wealth but also high social inequality in income, health, and education coupled with relatively limited social safety nets in comparison with Europe (United Nations 2010; World Factbook 2011). For example, in the US in 1984, the median age of first marriage was 25.4 for men and 23.0 for women and the mean age of mother at the birth of her first child was 23.5. In 1996 by contrast, the median age of first marriage was 27.1 for men and 24.8 for women and the mean age of mother at the birth of her first child was 24.6 (Mathews and Hamilton 2002; US Census Bureau 2006). Across many nations, the passage to adulthood has become also become marked by more heterogeneity in the timing and content of social role changes. However, despite these changes and challenges, we identified four clear cross-sectional configurations of social roles that were remarkably similar in two cohorts separated by 12 years, as well as similar to those observed in two cohorts roughly matched in historical time in Britain (Schoon et al 2012) and Finland (Räikkönen et al 2012; Salmela-Aro et al 2012). The patterns are also relatively consistent with prior studies using latent class analyses (e.g. Osgood et al 2005; Sandefur et al 2005).

Why would social roles tend to cluster together in cohesive patterns? First, at a particular point in time, the successful pursuit of specific combinations of social roles may be mutually facilitative or inhibitive. For example, the income earned through longer-term full-time employment makes residential independence more possible. The support of a stable romantic partnership may promote a desire or practical support to become a parent. Conversely, the demands of parenthood or full-time education may make employment more challenging, though a source of income would facilitate the pursuit of both these roles. Second, over time, as Bynner et al (2005) argued, prior achievements and already-adopted roles may impose constraints or at least mount challenges to the unbridled pursuit of new role adoptions and achievements. For example, in the mid-20s, it may be practically easier for a person with a college degree to return to full-time education than a person with a high school diploma, due to financial, academic, and other resources. In this way, between-person (or between-class) heterogeneity may increase over time.

Educated Workers without Children and Married Workers with Children can both be characterized as having taken faster tracks to adult roles, in that they were not involved in education, they lived independently from parents, and they evidenced high levels of full-time employment or homemaker status. At the same time, the Educated Workers without Children class came from more advantaged family backgrounds (e.g. higher parental education) and had achieved more higher education. Those in the Married Workers with Children class, as implied by their class label, were almost all married and had children by their mid-20s, whereas there was great diversity in the partnership status of the Educated Workers without Children group, almost none of whom were parents. Alcohol and marijuana use in the two groups were very different, as previously shown in research examining links between marriage and parenthood and reduced substance use during the 20s through midlife (e.g. Bachman et al 1997; Staff et al 2012). Yet despite the many differences in the daily realities of their lives, the groups reported similar levels of life satisfaction and economic independence.

As Settersten (2007) noted, "Young adulthood is a time when people begin to sort out commitments to persons, jobs, values, and ideologies. The realization that these commitments not only matter, but that they can actually be associated with happiness and life satisfaction even when they limit autonomy, is a symbol of maturity" (p. 257). It would appear that these young adults may have found some fulfillment in these adult roles.

The Educated Students without Children and the Working Singles Living with Parents could be seen as having taken slower tracks to adulthood. Again similarities and differences can be noted. Both groups tended to be single and few had children. However, Educated Students were typically in full-time education and tended to be more highly educated (even while still studying), while Working Singles were very seldom enrolled in any schooling and had more average levels of achieved education. Educated Students were likely to live away from parents while Working Singles lived in the parental home. Educated Students had the lowest levels of economic independence while Working Singles had medium economic independence. Life satisfaction of Educated Students was as high as both faster track groups, whereas Working Singles had the lowest levels of life satisfaction. Turning to substance use, Working Singles had higher annual smoking prevalence and Educated Students had the lowest; levels of other substance use for these two groups tended to fall in between the relatively high alcohol, marijuana, and other drug use of the Educated Workers without Children class and the relatively low use of these substances of the Married Workers with Children class. Overall, those classified as Educated Students were the most economically dependent, but it did not appear to negatively impact their life satisfaction, perhaps because their economic dependence is understood to be temporary and/or due to their own volition (i.e. continuing in higher education was likely their choice and viewed as in pursuit of a valued goal). Working Singles, who were the most likely to still live with their parents and who reported the lowest levels of life satisfaction, may have had the sense that they were stuck somewhere between adolescence and adulthood.

Finally, we also compare the Educated Students without Children with the Educated Workers without Children classes. These groups came from more advantaged backgrounds, achieved higher levels of education, were very unlikely to be parents by their mid-20s, and had similar (though not identical) partnering profiles. Given the consistent documentation of higher rates of substance use among college students in the 18-22 year old age range (e.g. O'Malley and Johnston 2002), it may appear surprising that those who were working had higher rates of some substance use than the Student group. We suggest two possible explanations. First, we speculate a selection effect that draws attention to the age (mid-20s) and relatively high achieved education level of the Students. Given the relatively small size of the Student group (less than 10 percent in both cohorts), we speculate that many of these may be more academically-inclined and currently means-limited graduate students, whereas those childless, single/cohabiting workers within the Educated Workers without Children group likely have greater time and resources to continue their youthful social life beyond their college years (see also Amato and Kane 2011). Second, some prior comparisons of the substance use of students and non-students have not distinguished among the other social roles of the non-students, as we do here.

What configuration of social roles could best be described as thriving? There is no immediately apparent answer to this question. On the basis of our subjective and most general indicator, self-reported life satisfaction, in both cohorts three groups report similarly high life satisfaction, distinguished only from the Working Singles Living with Parents who were least satisfied with their lives. These three more satisfied groups were very different in their combinations of social roles, suggesting that there is clearly more than one pattern of role configuration that may support satisfaction. These three groups were all actively engaged in some meaningful social roles or goal pursuits, with Educated Students pursuing higher education and the Educated Workers and Married Workers groups engaged in employment and/or parenting. Consistent with age norms for the mid-20s (Settersten 1998), these three more satisfied groups had higher rates of independent living, unlike the working singles who all lived with their parents. It is tempting to attribute the lower life satisfaction of this latter group to their lack of residential

independence, but the specific mechanisms underlying such an association require further elaboration. It is unknown whether it is the circumstances that led to not leaving or to returning to the parental home that are challenging (e.g. under-employment, divorce, parental illness) or the realities of sharing the home (e.g. inter-generational conflict, lack of privacy) (Valentine 2003).

Limitations and strengths

Of course, our study does have some limitations. First, because the sample included only those who completed high school, generalizability to those who dropped out of high school is limited. High school dropout rates among 16-24 year olds in 1976-1977 and 1988-1989 ranged from 12.6% to 14.1% nationally, and differed by race/ethnicity ranging from roughly one-tenth among Whites, one-sixth to one-fifth among Blacks, and one-third among Hispanics (note, however, that the high school completion rate has been improving in recent years; US Department of Commerce 2010). Individuals who leave school prior to high school graduation may combine roles in different ways and experience additional challenges. Second, role configurations at only one point in time were examined. Future research may fruitfully explore patterns of change in role configurations across the transition to adulthood. Third, role configurations may also differ in complex ways by gender and by additional demographic variables such as family social class background or race/ethnicity. For example some recent work has shown that gender differences in the timing of marriage and residential parenthood may underlie differences in the likelihood of inhabiting specific configurations (e.g. Oesterle et al 2010; Sandefur et al 2005).

An important strength of this study is the use of panel data collected from two nationally representative cohorts of US 12th grade high school students followed for an eight year period into the mid-20s, allowing us more confidence about the generalizability of the findings, as well as the sufficient coverage of time during which high school plans about the future unfold. The inclusion of two different senior year cohorts, both with the exact same sets of procedures and measures, allows us greater confidence about the replicability over history. Results were very similar for those who passed through their 20s 12 years apart, in the 1980s and the 1990s. For example, although there were historical differences in the timing of marriage between the cohorts, the combination of marriage with other social role changes was similar. As noted at the outset of this paper, scholars agree that the transition to adulthood has lengthened and diversified since the 1950s. In our comparison of these two cohorts who came of age in the 1980s and 1990s, however, we see clear similarities in the patterns and prevalence of how young people in their mid-20s combine social roles.

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Endnote

[i] More detailed information about the MTF design and methods is available in Johnston et al (2011a) and at www.monitoringthefuture.org

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Patterns of adult roles, their antecedents and psychosocial wellbeing correlates among Finns born in 1959

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Abstract

The study aimed to identify patterns of adult role combinations across the transitional domains of housing, educational attainment, work, partnership, and parenthood at age 27, and to investigate their antecedents and concurrent psychosocial wellbeing correlates. Data were derived for 354 Finns (born in 1959) from the Jyväskylä Longitudinal Study of Personality and Social Development. Three latent classes were identified: Work-orientation with delayed parenthood (WO; 46%; completed adult transitions of independent living, education, work, and partnership), Traditional work and family (35%; completed all five adult transitions), and Academic-orientation with no children (AO; 19%; completed independent living, education, work, and partnership transitions). Individuals in the Traditional pattern were more likely to be women, whereas individuals in the AO and WO patterns were more likely to be men. The socio-economic status (SES) and structure of the family of origin did not differentiate the patterns, but individuals in the AO pattern had had higher school success and educational aspirations in adolescence than those in the other patterns. Early adult life satisfaction and career stability were higher, and depressive symptoms and binge drinking lower in the Traditional pattern than in WO. Life satisfaction was also higher in AO than in WO.

Keywords: adult roles, childhood, early adulthood, psychosocial wellbeing

Introduction

The life course of an individual has been conceptualized as "a sequence of socially defined, age-graded events and roles that the individual enacts over time" (Elder 1998, 941), suggesting that transitions between roles in different life domains are interdependent, and that understanding the structuring of the life course requires simultaneous consideration of these various dimensions (Macmillan and Copher 2005). In the global transition to adulthood, the key adult role transitions (adult transitions hereafter) include moving from parental home into independent living, completing full-time education, starting a full-time job, establishment of an intimate relationship, and becoming a parent (e.g. Arnett 2000; Furstenberg, Rumbaut and Settersten 2005; Shanahan 2000). However, few studies have operationalized the complex developmental nature of the transition to adulthood according to the aforementioned conceptualization of the life course. Instead, most of the studies conducted about transitions to adult roles have investigated them singly, more or less independent of one another (Furstenberg, Rumbaut and Settersten 2005) with some exceptions (Osgood et al 2005; Ross et al 2009; Räikkönen, Kokko and Rantanen, 2011; Sandefur et al 2005; Schulenberg et al 2005). Also the predictors

and correlates of the transition patterns are unexplored. The aim of our study was to assess, within a representative sample of Finns born in 1959, patterns of role assumption in early adulthood, and the childhood antecedents and concurrent psychosocial wellbeing correlates of these patterns.

The timing and patterning of life transitions can be understood as a person's means to match decisions, commitments and career transitions with other life transitions, such as becoming a parent, as well as with contextual opportunities and constraints, as defined by Reitzle and Vondracek (2000). According to this definition, the individual is perceived as an active *agent* making decisions regarding his/her own life (Elder 1998; Elder, Kirkpatrick Johnson and Crosnoe 2003). These decisions, in turn, may affect subsequent transitions by opening or closing off opportunities, suggesting that transitions in different domains of life are interdependent.

In our study, we focused on variations in the combinations of adult roles across the domains of housing, education, work, partnership, and parenthood. Studies which have used person-centered typological approaches (e.g. latent class analysis) to investigate how different roles across these five domains weave together, suggest that the length and the level of post-comprehensive education and timing of family formation are crucial in determining transition patterns and role combinations at a particular age. The first typical pattern consists of individuals either lacking, or with short and low levels of post-comprehensive education, together with full-time work, marriage or cohabitation, and parenthood (Osgood et al 2005; Ross et al 2009; Sandefur, Eggerling-Boeck and Park 2005; Amato et al 2008; Oesterle et al 2010). The second typical pattern includes individuals who have obtained some post-comprehensive education, are working full-time, and have no family (Osgood et al 2005; Ross et al 2009; Sandefur, Eggerling-Boeck and Park 2005; Amato et al 2008). The third typical pattern consists of individuals who have a family but are disadvantaged with respect to career (Osgood et al 2005; Ross et al 2009; Amato et al 2008). The fourth pattern consists of those individuals who have obtained a higher level of education and who have postponed family formation (Osgood et al 2005; Ross et al 2009; Sandefur, Eggerling-Boeck and Park 2005; Amato et al 2008; Oesterle et al 2010). The fifth pattern is based on some empirical evidence regarding a group of individuals named as "slow starters" (Amato et al 2008) or "inactive" (Osgood et al 2005); that is, individuals who have assumed few or none of the adult roles.

The decisions regarding if, when, and in which order to undergo transitions, are always made in circumstances that are constrained by different background factors, such as gender, family of origin, and prevailing socio-historical and cultural context (Elder 1998; Shanahan 2000; Elder, Kirkpatrick Johnson and Crosnoe 2003; Schoon and Silbereisen 2009) as well as individuals' decisions made before the transitions. This interplay between the individual and the context has been described using the term *bounded agency* (Shanahan 2000). Our study focused upon the influences on the individual (i.e. gender, school success, and educational aspirations), the family, and the wider socio-historical and cultural context of the country in question (Finland). In the following paragraphs, we elaborate each of these influences and previous research on them.

The Finnish context

The present study was based on data collected from a representative sample of individuals born in 1959 in Finland (Pulkkinen 2006). In Finland, it has been typical for most youngsters to move out of the parental home at a fairly young age; women at 20 years and men at 21 years (Nikander 1998). The ages are similar for more recent age-cohorts. One reason for these early transitions to independent living is that the Finnish social welfare system provides a housing allowance for students who live in a rented apartment, to offset residential costs (Raivola, Zechner and Vehviläinen 2000). For those who are not students but otherwise have low incomes, Finnish society also provides a housing allowance (Saarikallio and Ylöstalo 2007).

The basic structure of the Finnish educational system has remained similar since the 1970s (Sahlberg 2011). Comprehensive school lasts for 9 years (from age 7 to 16). After that, youngsters enter either general upper secondary school (3 years) for post-comprehensive education, vocational upper secondary school (2-3 years depending on the study

program), or the labor market (Sahlberg 2011; Statistics Finland 2003). Selection to general and vocational upper secondary schools is based on the interests and grades of students. Vocational school qualifies young people only for vocational college (nowadays polytechnics) whereas upper secondary school qualifies them for tertiary education (i.e. either vocational college or university) (Sahlberg 2011).

The cohort born in 1959 was completing comprehensive school at a time when (1975) it was relatively easy to transfer directly from school to full-time work; the unemployment rate then was 2.6% (Statistics Finland 2003). The unemployment rate stayed at a relatively low level until the early 1990s recession, but in 1992, the unemployment rate was already 11.7%. However, most young people throughout this period decided to continue in full-time education; almost 3 in 4 Finnish adults aged 25–64 have qualified from upper secondary or tertiary education. An important reason for this high percentage continuing their studies is that all post-comprehensive education is and was free up to the university level (Kokko et al 2008). It is typical of Finland that students are on average around 25 to 29 years old when they graduate from university. There are several reasons for this, such as a competitive university entrance system, which delays the start of studies, and the fact that students usually take a Master's degree, which is a common requirement in the labor market. Moreover, men are obliged to participate in either military or civil service (optional also for women) before their 29th birthday.

A further distinctive feature of Finnish society is an equal engagement in full-time employment among women and men (Lehto and Sutela 2008). Part-time work with reduced working hours for mothers has been common in other Nordic countries. However in Finland, it is relatively rare, even among mothers with young children: in 1984, only 7% of Finns worked part-time.

Regarding family-related transitions, the mean age for getting married for the first time was 25.9 years in women and 28.1 years in men in 1986–1990, and the mean age of first childbirth was 26.5 years (Statistics Finland 2003). Finnish men are about two years older than women when they become a parent for the first time (Statistics Finland 1994). Highly educated women become parents later than other groups; they are about two years older at first childbirth than women who have not obtained a Master's degree. In Finland, cohabitation before marriage or as an alternative to marriage has been popular for many years. Among women born in 1938-42, 13% had lived in cohabitation, but among women born in 1958-62, 51% had lived in cohabitation before marriage and 33% as an alternative to marriage.

Socio-demographic and individual influences

Factors that differentiate transition behaviors include gender, the socio-economic status (SES) and structure of the family of origin, and personal choices. Although the educational and work pathways of women and men have become similar in the past few decades (Fussell and Furstenberg 2005), women and men still seem to differ in their pathways to adulthood: empirical studies based on older and more recent age-cohorts have demonstrated that women undergo adult transitions earlier than men, particularly in the family domain (Cohen et al 2003; Oesterle et al 2010; Kokko, Pulkkinen and Mesiäinen 2009). The timing of different transitions may also be more closely interlinked among women than among men (Kokko, Pulkkinen and Mesiäinen 2009). Factors related to an individual's family of origin may also influence transition behaviors: individuals from low SES families tend to undergo adult transitions earlier than those from higher socio-economic backgrounds, for whom the later timing of transitions is more typical (e.g. Osgood et al 2005; Sandefur, Eggerling-Boeck and Park 2005; Schoon, Martin and Ross 2007). This is most likely due to differences in the level of educational attainment: low family SES and earlier timing of transitions are associated with lower educational attainment (Kokko et al 2008). An impact of the structure of the family of origin on transitions was found in the study by Ross and his colleagues (2009), which showed that individuals who grew up in divorced families were less likely to pursue their educational career in post-secondary education, and more likely to establish their own families at an earlier age. Individuals' own educational aspirations,

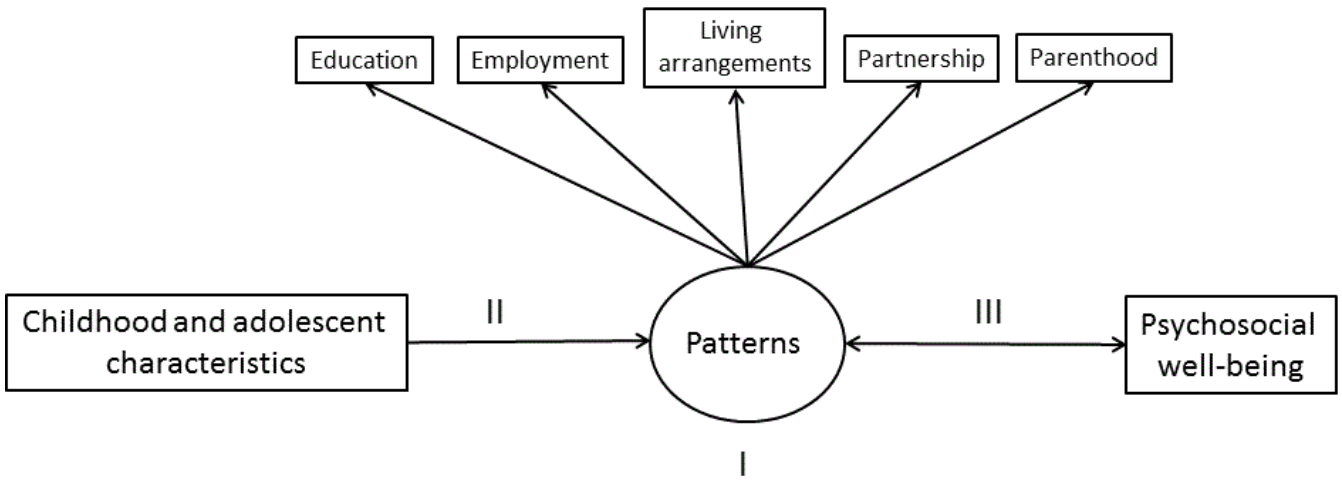
expectations, and performance in school may also differentiate transition behaviors (Osgood et al 2005; Ross et al 2009; Schoon, Martin and Ross 2007).

The transition to adulthood provides new roles and social contexts, and the successes and difficulties one experiences with the many challenges during this period may strengthen or alter the ongoing trajectories of substance use, health and wellbeing (Schulenberg et al 2005; Schulenberg, Bryant and O'Malley 2004). In general, the average levels of wellbeing and substance use have been found to increase from late adolescence to early adulthood (Schulenberg et al 2005). The average level of wellbeing tends to increase across adulthood (Räikkönen, Kokko and Rantanen 2011) whereas the average level of binge drinking has been shown to peak in early adulthood and then decrease (Schulenberg et al 2005). However, studies suggest that engagement in family roles, particularly marriage or cohabitation, reduces the use of substances (Schulenberg et al 2005; Staff et al 2010) and enhances one's wellbeing (Schulenberg et al 2005; Lee and Gramotnev 2007). By contrast, postponing transitions to stable adult roles beyond early adulthood has been linked to lower levels of wellbeing (Räikkönen, Kokko and Rantanen 2011; Schulenberg et al 2005) and higher levels of binge drinking (Schulenberg et al 2005) in early adulthood.

Aims and hypotheses

The *first* aim of the present study was to identify patterns of adult role combinations in early adulthood by investigating five transition domains (i.e. moving into independent living, completion of education, full-time employment, having an intimate relationship, and having a child) simultaneously (Figure 1). Taking into account the cultural features of Finland, as well as the Jyväskylä Longitudinal Study of Personality and Social Development (JYLS) data collection phases, we chose age 27 as the cut-off point. Completion of education means that a participant has obtained a degree from vocational school, vocational college, or university. We expected to find at least three latent classes: 1) a group of individuals who have undergone all adult transitions by age 27; 2) a group of individuals who have followed an academic path to adulthood, and because of their extended studies, their family formation is delayed; 3) a group of individuals who have undergone few of the five transitions (e.g. Ross et al 2009).

Figure 1. Conceptual model of the study. The Roman numerals I - III index the research questions of the study.



Our *second* aim was to investigate whether individual agency and contextual characteristics contribute to the identified latent classes (Figure 1). Context was operationalized by gender, family SES, and intact/non-intact family structure (Ross et al 2009), while individual agency was conceptualized in relation to school success and educational aspirations (Schoon, Martin and Ross 2007). Orientation to studies reflects individual agency concerning transitions in education. We expected that women would have experienced all five transitions more typically than men by age 27, because women are, on the average, two years younger than men at the time of marriage and the birth of the first child, and because women and men are equally educated and also employed in Finland, due to day care services for all children. Furthermore, we expected that individuals in the academic path would have experienced fewer transitions, because more-educated individuals tend to delay the birth of the first child (Statistics Finland 1994). Fewer completed transitions were expected to be found among individuals who have had difficulties in the completion of education and employment. In relation to background factors, we expected that high SES of the family of origin, good school success and high educational aspirations would be associated with the academic path, compared to the path including fewer completed transitions (Schoon, Martin and Ross 2007). The stability of the family of origin was expected to be associated with the pattern of all five transitions by age 27 (Ross et al 2009).

Our *third* aim was to examine whether the identified latent classes would differ in psychosocial wellbeing measured at age 27 (Figure 1). We defined psychosocial wellbeing in terms of life satisfaction, depressive symptoms, stability of career line, and binge drinking. We assumed that individuals with fewer completed adult transitions would show lower levels of psychosocial wellbeing compared to other groups (e.g. Schulenberg et al 2005).

Methods

Sample

The present study used data from the ongoing Jyväskylä Longitudinal Study of Personality and Social Development (JYLS) study, in which the same individuals have been followed from age 8 to age 50 (Pulkkinen 2006; Pulkkinen and Kokko 2010). The study was begun by Lea Pulkkinen in 1968, when she randomly selected 12 complete second-grade classes in the town of Jyväskylä, Finland, for the study; all the pupils participated (i.e. the initial participation rate was 100%). The original sample consisted of 173 girls and 196 boys, of whom the majority (94%) was born in 1959; the rest were born either in 1958 or 1960. The mean starting age of the participants was 8.3 years (*SD* = .25). All participants were native Finns. After age 8, main data collection phases took place at ages 14, 27, 36, 42, and 50. In the present study, adult transitions were studied up to age 27.

At ages 8 and 14, data were gathered using peer nominations and teacher ratings (Pulkkinen 2006). At age 14 (in 1974), the sample size was 167 girls (97% of the original sample) and 189 boys (96%). At age 27 (in 1986), the methods of data collection were a mailed Life Situation Questionnaire (LSQ) and a semi-structured interview. The LSQ was completed by 155 women (90%) and 166 men (85%), and interviews conducted with 142 women (82%) and 150 men (77%).

Information about adult transitions was gathered using the LSQs administered at ages 27, 36, 42, and 50, and retrospectively using the Life History Calendar (LHC; adapted from Caspi et al 1996) at ages 42 and 50. As a result of this procedure, the number of participants in the present study was 354 (95.9% of the initial sample; 165 women and 189 men). Both at ages 42 and 50, the sample was representative of the original random sample (studied at ages 8 and 14 in regard to social behavior and school success) and their age-cohort born in Finland in 1959, when compared with data provided by Statistics Finland on, for instance education, occupational status and marital status (Pulkkinen 2006; Pulkkinen and Kokko 2010).

Measures and Variables

Adult role combinations in the following five transition domains were examined: *Educational attainment*, *employment*, *living arrangements, partnership*, and *parenthood*. The variable for educational attainment measures the highest degree obtained by age 27. Educational attainment was coded *1 = no post-comprehensive education*, *2 = vocational school*, *3 = vocational college,* and *4 =*

university. A *degree* refers to graduation from a vocational school, vocational college, or university. The variable for living arrangements describes whether or not a participant has moved out from the parental home by age 27. It was coded *0 = lives with parents, 1 = lives away from parents*. The variable for employment was coded in five categories: 1 = *out of labor force*, 2 = *full-time homemaker*, 3 = *full-time student*, *4 = part-time work*, and *5 = full-time work*. The category 'full-time work' included only those participants who had worked full-time by age 27. If a participant had not worked full-time by age 27, then the status at age 27 was coded. The partnership variable was coded in two stages. First, partnership status at age 27 (married, cohabiting, divorced, separated after a cohabitation, or single) was coded for each participant. "Single" denoted a participant who had never been married or cohabited by age 27. Second, categories of "divorced", "separated", and "single" were combined. Partnership was coded *1 = marriage*, *2 = cohabitation* and *3 = single*. The two-stage coding of the partnership variable enabled us to trace, when necessary, all those participants who had completed the relationship transition by age 27. Parenthood was coded 1 = *no children*, 2 = *one child* and 3 = *two children or more*. Distributions of each transition variable are presented in Table 1.

Table 1. Observed role characteristics in the JYLS sample (*N* = 354) by age 27.

	Percent (%)	Variable specific *N*
Education		**352**
No post-comprehensive education	31.81	112
Vocational school	42.05	148
Vocational college	15.34	54
University	10.80	38
Employment status		**346**
Unemployed/out of labor force	2.02	7
Full-time home maker	1.73	6
Full-time student	5.20	18
Part-time work	1.73	6
Full-time work	89.30	309
Living arrangements		**345**
Lives away from home	95.94	331
Lives with parents	4.06	14
Relationship status		**344**
Marriage	47.09	162
Cohabitation	22.10	76
Single	30.81	106
Parental status		**346**
No children	53.47	185
1 child	27.75	96
2 or more children	18.78	65

Childhood and adolescent predictors

Gender was coded *0 = female, 1 = male*. *Socio-economic status* of the family of origin was coded when the child was 8 years old, on the basis of the father's occupation (the mother's occupation was used if she was a sole provider) into two categories: *0 = blue-collar* and *1 = white-collar worker* (Pitkänen, Lyyra and Pulkkinen 2005). *Family structure* at age 14 was coded *0* for *intact family* (i.e. the participant lived with both parents) and *1* if the *parents had divorced, separated from cohabitation or a parent had died* (Pulkkinen, Lyyra and Kokko 2009). *School success* at age 14 was measured by grade point average (min. 4, max. 10). The information about school success was collected from school archives. The observed range for school success was 5.3-9.1 (Table 2). For the purposes of the present study, school success was centered around its mean (7.22; see Table 2). We used actual entrance to upper secondary school (qualifying for tertiary education) as an indicator of participants' *educational aspirations* (Pitkänen et al 2008). For the purposes of the present study, educational aspirations were coded using two categories: *0 = other*, *1 = upper secondary school*.

Table 2. Descriptive statistics for childhood and adolescent antecedents, and early adult psychosocial wellbeing correlates. Means and standard deviations (in parentheses) are reported for continuous variables, and percentages for categorical variables.

	Mean (sd)/%	***N***[1]
Childhood and adolescent antecedents		
Gender (1 = male)	53.40	354
Family SES at age 8 (1 = white-collar workers)	28.81	354
Family structure at age 14 (1 = non-intact family)	23.78	349
Educational aspiration at age 14 (1 = upper secondary school)	39.94	343
Grade point average at age 14	7.22 (.87)	332
Psychosocial wellbeing at age 27		
Life satisfaction	2.97 (.43)	322
Career stability		335
Unstable	23.28	
Changeable	7.46	
Stable	69.25	
Depressive symptoms	1.98 (.46)	320
Binge drinking		323
Not at all	21.05	
Once a year or less	7.43	
Less than once a month	34.06	
1-3 times a month	21.36	
Once a week	12.38	
Several times a week	3.72	

Note: [1] *N is the number of non-missing cases for each variable.*

Psychosocial wellbeing at age 27 was assessed by life satisfaction, depressive symptoms, stability of career line, and binge drinking. *Life satisfaction* was assessed using five questions presented in the mailed LSQ. With these questions, we sought to assess a broader construct of global life satisfaction. The questions concerned satisfaction with housing, financial situation, choice of occupation, present occupational situation, and content of leisure time. The response scale ranged from 1 = *very dissatisfied* to 4 = *very satisfied*. Statistically significant correlations between the items ranged from .11 to .50. Satisfaction with leisure time did not correlate with housing and financial situation. An average score was computed, and Cronbach's alpha was .56 (Feldt, Mäkikangas and Aunola 2006).

Depressive symptoms was a subscale of a Personal Control Inventory presented in the mailed LSQ. The subscale was composed of five items (e.g. "I feel despair."). The response scale ranged from 1 (strongly disagree) to 4 (strongly agree; Pulkkinen and Rönkä 1994). An averaged score was computed and Cronbach's alpha was .65.

Stability of career line was evaluated on the basis of several questions presented in the LSQ and interview. The follow-up covered 11 years, from 1975 to 1986 (i.e. from age 16 to 27) (Rönkä, Kinnunen and Pulkkinen 2000). Three categories were formed: *1 = unstable career* (including participants who had experienced long periods of unemployment); *2 = changeable career* (including participants whose jobs had varied and for the most part did not correspond to their field; those who had started studying; those whose work situation had suddenly become unstable; or those who had removed themselves from the work force in order to care for children); *3 = stable career* (including participants who had worked in their own field without repeated interruptions due to unemployment, or had a career which had become stable during the first years of the follow-up period). Women who had been on maternity leave, but who had returned to their jobs after the leave, were coded as having a stable career.

Binge drinking for occasions of drunkenness During the interview, the participants were asked to recall how often during the past 12 months they had consumed so much alcohol that they had been truly drunk. Furthermore, in the mailed LSQ, the participants were asked to complete a quantity-frequency (q-f) table with the following instruction: "How much alcohol do you drink in one session? If you have stopped drinking, please refer to the situation before you quit. Circle the most appropriate option on each line." The quantity options consisted of different portion estimates per occasion: 1 drink or less, 2-4 drinks, or 5 drinks or more. One drink (portion of alcohol) was defined as one bottle (33cl) of beer (4.5% alc.), one glass of wine (12cl ~ 12% alc.), one glass of strong wine (8cl ~21% alc.) or one 4cl shot of spirits. Binge drinking was operationalized on the basis of the reported times of being truly drunk, but adjusted for the frequency of drinking at least five portions per occasion as reported in q-f table presented in the mailed LSQ. The variable for binge drinking was coded *0 = not at all*, *1 = once a year*, *2 = less often than once a month*, *3 = one to three times a month*, *4 = once a week*, and *5 = several times a week* (Pitkänen et al 2008).

Analytic Strategy

The analyses of the present study were conducted in three phases. First, the patterning of adult roles was examined using latent class analysis (LCA). LCA is a statistical method that enables the examination of latent structures among a set of categorical variables (Lazarsfeld and Henry 1968). In the present study, five categorical variables were used: residence, educational attainment, employment status, partnership status, and parenthood. The parameters of the LCA model are proportions of individuals within each of the latent classes (i.e. latent class probabilities) and their distribution across the predictor variables in a given latent class (i.e. conditional probabilities) (Nylund, Asparouhov and Muthén 2007). An advantage of using LCA instead of conventional cluster analysis, is that it provides several model fit indices, which enable the assessment of the model fit to the data, and the appropriateness of the number of latent classes specified. In addition, because LCA is a model-based method, the same results can theoretically be replicated with an independent sample (Muthén and Muthén 2000). The following indices are employed in our study: Bayesian Information Criterion (BIC) (Schwartz 1978), adjusted Bayesian Information Criteria (aBIC) (Sclove 1987), and Bootstrap Likelihood Ratio Test (BLRT) (Nylund, Asparouhov and Muthén 2007). Lower values of BIC and aBIC indicate a better fitting model. BLRT *p*-values above 0.05 indicate a good fit of the specified LCA

model, while values below 0.05 indicate that the number of classes should be increased by one (Nylund, Asparouhov and Muthén 2007). In addition, entropy (Celeux and Soromenho 1996) and interpretability of latent classes (Muthén and Muthén 2000) are considered when choosing the optimal number of latent classes. Entropy values approaching 1 indicate clear delineation of classes and that individuals are placed into classes with high precision (Celeux and Soromenho 1996).

Second, after deciding the best LCA solution, multinomial logistic regression analyses were conducted to investigate the extent to which childhood and adolescent characteristics predicted membership of the latent classes (Figure 1). Regression coefficients were presented as odds ratios (*OR*). An *OR* is the ratio of the odds of being in a particular latent class *k* (versus being in the reference class *j*) for any value *b* of a particular childhood characteristic, to the odds of being in class *k* for value *b*+1 of the childhood characteristic. For example for a dichotomous covariate, the *OR* represents change in the odds of being in a class *k* (versus being in the reference class *j*), when the value of a particular childhood characteristic changes from 0 to 1. An *OR* greater than one indicates that those individuals with the characteristic (i.e. for whom the value of the childhood characteristic is 1) are more likely to be in the class *k* than those individuals without the characteristic. Each latent class was in turn used as a reference class in order to compare each latent class to all other latent classes. In addition to *OR*s, we report relative risks (*RR*) in order to provide the reader with a direct comparison of the present results with the results shown in the study by Salmela-Aro, Ek, Taanila and Chen (2012, this issue). A *RR* is a ratio of two probabilities. *RR* indicates how many times more likely a participant is to be a member of a latent class *k* given a one unit increase in a childhood characteristic. For example for a dichotomous characteristic, *RR* represents the ratio of the probability of being in class *k* for characteristic category 1, versus the probability of being in class *k* for category 0.

Third, multivariate analysis was conducted to examine whether membership in the latent classes predicted psychosocial wellbeing in early adulthood (Figure 1). Regression analysis was used for continuous wellbeing outcomes (i.e. life satisfaction and depressive symptoms) and ordered logistic regression analysis was used for ordinal wellbeing outcomes (i.e. career stability and binge drinking). A set of dummy indicators of latent class membership was used as independent variables to estimate class differences in outcomes. In order to compare each latent class to all other latent classes, each latent class was set by turns as a reference group (i.e. each dummy was excluded by turns). The childhood and adolescent variables were controlled for in the analyses, in order to rule out the possibility that the observed differences between the latent classes in wellbeing indicators would result from the childhood and adolescent factors.

All analyses were conducted using the Mplus statistical package version 6.0 (Muthén and Muthén 1998-2010). In all analyses, the method of estimation was that of full information maximum likelihood (FIML) implemented in Mplus. FIML uses all observations in a data set when estimating the parameters in the model, without imputing the missing values. The models for the second and the third stages were estimated simultaneously to maximize the information in the data for estimation, the error terms between continuous measures of psychosocial wellbeing were allowed to correlate, and MLR estimator with Monte Carlo integration approach was used in the estimation process.

Results

Descriptive results

The descriptive statistics for childhood predictors and correlates for early adult psychosocial wellbeing are shown in Table 2. Some gender differences were found in the predictors and correlates. Women were more likely to enter upper secondary school qualifying for university ($\chi^2(2) = 20.36$, $p < .001$, *Adjusted standardized residual* (*ASR*) = 4.4) than men, for whom it was more typical to enter vocational school (*ASR* = 3.4). Women also had better school success than men ($t(271) = 7.64$, $p < .001$). Regarding wellbeing, gender differences were found in binge drinking ($\chi^2(5) = 71.08$, $p < .001$). Men were more likely to report binge drinking 1–3 times a month (*ASR* = 4.0), once a week (*ASR* = 4.8), or several times a week (*ASR* = 3.4) whereas women were more likely to report drinking binge less than once a month (*ASR* = 5.1) or not at all (*ASR* = 3.0).

Latent Classes

Fit statistics for the estimated latent class models showed that the 3-class model had the best fit indices, but also 2- and 4-class models received some support (Table 3). However, the interpretability of the 2- and 4- class models was not as good as that of the 3-class model. Therefore, we chose the three class model as the final model.

Table 3. Model fit indices for estimated latent class solutions.

Number of classes	BIC	aBIC	BLRT *p*-value	Entropy
2 classes	2739	2659	0.000	0.837
3 classes	2776	2655	0.002	0.805
4 classes	2830	2668	0.072	0.836
5 classes	2884	2681	0.070	0.789

Note. BIC = Bayesian Information Criteria ; aBIC = adjusted Bayesian Information Criteria; BLRT = Bootstrap Likelihood Ratio Test.

Table 4. Latent class probabilities and conditional probabilities[1]

	Work-orientation with delayed parenthood	Traditional work and family	Academic-orientation with no children
Education			
No post-comprehensive education	.347	.356	.161
Vocational school	.568	.423	.000
Vocational college	.085	.147	.359
University	.000	.074	.480
Employment status			
Unemployed/out of labor force	.037	.007	.000
Full-time home maker	.000	.050	.000
Full-time student	.000	.033	.237
Part-time work	.019	.024	.000
Full-time work	.944	.886	.763
Living arrangements			
Lives with parents	.077	.010	.000
Lives away from home	.923	.990	1.000
Relationship status			
Marriage	.000	.972	.246
Cohabitation	.421	.028	.254
Single	.579	.000	.500
Parental status			
No children	.753	.000	1.000
1 child	.204	.516	.000
2 or more children	.043	.484	.000
Class *N*[2]	163	124	67
Latent class probabilities[2]	0.460	0.350	0.189

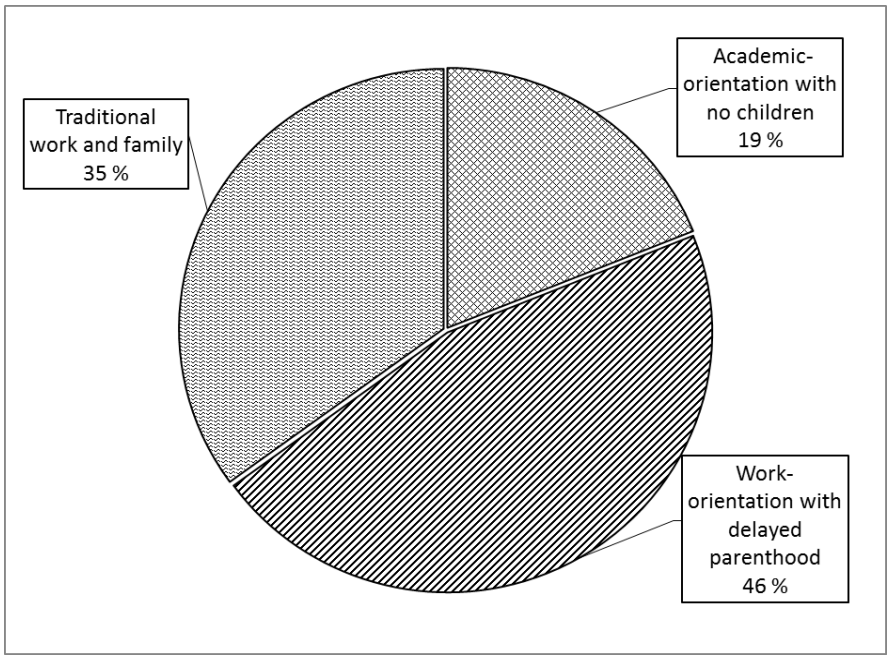
Notes.

[1] Latent class probabilities are proportions of individuals within each of the latent classes and conditional probabilities are their distribution across the indicator variables in a given latent class.

[2]Values from classification of individuals based on their most likely class membership.

Table 4 presents the latent classes and the conditional probabilities of the chosen model. Class proportions are presented in Figure 2. Almost all participants in the three classes were living independently (95.9% of the sample; Table 1). Members of the largest class, *Work-orientation with delayed parenthood* (46.0%; Table 4) typically had undergone four of the five transitions by age 27: They had moved from the parental home, obtained a degree from a post-comprehensive educational institution, worked full-time, had been in a committed relationship, and had no children. Half of the group had an educational degree from a vocational school. At age 27, their partnership status was mixed: the class included single and cohabiting individuals. Additional analysis showed that 20.8% of the members in the *Work-orientation* were truly singles (i.e. they had never been married or cohabited).

Figure 2. Percentages of JYLS latent classes (*N* = 354).



Members of the second class, *Traditional work and family* (35.0%; Table 4) had typically undergone all five adult transitions by age 27, that is, most of them lived independently, had a degree from a post-comprehensive educational institution, they worked full-time and they were married with at least one child. Almost half of the members of this class had an educational degree from a vocational school.

Members of the smallest class, *Academic-orientation with no children* (18.9%; Table 4) typically had undergone four of the five adult transitions: They had moved from the parental home, obtained a degree from a post-comprehensive educational institution, worked full-time, had been in a committed relationship, and had no children. At age 27, their partnership status was mixed – the class included single, cohabiting, and married participants. Additional analysis showed that 37.3% of the members in the *Academic* pattern were truly singles (i.e. they had never been married or cohabited).

Antecedents of Class Membership

Women were more likely to be in the *Traditional* pattern than in the *Academic* and *Work-orientation* patterns (Tables 5 and 6). No gender differences were found between the *Academic* and *Work-orientation* patterns. Individuals who had achieved higher school success and entered upper secondary school at age 14 were more likely to be in the *Academic* pattern than in the *Traditional* and *Work-orientation* patterns. The structure and socio-economic status of the family of origin did not significantly contribute to the class membership.

Table 5. Patterns of adult role combinations in relation to childhood and adolescent antecedents: multinomial logistic regression analysis with odds ratios (OR) and 95% confidence intervals (CI).

Childhood and adolescent characteristics	Traditional vs. Work-orientation	Academic- vs. Work-orientation	Academic-orientation vs. Traditional
	***OR* (95% CI)**	***OR* (95% CI)**	***OR* (95% CI)**
Male (vs. female)	**0.42 (0.25; 0.72)***	1.41 (0.63; 3.17)	**3.36 (1.49; 7.56)****
White-collar (vs. blue-collar SES)	0.94 (0.53; 1.67)	1.45 (0.69; 3.05)	1.54 (0.75; 3.18)
Lives with one parent (vs. parents together)	0.58 (0.32; 1.05)	0.82 (0.35; 1.93)	1.41 (0.57; 3.48)
Grade point average	1.09 (0.74; 1.61)	**3.21 (1.84; 5.61)*****	**2.96 (1.68; 5.23)*****
Educational aspirations (upper secondary school vs. other)	1.64 (0.85; 3.15)	**22.02 (6.98; 69.44)*****	**13.43 (4.26; 42.35)*****

*Note. *p < .05; **p < .01; ***p < .001.*

Table 6. Patterns of adult role combinations in relation to childhood and adolescent antecedents: relative risks.

Childhood and adolescent characteristics	Work-orientation with delayed parenthood	Traditional work and family	Academic-orientation with no children
Male (vs. female)	1.452	0.610	2.048
White-collar SES (vs. blue-collar)	1.025	0.967	1.489
Lives with one parent (vs. parents together)	1.299	0.757	1.068
Grade point average 1 sd above vs. average	0.929	1.007	2.981
Educational aspirations (upper secondary school vs. other)	0.611	1.001	13.442

Table 7. Patterns of adult role combinations in relation to psychosocial wellbeing: multivariate analysis.
Regression coefficients and their standard errors (s.e. in parentheses) in each latent class are reported for all outcomes. In addition, odds ratios (OR) are presented in the case of categorical outcomes.

	Life satisfaction *b (s.e.)*	Depressive symptoms *b (s.e.)*	Career stability *b (s.e.)*	*OR*	Binge drinking *b (s.e.)*	*OR*
Comparison group: Work-orientation						
Traditional work and family	**0.18 (.05)*** **	**-0.13 (.06)***	**0.62 (.29)***	**1.84**	**-0.66 (.24)****	**0.52**
Academic-orientation with no children	**0.15 (.08)***	-0.01 (.08)	0.27 (.47)	1.31	-0.06 (.33)	0.94
Comparison group: Traditional work and family						
Academic-orientation with no children	-0.03 (.07)	0.122 (.08)	-0.34 (.50)	0.71	0.60 (.33)	1.82

Note. *$p < .05$; **$p < .01$; ***$p < .001$.

Psychosocial wellbeing at age 27

Individuals in the *Traditional* pattern reported higher life satisfaction and career stability as well as less depressive symptoms and binge drinking at age 27 than individuals in the *Work-orientation* pattern (Table 7). Individuals in the *Academic* pattern showed higher level of life satisfaction than individuals in the *Work-orientation* pattern. No differences were found between *Traditional* and *Academic* patterns.

Discussion

In the present study, we investigated the patterning of adult roles across the domains of housing, educational attainment, employment, partnership, and parenthood in early adulthood, as well as their childhood and adolescent antecedents and contemporaneous psychosocial wellbeing correlates. Our analyses were based on a representative sample of Finns born in 1959. We identified three patterns: *Work-orientation with delayed parenthood*, *Traditional work and family*; *Academic-orientation with no children*. Our three patterns of adult role combinations corresponded fairly well to classes found in earlier studies using latent class analysis (e.g. Oesterle et al 2010; Osgood et al 2005; Ross et al 2009; Sandefur, Eggerling-Boeck and Park 2005). Thus, although the transition to adulthood has lengthened, diversified, and become more heterogeneous in the timing and content of role changes in most western countries in recent decades (e.g. Arnett 2000; Furstenberg, Rumbaut and Settersten 2005; Shanahan 2000), the transitional patterns appear to be rather similar across countries in early adulthood.

Unsurprisingly, the majority of our participants lived independently. Hence, housing situation did not distinguish the patterns. In Finland, it is typical for young adults to move out from the parental home at an early age (Nikander 1998). This applies both to the 1959 cohort and to more recent age cohorts. One reason for this young age is that Finnish society provides a housing allowance to offset residential costs for students and those with low income for other reasons (Raivola, Zechner and Vehviläinen 2000; Saarikallio and Ylöstalo 2007). As in previous studies (e.g. Osgood et al 2005; Ross et al 2009, Sandefur, Eggerling-Boeck and Park 2005), transitions in relation to educational attainment and family formation distinguished our patterns most clearly. As indicated by the group name, individuals in the *Academic-orientation with no children* had obtained a high level of education, whereas individuals in the other two groups had lower levels of post-comprehensive education. Among those individuals who had obtained a more limited amount of education, two groups were found: first, individuals who had become parents (*Traditional* pattern), and second, individuals who had no children (*Work-orientation* pattern).

Contrary to our expectations (e.g. Ross et al 2009), we did not find a pattern of individuals who had undergone few (less than four) of the adult transitions. Instead, we found two patterns of individuals (*Academic and Work-orientation*) who had one delayed transition: parenthood. The *Work-orientation* pattern was the most prevalent pattern, covering over two fifths of our sample. This pattern as well as the *Academic* pattern could be considered to represent those individuals who are experiencing a delayed step into adult roles, a period which has recently been labeled as emerging adulthood (Arnett 2000).

Our results indicated that both background and individual agency-related characteristics contributed to membership of the patterns of adult role combinations, supporting the idea of bounded agency (Shanahan 2000). Our findings showed that women were over-represented in the family-oriented pattern, namely *Traditional work and family*. This result reflects earlier findings which have shown that women establish a family at an earlier age than men (Cohen et al 2003; Kokko, Pulkkinen and Mesiäinen 2009). Furthermore, as in earlier studies (e.g. Ross et al 2009), individuals in the *Academic* pattern had better school success and higher educational aspirations (indicated by the entrance to upper secondary school qualifying for tertiary education) than individuals in the *Traditional* and *Work-orientation* patterns. Contrary to our expectations (e.g. Schoon et al 2007), family SES did not distinguish our patterns. One reason for these findings may be that in Finland, socio-economic differences are relatively small, education is free up to university level (Kokko et al 2008), and housing allowances were provided for students who lived in rented apartments, to offset residential costs (Raivola,

Zechner and Vehviläinen 2000). Consequently, due to these readily available opportunities provided by Finnish society, it was more possible for individuals with different social backgrounds to follow the path they preferred than, for instance, might be the case in countries where there are tuition fees.

Our results showed that individuals in the *Traditional* and *Academic* patterns showed higher life satisfaction than individuals in the *Work-orientation* pattern. Furthermore, individuals in the *Traditional* pattern reported higher career stability and less depressive symptoms and binge drinking than individuals in the *Work-orientation* pattern. Regarding those individuals with a limited amount of post-comprehensive education, our results suggest that the relatively early completion of adult transitions seems to be associated with higher levels of wellbeing. Furthermore, in Finland, communities are obliged to provide a child care service, which enables mothers to work full-time outside the home. Therefore, becoming a parent is not an obstacle to having a stable career. Regarding the difference in life satisfaction among those who had one missing transition (*Academic* and *Work-orientation* patterns), our results indicate that individuals in the *Academic* pattern had a higher level of life satisfaction because they had obtained a higher level of post-comprehensive education than individuals in the *Work-orientation* pattern. Accordingly, it has been shown that having a higher level of education is associated with higher life satisfaction than having a lower level of education (Daukantaite and Zukauskiene 2006). However, based on our wellbeing results, no conclusions about causal links between the completion of transitions and psychosocial wellbeing can be drawn, because the wellbeing measures used in our study were not available before age 27. The examination of causal associations between wellbeing and transitions, remains for the future.

Our study contains some limitations which should be acknowledged. First, owing to the relatively small sample size, our study may have suffered from limited statistical power. This may have resulted in an inability to identify the interconnections between the categorical transition variables as well as to detect subtle links between latent classes and concurrent wellbeing correlates. Second, although latent class analysis provides a tool for exploring the interconnections among a set of categorical variables, one should be cautious about attaching too much meaning to a latent class or to a label assigned to it (Sandefur, Eggerling-Boeck and Park 2005). Third, the patterns of adult role combinations were identified at age 27, and thereby, they represent only a snapshot in time. Therefore, our patterns do not capture the dynamic nature of the transition process. For instance, it is possible that individuals in the *Work-orientation* pattern may have established a family later on. Using latent transition analysis, one could study change in class membership (Macmillan and Copher 2005; Oesterle et al 2010). Fourth, psychosocial wellbeing was measured at the same age as the transitional domains used in latent class analysis. Therefore, no conclusions can be drawn regarding the causality between psychosocial wellbeing and adult role combinations. Considering the limitations, studies with larger samples are needed in the future to confirm our results regarding patterns of adult role combinations, their antecedents in childhood and psychosocial wellbeing implications in adulthood. Furthermore, the examination of how role transitions regarding housing, education, work, partnership, and parenthood intersect and are linked across time, would be worth a separate study in the future.

Our study contributed to the existing research regarding transition to adulthood, first by considering the occurrence of five key adult transitions (i.e. moving from parental home into independent living, completion of full-time education, starting a full-time job, establishment of an intimate relationship, and becoming a parent (Furstenberg, Rumbaut and Settersten 2005; Shanahan 2000) simultaneously, rather than as isolated life events. The importance of taking the inter-relation of the adult transitions into account has been highlighted by Furstenberg and his colleagues (2005). Second, our analyses were based on a representative sample of Finns born in 1959. Third, we used a longitudinal approach, which enabled us to investigate contextual and individual childhood antecedents of the patterns of adult role combinations, as well as concurrent psychosocial wellbeing correlates of the patterns within the same individuals, adjusting for the childhood antecedents.

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Role configurations in young adulthood, antecedents, and later wellbeing among Finns born in 1966

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Abstract

The aim of this study was to identify latent classes of role configurations among Finnish cohort members born in 1966, based on education, employment, housing, marital status, and parenthood, and to investigate their antecedents and individual psychosocial wellbeing outcomes. Data from the Northern Finland Birth Cohort 1966 (NFBC66) (N= 11,825) were used to identify the latent classes at the age of 25–26, together with register data on education, employment, partnership, and parenthood from official registers, and data from a postal questionnaire on living arrangements, administered at age 31, and used as proxies for the 25 to 26 year old situation. Four classes were identified by latent class analysis. Multinomial logistic regression was used to investigate the classes' association with their antecedent conditions and logistic/ordered logistic regression with their wellbeing outcomes.

Keywords: adult roles, childhood, early adulthood, psychosocial wellbeing

Introduction

The transition from adolescence to adulthood is characterized by frequent changes in role status. The most dramatic of these changes – the so-called Big Five – are: completing an education, moving into working life, leaving the parental home, forming a romantic partnership, and becoming parents (Elder and Shanahan 2007). Making these five key transitions is often considered to define reaching adulthood. The present study investigated three aspects of the role configurations that define young adulthood: their composition, their antecedents and their wellbeing outcomes at the age of 25-26 among the members of a Finnish cohort born in 1966.

Our main theoretical starting point is the life-span model of motivation (Baltes 1997; Salmela-Aro 2009), life-course theory (Elder 1985; Mayer 2009) and the developmental task approach (Erikson 1959; Havighurst 1948; Levinson 1986). According to life-span and life course theory, an individual's development is characterized by changing demands, roles and life events (Baltes 1997; Buchmann and Kriesi 2011; Elder 1985; Elder, Johnson and Crosnoe 2003; Salmela-Aro 2009) that channel development and constitute different developmental environments for people at different ages. Such age-graded environments have been conceptualized in many different ways, for example, in terms of developmental tasks (Erikson 1959; Havighurst 1948; Oerter 1986), role transitions (Elder 1985), constraints (Neugarten, More and Lowe 1965; Settersten and Hagestad 1996), and institutional tracks (Mayer 1986). In terms of life course theory (Elder 1985; Mayer 2009), the transition to adulthood

precipitates changes in objective statuses or social roles, such as leaving the parental home, entering into full-time employment, getting married, and having children.

Young people also actively influence their own development by means of setting and pursuing personal goals in accordance with current developmental tasks (Lerner et al 2001; Salmela-Aro 2009). The third decade of life is a period during which individuals are faced with more transitions and life decisions than at any other stage (Caspi 2002). Rindfuss (1991), for example, describes the period between the ages of 18 and 30 as demographically dense with respect to the many transitions that take place then, including moving from education to work, starting a career, initiating an intimate relationship, and starting a family. These transitions and role changes are significant markers of the transition to adulthood (Shanahan 2000). They also relate to the three basic psychological needs: autonomy (independent living), competence (education, employment) and relatedness (partnership, parenting) (Deci and Ryan 2000; Salmela-Aro 2009) on which psychological wellbeing is founded.

Navigating and mastering these developmental demands is considered adaptive functioning (Heckhausen 1999). For example, Schulenberg, Bryant and O'Malley (2004), in line with Havighurst (1948), found that successful tackling of developmental tasks in a sample of young adults (aged 18 to 26) was closely tied to high levels of wellbeing. Salmela-Aro et al (2011) also found that those young adults who had achieved their developmental tasks of getting married and successfully entering employment after finishing studies were more satisfied with their life compared to those who had yet to achieve these statuses. Failure to achieve developmental tasks by a given time may therefore lead to unhappiness and symptoms of depression i.e. reduced wellbeing (Salmela-Aro and Nurmi 1997).

Normative timetables or 'scripts' provide models for life course behaviour (Buchmann 1989; Buchmann and Kriesi 2011). The life course is thus socially structured by a set of formal or institutionalized roles. However, in recent decades, there have been major changes in the move from education to work, labour-market opportunities, and transition strategies (Arnett 2000; Buchmann and Kriesi 2011; see also Bynner 2005; Salmela-Aro and Helve 2007). It has been argued that the transition to adulthood has been considerably extended with the postponement of most transition markers (Buchmann and Kriesi 2011). For example, in the area of employment, the progress from education to working life is now often prolonged and discontinuous and can extend into the early thirties (Quintini, Martin and Martin 2007; Salmela-Aro and Helve 2007; Shanahan 2000).

The impact of changes on the transition to adulthood is conditioned by educational choices and what shapes them. According to Jacobs and Eccles (2000) adolescents' gender, aptitudes and family background, as reflected in socio-economic status (SES) all have an impact, emphasizing the role of family processes in achievement-related development. Previous studies have found that the higher the parents' SES and the higher the adolescent's prior grade point average (GPA), the higher are their educational expectations (Garg et al 2002; Ou and Reynolds 2008; Schoon and Parsons 2002). Moreover, in Finland as in many other OECD countries, the majority of students in higher education are women (Education at a Glance 2009). Accordingly we may expect such 'antecedents' as GPA and SES to have a role in young people's tracks to different role statuses in early adulthood, and to find more women than men among those with role statuses that are academically-based.

The transition from education to employment takes place as a complex set of consecutive events, which are connected with transitions in other domains, such as family formation through partnership and parenthood (Gallie 2000). In Finland, adolescents have the same basic education until they are 15 to 16 years old, after which they divide between general and vocational routes. Over 90% complete one of these (National Center for Education Statistics 2010). As all education is state-provided and tuition is free, the possibility of accessing higher education is open to all (Education Strategy Associates 2010). However, because competition to enter certain fields is high (10% acceptance) 'gap years' and extended educational careers are common. Due to tightened economic circumstances in the 1990s, when our cohort were in their mid-20s, entry to the labour market tended to be difficult, especially in the rural areas of Northern Finland. By

the age of 31, 10% had yet to gain entry to employment. As in other western countries, young Finns increasingly postpone domestic commitments (Arnett 2000); transformation of romantic unions into marriage and parenthood tends to happen late, or not at all (Salmela-Aro and Helve 2007). The mean age for first marriage in Finland is 28 for women and 30 for men, and for first birth, 27.9 years (women) and 29.9 years (men) (www.findikaattori.fi). Under the Nordic welfare system, students are entitled to social security support if they move away from their parents' home when they begin university studies. Consequently, postponement of independent living is rare and most young Finns leave home early.

A life course is thus characterized by the interplay of multiple inter-connected role transitions that vary considerably (Levinson 1986; Macmillan and Eliason 2003). It has also been argued that the transition to adulthood has become de-standardized and more flexible, heterogeneous, and differentiated (Buchmann and Kriesi 2011). Instead of following a single, uniform passage, young people take many different routes, some moving more slowly and others following a more traditional fast track to adulthood (Jones 2002). Accordingly, transition to adulthood can be differentiated between *fast* versus *slow* transitions. In the present study, we seek to learn how different transitions in the areas of employment and family formation are interwoven in young people's lives (Elder 1985; Shanahan 2000)

Despite the fact that theories of life-span and life course development have been evolving for several decades, empirical research on the transition to adulthood, taking a person-orientated approach, has begun only recently. Different role configurations have been identified in young adulthood that vary in terms of timing (on-time or postponed), the key role of career or family, and stability and change over time (Salmela-Aro 2009; Salmela-Aro et al 2011). Based on this earlier work, we assumed that in the present study we would find such configuration identified with fast or slow transitions, traditional working family (Osgood et al 2005) and academic achievement-based careers. We pursue these distinctions, relating them to earlier antecedent influences and later outcomes in psychological wellbeing.

Aims and hypotheses

The study had three aims and associated hypotheses:

1. To identify role status configurations at the age of 25-26 based on education, full-time employment, living arrangements, marital relationship, and parenthood, using a regionally representative birth cohort study, the North Finland Birth Cohort 1966 (NFBC66). We expected to find at least three latent classes: a class of individuals who had undergone all of these adult transitions by age 26 in a Traditional fast track (work and family), a class of Slow track individuals, and finally, those with Academic careers (Highly-educated).
2. To investigate the antecedents of the classes we identified as central, gender, the mother's education, parental SES, family stability, and/or school grades. We assumed that it would be more typical of women than men to have undergone family transitions by age 25-26. Furthermore, we expected that individuals on the academic career path would be characterized by a high level of the mother's education, a stable family background, and success at school (Schoon, Martin and Ross 2007).
3. To examine whether the latent classes identified differ in psychological wellbeing in terms of life satisfaction, depression, psychiatric diagnoses and self-reported health. We assumed that individuals with several incomplete transitions (i.e. uncompleted 'developmental tasks') would show lower levels of psychological wellbeing compared to other groups (Salmela-Aro et al 2011; Schulenberg et al 2004). In particular we expected that classes characterized by marriage and parenthood, would show higher levels of wellbeing, including reduced depressive symptoms and higher life satisfaction (Clare and Wheaton 2005).

Data and Method

Participants and procedure

The present study used data from the NFBC66, which recorded data from individuals born in Northern Finland in 1966. The cohort is based on 12,055 pregnant women and their 12,058 live-born children (6,169 boys and 5,889 girls) in the provinces of Lapland and Oulu. The mothers' expected delivery

date fell during the year 1966 and represented 96 per cent of all births in the region (Isohanni et al 2001; Rantakallio 1988). Data on the biological, socio-economic, and health conditions, living habits, and family characteristics of cohort members were collected prospectively from pregnancy up to the age of 31. The first round of information on the mothers and children was collected during routine pre-natal and post-natal clinic visits. At the fourteen-year follow-up, in 1980, the subjects were asked to complete a questionnaire concerning their parents' socio-economic status and other family-related factors. If a cohort member did not respond, then the questionnaire was forwarded to the custodial parent. School grades were collected from the education register at the age of 16. The latest phase in the follow-up took place in 1997 (when the cohort members were aged 31): a questionnaire was sent by post to all members of the cohort who were alive and could be reached (n = 11,541). About 75 per cent (n= 8,673) returned the questionnaire; 90 of them refused permission to use their data for research purposes and were removed.

Previous studies of sample attrition between 1966 and 1988 found that dropouts were more often men, but otherwise the attrition was not systematic (Rantakallio 1988; Isohanni et al 1998). In the follow-up study at the age of 31, however, it was found that subjects with psychiatric disorders participated less often than those without psychiatric disorders (Haapea 2010). In the present study, those who did not respond to the 1997 postal questionnaire were also included, and the information they provided in the early stages of data collection were used to reduce bias in estimates via Full-Information Maximum Likelihood estimation. In 1997-98, at the age of 31, 66% of the cohort members were living in Northern Finland. 64% of the cohort were living in urban areas, and only 36% in rural areas (Ek et al 2008). 39% of those who had been living in rural areas at the age of 23 had migrated to urban areas by the age of 31 and only 10% to rural areas. Thus, although some were born in quite remote areas, in their youth this population was comparable to the general population of young people in Finland with regard to urban/rural place of residence. Also, the proportion of subjects with a university education in the sample was about the same as in the overall Finnish population of the same age that year (Statistical Yearbook of Finland 1998). The rate of unemployment in this population was the same (13%) as among Finns in general in 1997 (Statistical Yearbook of Finland 1998).

In addition to the postal questionnaires sent out at 14 and 31 years of age, register data have been collected online. The present study is based on those cohort members for whom at least some of their relevant register data could be obtained at the age of 25-26 (N = 11,825). Full-Information Maximum Likelihood estimation was used to impute missing data, including information that was missing owing to failure to respond to the 1997 postal questionnaire survey at age 31.

Measures

Role status configuration indicators

The data for education and employment status of the cohort members were obtained from register data in Finland's Central Statistical Office for the group members who had reached age 25. Housing (living arrangements) information was obtained from the 1997 postal questionnaire survey. Marital status at age 26 was obtained from the 1992 register data archived in the Population Register Centre, Helsinki. Parental status was obtained from the registration of births and deaths of children from 1982 to 1994 from the Population Register Centre, Helsinki, using the numbers of living children at age 26 for the NFBC66 members.

The registration records for education contained eight categories, which were combined into four for the purposes of this study: comprehensive education only, vocational school, vocational college, and secondary/university education, coded 1 to 4, respectively. Comprehensive education indicated those who had completed nine years of schooling or less; vocational school was for those who attended 0.5 to two years of vocational school. Vocational college was for those who attended two years or more of vocational college, and secondary/university education indicated those who attended upper secondary school or had completed the matriculation examination. Employment status was coded 1 for unemployed, pensioned, and in the army, 2 for student, and 3 for employed. Housing (i.e. living arrangements) at the age of 31 was coded 0 for those

who owned or rented an apartment and 1 for other living arrangements, such as living with parents or living in a student dormitory. Marital status was coded 1 for married, 2 for divorced or widowed, and 3 for unmarried, including those who were cohabiting. Parental status was coded 0 for those who had no living child, 1 for those who had one living child, and 2 for those who had two or more living children. Descriptive statistics for role status indicators are presented in Table 1.

Table 1. Percentages for role status configuration indicators at age 25/26 for the 1966 Northern Finland Birth Cohort (NFBC66; N=11,825)

	Percent (%)	N
Education (1-4)		11,584
Comprehensive school only (1)	19.1	
Vocational school (2)	33.1	
Vocational college (3)	37.7	
Secondary/university (4)	10.1	
Employment status (1-3)		10,126
Unemployed/pensioned/retired /army (1)	10.7	
Student (2)	18.3	
Employed (3)	71.0	
Living arrangements (0, 1)		8,627
Own/rent apartment (0)	88.8	
Lived with parents/elsewhere (1)	11.2	
Relationship status (1-3)		11,817
Married (1)	30.3	
Divorced/widowed (2)	2.7	
Single/cohabiting (3)	67.0	
Parental status (0-2)		11,825
Childless (0)	63.9	
1 child (1)	19.0	
2 or 2+ children (2)	17.1	

Notes. Coding for indicators is in parentheses, and N gives the non-missing cases for each variable.

Antecedents and early adulthood wellbeing

The antecedents for role status configuration in this study were gender, the mother's education, the parents' SES, family structure, and school grades. Gender was recorded at birth by the midwife in attendance at the clinic; the mother's education and parents' SES were obtained from postal questionnaires at birth; family structure was obtained from postal questionnaires at age 14, and school grades were obtained from national school registers at age 16.

Gender was coded 1 for male and 0 for female.

Mother´s level of education in 1966 was coded 1 for those whose mothers had further education and 0 for those whose mothers had basic education only.

Parental SES at birth was determined by the father´s occupation and its prestige in 1966 (Rantakallio 1988). It was coded 1 for those whose father's occupation belonged to white-collar occupations (those with the highest prestige and the most education, such as school teachers, dentists, civil

engineers, members of the clergy, and office managers) and 0 for those whose father's occupation was classified as blue collar - skilled workers such as clerks and stewards and unskilled workers, such as home help and cleaners, those with unknown or no occupation, and farmers.

Family structure at age 14 was based on the question of whether the mother/father was: 1) alive, 2) alive, but not living at home, 3) dead, or 4) unknown. The variable was coded 0 for those living in an intact, two-parent family, in which both parents were alive and still living together in 1980, and 1 for those living in a non-standard family, consisting of a single-parent with the child living with the mother (the father either dead, n = 440; 5.1%; divorced, n = 542; 6.1%; or the father's residence unknown, n = 33; 0.4%); a single-parent family with the child living with the father (the mother either dead, n =79; 0.9%, or divorced, n= 77; 0.9%); and a non-parent family, in which both parents were either dead or living elsewhere (n = 37; 0.4%).

School performance was based on school grades, which were taken from the national school registers. The mean scores for all courses taken were calculated from the school reports at the end of comprehensive school when the students were 16, and the grades ranged from 4.5 to 9.9. The variable was recorded to centre on the sample mean at 7.5.

The later wellbeing of those in the role configurations used in the study was evaluated on the basis of psychiatric diagnoses at age 27, together with depression, life satisfaction and self-rated health at age 31. Psychiatric diagnoses were derived from the Finnish Hospital Discharge register (FHDR) up to age 27, while depression, life satisfaction, and self-rated health at age 31 came from the 1997 postal questionnaires survey.

Psychiatric diagnoses up to the age of 27 were derived from the FHDR, which covers all mental and general hospitals, as well as bed wards in local health centers together with military and prison hospitals nationwide. The FHDR contains the primary diagnosis at discharge, together with a maximum of three subsidiary diagnoses. The answers were dichotomized as yes/no (coded 1 for yes with at least 1 psychiatric diagnosis, and 0 for no).

Symptoms of depression were assessed by the HSCL-25, a 25-item instrument, assessing global psychological distress and derived from the SCL-90 (Derogatis, Lipman and Covi 1973). A depression subscale consists of 13 items (feeling low in energy/slowed down, blaming yourself for things, crying easily, loss of sexual interest or pleasure, feeling hopeless about the future, feeling blue, feeling lonely, thoughts of ending your life, feeling trapped or caught, worrying too much about things, feeling no interest in anything, feeling worthless (Winokur et al 1984). Participants indicated how well each item described the psychological distress they experienced during the week prior to participation, on a scale of 1 (not at all) to 4 (extremely). The cut-off score ≥ 1.75 was used to indicate depression, a level that corresponded to the cut-off used in prior studies, where it has been found to be a sensitive case finder of depressive disorders (Nettelbladt et al 1993; Sandanger et al 1999). The predictive validity of the HSCL-25 has been found to be good in terms of clinical response, clinical remission, and criterion symptom remission (e.g. Karlsson, Joukamaa and Lehtinen 2000). HSCL-25 has been found to be moderately reliable in a two-stage field study with a structured interview for DSM-III-R used as a diagnostic instrument in this young adult database (Veijola et al 2003). In the present study, depression at age 31 was coded 1 for those who had a score of ≥ 1.75 (i.e. they met the depression cut-off level) and 0 otherwise.

Life satisfaction was measured by a question about whether respondents were satisfied with their lives in general on a scale of very dissatisfied, quite dissatisfied, quite satisfied, very satisfied, as used in previous studies (e.g. Aromaa et al 1989).

Self-rated health was measured by a question about how healthy the respondents felt at that moment on a scale of very bad, bad, moderate, good, very good. This single self-rated health item has been used in a large population-based Finnish study and was found to be a good general measure of health overall (Manderbacka, Lundberg and Martikainen 1999; Martikainen et al 1999).

Descriptive statistics for antecedents and wellbeing in early adulthood are presented in Table 2.

Table 2. Percentages/mean for antecedents and later wellbeing of role status configuration for the 1966 Northern Finland Birth Cohort (NFBC66; N=11,825)

	Percent/ Mean (SD)	N
Antecedents		
Gender 1=male, 0=female	51.1	11,825
Mother education at birth 1=further education, 0=basic	33.1	11,624
Parent SES at birth 1=white collar, 0=blue collar	23.6	11,637
Family structure at age 14 1=non-intact, 0=intact	19.5	11,825
School grade at age 16 centered at mean 7.5 (4.5-9.9)	.014 (.954)	10,726
Wellbeing at Age 27		
Psychiatric diagnoses: 1=yes, 0=no	4.8	11,825
Wellbeing at Age 31		
Depression: 1=yes, 0=no	14.6	8,547
Life satisfaction (1-4)		8,378
Very unsatisfied (1)	1.4	
Quite unsatisfied (2)	8.0	
Quite satisfied (3)	68.7	
Very satisfied (4)	21.9	
Self-rated health (1-5)		8,558
Very bad (1)	0.3	
Bad (2)	2.8	
Moderate (3)	28.6	
Good (4)	53.0	
Very good (5)	15.2	

Notes. Coding for ordered variables is in parentheses, and N gives the non-missing cases for each variable.

Analysis Strategy

Latent class analysis (LCA) was used to develop a typology of classes of combined role statuses for the members of the Northern Finland Birth Cohort 1966 when they reached their mid-twenties (N=11,825). Five indicators of role status - educational attainment, employment status, housing, marital status, and parenthood - were used to identify these classes. Since we expected to find three or four configurations, we estimated several different models for different numbers of latent classes (2, 3, 4, 5, and 6). Several goodness of fit criteria, in common use, together with 'entropy' and 'interpretability', were adopted to determine the optimal number - see Table 3. For BIC, adjusted BIC, and AIC, a smaller value indicates a better fitting model; thus, the solution with the smallest value would be the best model. For VLMR-LRT and BLRT, an insignificant p value (p >= .05) for the k class means k-1 classes would be a better fitting model; thus, the k-1 class from the first encountered k class with p value >=.05 would be the best fitting model. Entropy is a measure of the quality of classification for each individual and how well the latent classes are distinguishable from one another. A model with good entropy (close to 1) is critical for this study as the resultant classes are used in further analysis (Clark and Muthén 2009; Nylund, Asparouhov and Muthén 2007; Petras and Masyn 2010).

Table 3. Model Fit indices and entropy by numbers of classes from exploratory latent class analysis

k-class	H0 LL	L^2	# Par	BIC	Adj BIC	AIC	VLMR-LRT	BLRT	Entropy
2	-43103	1339	21	86404	86337	86249	0.000	0.000	0.883
3	-42450	686	32	85200	85098	84964	0.000	0.000	0.729
4	-42290	428	43	84984	84847	84667	0.000	0.000	0.751
5	-42235	331	54	84977	84805	84578	0.000	0.000	0.668
6	-42202	252	65	85013	84806	84533	0.859	0.000	0.604

Notes.
H0 LL: Log-Likelihood value for the k-class model
L^2:Likelihood Ratio Chi-Square value for the k-class model
 # Par: Number of parameters to be estimated
BIC: Bayesian Information Criterion; Adj. BIC: Adjusted BIC
AIC: Akaie Information Criterion
VLMR-LRT:p value for VUONG-LO-MENDELL-RUBIN likelihood ratio test for k-1 class vs. k class
BLRT: p value for bootstrap likelihood ratio test for k-1 class vs. k class

Table 4. Role conditional indicator probabilities and class probabilities for the 1966 Northern Finland Birth Cohort (NFBC66; N=11,825)

Classes	Highly educated without family	Slow starters	Traditional work and family	Highly educated with family
Education (1-4)				
Comprehensive school only (1)	.000	.443	.210	.000
Vocational school (2)	.078	.541	.535	.051
Vocational college (3)	.733	.016	.255	.615
Secondary/university (4)	.188	.000	.000	.334
Employment status (1-3)				
Unemployed/pensioned/army (1)	.063	.218	.087	.028
Student (2)	.329	.041	.050	.325
Employed (3)	.608	.741	.863	.647
Living arrangements (0, 1)				
Own/rent apartment (0)	.862	.865	.939	.900
Lived with parents/elsewhere (1)	.138	.135	.061	.100
Relationship status (1-3)				
Married (1)	.026	.024	.737	.943
Divorced/widowed (2)	.006	.006	.093	.011
Single/cohabiting (3)	.968	.969	.170	.046
Parental status (0-2)				
Childless (0)	.919	.822	.124	.412
1 child (1)	.076	.129	.333	.377
2 or 2+ children (2)	.006	.049	.544	.211
Class N*	3817	3922	2623	1463
Class Probabilities*	.323	.332	.222	.124

*Note. * Class N and probabilities are from most likely latent class membership*

A four-class solution was found to be optimal for the NFBC66 data. The estimates of conditional item probabilities and class probabilities from the final four class model, which had the biggest maximum log likelihood value, are reported in Table 4. The predicted role status class memberships for each individual were used to study the relationship between the classes and the antecedent variables, and with later wellbeing.

To assess the relationship between the antecedent variables and the role status classes, the classes were treated as categories of a nominal variable, and a multinomial logistic (MNL) regression was applied. To study the differences in wellbeing and health among the classes adjusted for the antecedent variables, dummy variables for each of the four classes were created. Three of these four dummy variables (the omitted class was the reference group), along with the antecedent variables, were included in each wellbeing/health equation. Logistic regression was applied to the dichotomous measures of wellbeing, such as psychiatric diagnoses at age 27 and depression at age 31. Ordered logistic regression (using the proportional odds specification) was applied to life satisfaction and self-rated health, both at age 31 (Muthén and Muthén 1998-2010). All models were estimated simultaneously via Full Information Maximum Likelihood (FIML) estimation with robust standard errors using Mplus 6.1 (Muthén and Muthén 1998-2010) and including cases with missing data. When missing data occurred in the antecedent variables, the variance/covariance of these variables was estimated, so that "full information" could be used for estimation (Asparouhov and Muthén 2008). Furthermore, to make all six possible comparisons between the classes, different classes were used as reference groups. The estimated multinomial logistic regression coefficients for each antecedent variable were converted to the 'relative risks' of being in each class, together with approximate standard errors. The 99% confidence intervals of these relative risks were then computed (the formula for this procedure is available upon request). The statistically significant ($p<=.01$) relative risks r are shown in bold in Table 5. The estimated logistic regression coefficients, standard errors, and odds ratios of classes (with all possible comparisons) from the four wellbeing analyses are presented in Table 6.

Table 5. Estimated relative risks computing from multinomial logistic regression coefficients of role status configuration classes at age 25/26 on antecedents for the 1966 Northern Finland Birth Cohort (NFBC66; N=11,825)

	HE	SS	TWF	HEF
Gender male vs. female	**1.339**	**1.311**	**.551**	.984
Mother education at birth further education vs. basic	**1.315**	**.783**	**.847**	**1.426**
Parent SES at birth white collar vs. blue collar	**1.354**	**.761**	**.865**	**1.311**
Family structure at age 14 non-intact vs. intact	**.813**	**1.292**	.998	**.638**
School grade at age 16 centered at mean 7.5 (-1 vs. 0)	**.242**	**1.765**	**1.140**	**.182**
School grade at age 16 centered at mean 7.5 (1 vs. 0)	**2.034**	**.279**	**.431**	**2.701**

Notes.

Bold relative risk is significant at .01 level based on 99% confidence interval for the estimated relative risk coefficients.

HE: Highly-educated without family

SS: Slow starters

TWF: Traditional work and family

HEF: Highly-educated with family

Table 6. Logistic regression coefficients (b) and odds ratios (OR) from logistic/ordered logistic regressions of wellbeing at age 27/31 on role configuration classes at age 25/26 for the 1966 Northern Finland Birth Cohort (NFBC66; N=11,825)

Logistic Regression	Psychiatric diagnoses at age 27				Depressive symptoms at age 31			
	b		se(b)	OR	b		se(b)	OR
Slow starters (reference group)								
Highly-educated without family	-0.565	***	0.137	0.568	-0.162		0.095	0.850
Traditional work and family	-0.579	***	0.118	0.560	-0.328	***	0.087	0.720
Highly-educated with family	-1.407	***	0.253	0.245	-0.339	**	0.120	0.712
Highly-educated without family (reference)								
Traditional work and family	-0.014		0.153	0.986	-0.166		0.093	0.847
Highly-educated with family	-0.842	***	0.249	0.431	-0.177		0.103	0.838
Traditional work and family (reference)								
Highly-educated with family	-0.829	***	0.261	0.436	-0.011		0.117	0.989
Ordered Logistic Regression	**Life satisfaction at age 31**				**Self-rated health at age 31**			
	b		**se(b)**	**OR**	**b**		**se(b)**	**OR**
Slow starters (reference group)								
Highly-educated without family	0.075		0.073	1.078	0.278	***	0.065	1.320
Traditional work and family	0.386	***	0.066	1.471	0.100		0.060	1.105
Highly-educated with family	0.499	***	0.086	1.647	0.313	***	0.079	1.368
Highly-educated without family(reference)								
Traditional work and family	0.311	***	0.067	1.365	-0.178	**	0.061	0.837
Highly-educated with family	0.423	***	0.071	1.527	0.035		0.064	1.036
Traditional work and family (reference)								
Highly-educated with family	0.112		0.079	1.119	0.213	**	0.075	1.237

*Notes: *p < .05, **p < .01, ***p < .001.*

All models also control for antecedents (i.e. gender, mother education, parent SES, family structure, and school grade) for role configurations.

Results

Characteristics of the classes of role configurations

BIC, adjusted BIC, and VLMR-LRT in Table 3 pointed to the five-class solution as the best model. However, in terms of interpretability as well as the fact that with a large sample size, as in this study, a statistically insignificant test result is difficult to obtain, the four-class solution was selected as optimal for the study. Furthermore, the entropy value of .751 for the four-class solution was in the medium to high range (Clark and Muthén 2009), which was much better than the entropy of .668 for the five-class solution (see Table 3). The conditional role status probabilities for each of the constituent variables for each of four latent classes, together with the total estimated probability of class membership for each class are shown in Table 4: 'Slow starters' (33.2%), 'Highly-educated without family' (32.3%), 'Traditional work and family' (22.2%), 'Highly-educated with family'(12.4%)'.

The class of 'Highly-educated without family', which was almost as large as the 'Slow starters', was characterized by a high level of education, being a student or working, a relatively higher percentage renting/owning housing, being single, and having no children.

'Slow starters', the largest in class size, were characterized by a low level of education, the lowest rate of being students and the highest rate among all four classes of being unemployed/out of the labour force. In addition, a relatively low percentage of 'Slow starters' were likely to be renting or owning their homes. Most were likely to be single and most had no children.

'Traditional work and family', which ranked third in class size, was characterized by a relatively low level of education, coupled with the highest employment rate. A high percentage were renting or owning their homes. Most were married and this group were the most likely to have children.

'Highly-educated with family' was the smallest class and characterized by a high level of education, being a student or working, and renting or owning their homes. They were likely to be married and often had children.

Multivariate results: antecedents, of role configuration classes, and wellbeing

Antecedents of latent classes

Table 5 reports the estimated relative risks derived from the multinomial logistic regression of antecedents. The results show that all predictors had independent impacts on the chances of being in a certain latent class for individuals at age 25 to 26, although school grades at age 16 seemed to be the most salient. Specifically, compared to females, males were significantly more likely to be in the 'Highly-educated without family' group or in the 'Slow starters group', and less likely to be in the 'Traditional work and family' group. Males were also slightly less likely to be in the 'Highly-educated with family group', but the relative difference was not statistically significant. Overall males were less likely than females to be in the classes that had begun families.

Those with more educated mothers and mothers with white collar jobs were more likely, compared with the others, to be in the career-oriented classes ('Highly-educated without/with family'), as were those from intact families and also those with the highest school grades at age 16.

Wellbeing

Table 6 presents the estimated logistic regression coefficients and odds ratios from logistic regressions and ordered logistic regressions of wellbeing at age 27 and again at age 31, for the four latent classes controlling for gender, mother's education, parents' SES at birth, family structure at age 14, and school grades at age 16. The results indicate that the 'Slow starters' tended to suffer the most from low wellbeing as reflected in the depression indicators, while the 'Highly-educated with family group' enjoyed the best wellbeing. The 'Highly-educated without family' and 'Traditional work and family' classes were in-between. The classes that had started families ('Traditional work and family' and 'Highly-educated with family') also enjoyed higher life satisfaction than the others. The career-orientated latent classes ('Highly-educated without/with family') were likely to report better health than the non-career orientated classes.

Discussion and conclusion

This longitudinal study investigated the role configurations among young Finnish adults born in 1966. The cohort members were examined at age 25–26 in five life domains and their associated role statuses, education, employment, living arrangements, partnership, and parenthood. Three basic psychological needs were considered as driving the transition to adulthood: autonomy (independent living), competence (education, employment), and relatedness (partnership, parenting) (Deci and Ryan 2000; Salmela-Aro 2009).

The results of latent class analysis supported our hypothesis that we would find both 'Slow starters' and 'Traditional work and family' ('fast starter') classes and an 'academic achiever' ('Highly educated with or without family' career class). We also found a small and elite 'Highly-educated with family' fourth latent class.

The present study revealed that the 'Slow starters' formed marginally the largest class. In line with the life-span model of motivation (Baltes 1997; Heckhausen 1999; Salmela Aro 2009), they had yet to achieve the developmental tasks of partnership and

parenthood. Individuals in this class had a relatively low level of education, and they were either working or unemployed. They were also mostly unmarried or had entered into partnerships late and had no children. The individuals in this class could be said to be in a state of suspension or in a moratorium concerning both their career and family transitions i.e. experiencing a kind of 'extended adolescence' (Arnett 2000). The difficulties of labour market entry, among those still living in the Northern Finland rural areas, may have also accounted for this group being the largest in this cohort (Ek et al 2004).

The second largest latent class, 'Highly-educated without family', was similarly taking time to achieve the adult role statuses of career and family, but this time from a much stronger and more demanding education base. Many of these individuals at age ages of 25–26 were still studying, or just entering working life, usually following higher education. They were unmarried and had no children, focusing instead on achieving competence at the expense perhaps of relatedness, at least for the time being. This class aligns with the 'educated singles' cluster identified by Osgood et al (2005) and Arnett's 'emerging adults' (Arnett 2000).

The 'Traditional work and family' class, combining work and family, included approximately one-fifth of all the participants in the study. Most were also married and had children. They also had a relatively low level of education. Their transitions had occurred early and followed the traditional order of home, to a partnership, to family. The fact that less than a quarter of the sample were in this class, reflects the general extension of the transition to adulthood. Such (new) normative patterns are of course subject to change, through influences from the wider socio-historical context in which these young people were located, but the trend seems likely to continue (Elder, Johnson and Crosnoe 2004).

At just over one tenth of the sample, the 'Highly-educated with family' group, was the smallest latent class. Those in it had high levels of education, and they were either students or had embarked on working life. However, they were also married, and a number of them had children, showing success in combining both career and family. They had entered into a steady partnership relatively early, and had worked for a few years before having children. In a sense, of all the latent classes, they were closest to achieving their developmental tasks in terms of the life-span model of motivation.

In accordance with our hypotheses about the antecedents of role statuses, those from low socio-economic backgrounds were more likely to be in non-career orientated classes ('Slow starters'/'Traditional work and family') than in career-orientated ones ('Highly-educated without/with family'). Gender also appeared to play a critical role: females were more likely to be in the classes that had achieved family formation ('Traditional work and family' and 'Highly-educated with family') than in the 'Highly-educated without family' or 'Slow starters' classes compared to men. In addition, those who lived in an intact family or had better grades at school, were more likely to be in relatively advantaged classes, i.e. were career-orientated, or to have achieved family formation, or both.

Turning finally to the hypothesized wellbeing outcomes of the different role configurations, again in line with the life-span model of motivation, the results showed that the 'Highly-educated with family' class enjoyed the highest level of wellbeing, while 'Slow starters' had the lowest. 'Slow starters' compared to the 'Highly-educated without family' group had a significantly higher likelihood of being diagnosed with a psychiatric disorder by age 27 and a lower likelihood of reporting good health. In contrast, the 'Traditional work and family' group had significantly lower likelihood of these outcomes and greater likelihood of life satisfaction. Thus, achievement of the developmental tasks predicts higher levels of psychosocial wellbeing, compared with having still to achieve them (cf. Schulenberg et al 2004).

These findings need to be appraised against the strengths and limitations of the Northern Finland birth cohort study of the role statuses of young adults**.** The representative sample and prospective nature of the study and the use of register data avoided recall bias in measuring wellbeing outcomes at different ages. However it needs to be acknowledged that the sample was collected from a birth cohort born in Northern Finland where a relatively large proportion grew up and still lived in rural areas. Moreover, at age 31, the employment rate and education level of the cohort members

corresponded to that of Finns of the same age in the total population.

Further research based on role status configurations at later ages will be needed to confirm the findings unequivocally for transitions to adulthood in the life course as a whole. In the meantime we believe that our main conclusions relating to the role status of young adult Finns in their mid-20s at the end of the 1990s are robust. Successful tackling of developmental tasks is related to later psychological wellbeing including better health.Young adults in those role configurations who have achieved the developmental tasks associated with career and family, can thus expect better wellbeing than those who have yet to achieve them. The practical conclusion to draw is therefore, that continuing support for young people over the period of youth transitions will be of benefit both to them and, in their role as the next generation, to society as a whole.

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Role statuses and transitions in adolescence and young adulthood: reflections and implications

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Abstract

The reflections begin by considering the methodological challenges in undertaking comparative youth transition research as exemplified by the Special Section papers. The paper then moves to the findings of the analysis reported and their interpretation in context. The final sections discuss substantive and methodological issues raised by the research and finish with some conclusions about next steps in what needs to be a continuing comparative programme.

Keywords: longitudinal, comparative methodology, youth transitions, role statuses, latent classes

Previous papers in this Special Section have reported four independently designed and executed research projects on role status configurations and the 'latent classes' with which they can be identified in the United States (US) Great Britain (GB) and Finland. To detect secular changes in these latent classes and their antecedents and outcomes, two cohorts were compared - separated by a birth interval of about 12 years – in single longitudinal studies in the US and in GB and in two separate longitudinal studies in Finland. This discussion paper is devoted to the broader comparative aim of bringing the studies together in a single framework for examining differences and similarities, drawing some general conclusions and considering next steps.

Introduction

Comparative research involving surveys conducted in different countries is a major challenge for social and developmental scientists. Cross-sectional surveys, including those comprising the panoply of performance indicators that make up national 'league tables' like OECD's 'Programme for the International Assessment of Adult Competencies' (PIAAC) and 'Programme for International Student Assessment' *(*PISA), make heroic assumptions about 'commensurability' – what comparativists describe as the *problem of equivalence* (e.g. Sztompka 1990). In the case of developmental processes such as life course trajectories, and the transitions they comprise, such problems of equivalence are compounded. For as Kohn (1987) points out, an investigation of similarities and differences between, in his terms, 'countries as context', as in the studies reported here, confronts the confounding of explanatory variables of numerous kinds with the cross-national categorical variable 'country' or 'nation state'. A glance at some of the Vienna Centre comparative projects involving countries from both sides of the Iron Curtain in the 1980s, such as *Youth and New Technology* (Fürst-Dilic 1991) or more recent initiatives such as *Rural Young People in a Changing Europe* (Helve 2000), display in abundance the complexity of establishing equivalence. Even a two-country project, *Transition to Work in England and Germany,* based on equal samples of young people matched at four occupational levels and by gender, in towns matched on whether they had expanding or contracting labour markets, had difficulty in explaining differences in transition outcomes, such as self-assessed skills. Quantitative research alone could not resolve the comparative issues raised (Bynner and Heinz 1991).

The Special Section offers the opportunity to compare role statuses and their antecedents and outcomes cross-nationally, bringing to light a

number of analytic and interpretative challenges that need to be addressed. This means that in the case of the three countries for which research is reported - four if you treat northern Finland, with its relatively sparse population and Sámi (Lapp) minority population and traditions, as culturally distinct from the central part of Finland where Jyväskylä is located - analysis needs to embrace the multiple interactions between the explanatory variables of interest and the three value categorical variable, 'country'. It is worth the effort because of the insights that may be gained into the ways in which institutional arrangements in different national contexts affect entry into the role statuses, identities and later wellbeing of the young people exposed to them (Côté and Bynner 2008).

My discussion begins by considering these challenges, then the outcomes of the analyses reported and their interpretation in context, followed by the substantive and methodological issues raised by the research. The paper finishes with some conclusions about next steps in what needs to be a continuing comparative research programme. Many of my points pick up and develop, with a slightly different slant, those made in the excellent overview paper by John Schulenberg and Ingrid Schoon (Schulenberg and Schoon 2012) with which the Special Section begins.

Comparative challenges

According to Scheuch (1990), the aim of comparative research is to resolve the tension between the *'search for universals'* and the *'elucidation of uniqueness'*. The former seeks replication across countries of law-like relationships deducible from a general theory; the latter views each country holistically as a complex system of interacting individuals and institutions. Even if ostensibly the same measures, translated into the relevant language(s), are used in a comparative study - including identical survey questions, attitude scales and psychological tests - we still have to confront cultural differences. These reside not only in each country's institutions and the cultural assumptions on which they are based, but in the meaning of the words used to describe the constructs to which the measures refer (Bynner and Chisholm 1998). For example the term 'youth training' has quite different connotations in German-speaking countries, because of its association with apprenticeship, than it does in other European countries. In the US, the concept barely exists (Heinz 1999).

Moreover, countries are going through similar historical processes, not necessarily at the same time, in relation to the management of youth transitions. Finland, in common with other Nordic countries, experienced a major economic recession following the collapse of the Soviet Union in 1989-90. The effects of a 'lost generation' arising from the labour market consequences, are still felt today even if overlaid with the economic downturns encountered subsequently. The US and the GB experience of recession fluctuated since the 1970s, peaking in the early 1980s and early 1990s (plus early 2000 in the case of the US) and in company with Finland, reaching crisis point with the collapse of the banking system in 2008, from which the US has been recovering the most quickly. In March 2012, youth unemployment (15-25 year olds) in the US stood at 16% compared with 22% in the UK, 19% in Finland and 23% across the whole of the European Union.

It may be that such economically driven events are largely marginal in their effects on the key transitions to adulthood - at least in form, if not always in timing - and therefore unlikely to show marked differences between countries. As Kohn (1987) concludes, when differences do exist, explaining them requires insights that only socio-historical investigation outside the framework of quantitative enquiry can supply. The point is developed further by Ragin (1987) who argues for a *'dialogue'* between *'cases'* (individuals, regions, countries) and *'variables'*, rather than treat them in isolation.

In the case of the Special Section studies, analysis was based on longitudinal data relating to role statuses at (average) age 26, collected in continuing longitudinal surveys in the US and GB, for two cohorts separated by a 12-year birth interval (broadly defined as 1974-1986). In Finland, two different longitudinal surveys were used to cover the same two cohorts and broadly the same birth interval, one in northern Finland and the other in Jyväskylä in central Finland. Not surprisingly, as we extend across studies, the methodological challenges multiply - not only in relation to the different national contexts of the transitions the survey members were experiencing, but also in the details of survey design, including sample selection, the questions asked, and variables included. Thus,

across the studies, the samples at age 26 varied in size from around 8-10,000 in each cohort in GB and in the older cohort in Northern Finland, through 5-6000 (total) in the US, and 400 in the younger cohort in Jyväskylä. The British samples are nationally representative birth cohorts based on all births in a single week in 1958 and 1970; the US samples, selected from the repeated cohort study 'Monitoring the Future' and with comparable birth dates to the British samples, are nationally representative of 12th grade graduation year students leaving high school in 1976/77 and 1988/89; the Northern Finland sample comprises all births in the provinces of Oulou and Lapland in 1966, and the Jyväskylä sample, all 2nd grade students in a random sample of 12 secondary schools born in 1959 and first contacted at completion of grade 2 in 1968.

Notably the Jyväskylä survey, unlike the others, experienced relatively little attrition since the study began in 1968. In the case of the Northern Finland study at age 26, to make good missing data and non-response in some follow-ups, there was heavy reliance on the Finnish Government's Population Registers. Data collection methods vary across the studies between face-to-face and telephone interviews and self-completion questionnaires and tests, as described in the separate papers.

As Schulenberg and Schoon (2012) make clear, the coordinated programme of secondary analysis projects for which the four papers report the findings, was clearly not constructed from scratch as a comparative study. It was more a case of exploiting existing longitudinal data to test theoretical propositions about youth transitions in ongoing surveys covering much the same age group, at much the same time, and sharing much relevant data. (See Hofer and Piccini 2009 for a discussion of model analytic strategies for this kind of programme). Survey coverage similarly shared common features for most role statuses, but with some variations including, in the case of Northern Finland, no identifiable distinction between part-time and full-time employment nor between the statuses of 'single', 'cohabiting', 'divorced' and 'widowed'. In the case of the US, Monitoring the Future coverage did not include experiences post-16 of that section of the population who failed to graduate from high school, i.e. mainly those who had dropped out by Grade 12.

If data can be linked only weakly across studies to achieve comparability, as Schulenberg and Schoon (2012) point out, comparative analysis can still be pursued but more at the 'functional' rather than 'measurement' level. That is to say, the modelling approach adopted is, in terms of shared constructs that the measurement reflects in much the same way, rather than through precisely matched data. Thus comparable role statuses, as outcomes of transition through the period of adolescence and young adulthood up to the mid- to late-twenties, will be experienced in all countries and in all cohorts: 'being employed', 'being married or in a partnership', 'having one or more children', 'being in education', 'living in the parental home' or in a 'home of your own' – i.e. those role statuses identified as outcomes of the 'Big Five' youth transitions classified as such by Settersten (2007).

Similarly, the demographic predictors of these outcomes can be identified in much the same way across studies - most obviously those to do with gender, socio-economic status (US)/social class (GB) and education. But even here, questions of commensurability and meaning in relation to social class, and especially to educational pathways and levels, start to become apparent.

The predicted outcomes of role statuses in terms of subsequent psychological states – 'depressed', 'satisfied with life' - measured by tests or single item self-assessment scales at a variety of ages, become even more difficult to pin down, involving different variables in the different studies. But all reflect, in varying degrees, self-appraisals of 'positive' as opposed to 'negative' *affect* (Crawford and Henry 2004), and all studies share much the same measure of *life satisfaction*. In the case of the US and, to a much lesser extent, Jyväskylä, post-26 analysed outcomes extend to health-related behaviours such as smoking, drinking and drug-taking. But as such variables were not available or were not analysed in all studies, and because the focus is on comparative themes and conclusions, they are not pursued centrally here. Full details can be found in the preceding individual papers.

Traditionally, analysis of these different transitions and their role status outcomes would have been treated independently (e.g. as in analysis of youth transition outcomes at age 26 using the same cohort study data source as reported in Schoon et al 2012 (see Bynner et al 2002). Paralleling the case argued by Kohn (1987) for the

use of 'latent variables' as deployed in structural equation modelling to achieve commensurability in comparative research, the studies seek a deeper level of understanding by means of latent class analysis of inter-relationships between the different role statuses (e.g. married/employed). The aim is to identify latent classes or 'types' in terms of which all sample members can be (probabilistically) classified. Returns to be expected are first to increase the reliability of classification, and second, to optimise data reduction to reflect the patterning of key features of the statuses and their interactions in terms of a smaller number of fundamental 'types' (McCutcheon 1987).

Latent role statuses

Although in the analyses reported there are variations between the variables to which the latent class analysis is applied, and in the choices made against statistical criteria for the optimum number of classes to best represent the data, some clear patterns begin to emerge. Schulenberg and Schoon (2012) identify five types of role status configuration, linked to transition processes principally by the way the key longitudinal variable, education level, relates to them: 'highly educated' (in the US study, labelled 'students'); 'work orientation without children'; 'traditional families'; 'fragile families'; 'slow starters'.

The five latent classes to which these patterns relate include three that are broadly common to all three countries, including the two Finnish samples, 'work orientation without children' (described in the Jyväskylä study as 'Academic orientation with no children' and in the Northern Finnish study as 'higher education without family', 'traditional families' and 'slow starters'. The other two 'Educated students without children' and Fragile families are more country-specific. 'Educated students without children' is restricted to the US, reflecting the relatively large numbers still studying in the US at age 26 (e.g. in graduate schools) and the restriction of the analysis sample to high school graduates. The GB, Northern Finland and Jyväskylä studies included in their latent class analysis only the educational level achieved.

The selective nature of the US sample may also be the reason for the apparent anomaly of the lack of any evidence of a US 'fragile families' latent class, clearly identified in the GB sample. There were also early signs of fragile families in Jyväskylä described as 'precarious', that did not carry through to the last stage of the analysis - 5% of the sample compared with 13% in GB. It is reasonable to conclude that whereas the GB analysis split the family group into two, one of which comprised 'traditional families' (20%) and the other 'fragile families' (16%), the Jyväskylä analysis kept the two groups merged (35%). It may also be, as Räikkönen et al (2012) suggest, attributable to the substantially different sample sizes. There was not even indicative evidence of the fragile family latent class in Northern Finland, which may in part reflect the disproportionate loss of this group to the study through sample attrition. However in one form or another, the idea of families under economic stress and relatively marginalised, reflecting the increasing polarising pressures to which these cohorts were subjected, is a feature of all Western countries. Its prevalence, if not its existence at all, appears to be much lower in Finland, possibly because of the relatively strong labour market and substantial welfare benefits to which the Finnish population in both locations had access at the time. But we can never discount entirely the possibility of sample loss reducing the likelihood of identifying such a group.

Another anomaly of more substantive significance, relates to 'slow starters', identified in the US, GB and Northern Finland in the sense that in Finland, because of high levels of welfare provision, including accommodation support, staying at home with parents rather than living independently is not an attractive option. So in this case, the Finnish slow starters, though still to get fully established on a route to adulthood, at least had the benefit of a state-supported first major step towards it.

Finally and perhaps reassuringly, we see that although prevalence of some features of role status, such as higher qualifications, were evident in the more recent cohort, the distribution of latent class membership probabilities did not differ much between cohorts in the US and GB; nor did their relationships with the antecedent condition variables. It can be inferred therefore, that the transition processes leading to the classes are reasonably robust to cohort effects, at least in the US and GB samples. The Finnish cohorts, located in quite different surveys, and finding different numbers of latent classes, raise issues of comparability that cannot be so easily resolved. But there are some signs of mapping between them. For example the 'traditional work and family' and

(higher education-based) 'career and family' statuses, appeared quite strongly in both Jyväskylä and Northern Finland. However, in contrast with the US and GB cohort comparison where the latent class membership probabilities were quite similar, between the two Finnish cohorts the membership probabilities were quite different suggesting that their comparability should be treated cautiously.

Comparative meaning

The five latent role statuses are important to identify because they reflect in many respects the structure of adult society, which young people in all three countries were entering, and the distribution of the probabilities of individuals in each country of being located in each of them. I consider here the three that are common to all three countries, as identified in the previous section with fairly large latent class probabilities for each of them. They can be seen as lying at the *core* of shared transition experiences and the role statuses arising from them.

Work orientation without children, often following some experience of higher education reflects the attractions of, and extent of, prolonged single status as popularised in such US television series, as 'Friends'; not universally as suggested by Jeffrey Arnett's 'Emerging Adulthood' thesis (Arnett 2004), but largely restricted to just one of the five groups. This status reflects the rising aspirations and achievements of a section of the generation that had access to further and higher education on a scale that was unheard of in their parents' generation. Although their relative affluence, individualistic values, and relatively high life satisfaction have some attraction, their resistance to the long-term commitments of partnership and parenthood, point to some of the undoubted stresses on identity development that such continual postponement of commitment will inevitably represent. The association of this lifestyle with a relatively high drinking level, though marginally less in the British sample than that of the 'highly educated without children group', points to its hedonistic aspects but also perhaps to incipient strains connected with it, that are also beginning to show.

For example, young women, who in company with young men over the last twenty years, have extended continually the transition to parenthood, may have to confront, regardless of their personal goals, the biological obstacle of losing the opportunity to have children. Young men may not be faced with this quandary on quite the same timescale, but nevertheless their reluctance to give up a lifestyle that in so many respects is glamorous and carefree without the costs and commitment associated with marriage and family may prompt them ultimately to lose interest. Arnett suggests that by the 30s, i.e. four years later than the groups with which we are concerned here, pressures begin to build towards matrimony and parenthood, but it is still the case that in the 1958 cohort, which formed the basis of the GB study, 42% of the women with degrees had still to become parents by the age of 37 (Bynner and Parsons 2002).

Traditional families, is interesting and challenging in a different way. It reflects the relatively early move from education into work, with partnership and parenthood following naturally as the means by which independence from the family of origin is achieved. Many of these young adults in the GB and Finnish contexts, if not to the same extent in the US context, would have reached the status via vocational rather than academic courses. Their vulnerability is that which GB politicians describe as the 'squeezed middle'. That is to say, they are the group who, at times of recession, may bear the brunt of austerity. Not only are they more at risk of redundancy, but their income level may remove them from the welfare provisions for which the really vulnerable, such as the fragile families, are eligible.

The *slow starter* category comprises individuals whose family formation is not yet on the horizon; nor has the pathway towards it properly begun. Financial independence is still some way off and the tendency to stay on in the parental home or move in and out of it (mainly young men) as in the US and GB, or in Finland to take up the opportunity of state supported housing, is common. Unlike the first group, modest qualifications and slow progress in the labour market are also features, pointing perhaps to a less educated and less attractive form of 'emerging adulthood'. The difficulty for this group, as the Finnish welfare state recognises, is that family comforts become addictive. And even when the break with the parents does occur, it may be temporary, at least for young men who, compared with young women, tend to be more limited in their capability for undertaking household tasks and exercising life-management skills (Helve

and Bynner 1996). The findings suggest that in the mid-20s, psychological stress associated with a frustrated lifestyle is beginning to be evident. As the status extends to the 30s and especially the 40s we might expect a more pronounced picture of reduced psychological wellbeing – 'bamboccione' as Italians describe the extremes of male stay-at-home helplessness, leading ultimately in some cases to forced eviction!

All the classes were linked in various ways, within each study, to measures of wellbeing, either at the time at which the role statuses were established, or later on in life, using the longitudinal data relating to measures of psychological states, such as depression and life satisfaction. The common picture that emerges is of relatively little variation across the latent classes, challenging the hypothesis that completion of multiple transitions is a source of stress (Schulenberg and Maggs 2002) as Maggs et al (2012) point out. Insofar as negative affect (depressive symptoms and low life satisfaction) is evident at all, it is in the most vulnerable group, 'fragile families' and least common for the 'work-oriented without children' and 'traditional families' groups and, in the case of the US, the 'highly educated (student)' group proceeding to post-graduate qualifications. Slow starters tend to be located towards the bottom end of the distribution, reflecting perhaps as Salmelo-Aro et al (2012) suggest, dissatisfaction with the status of having still to complete the key 'developmental tasks' of partnership leading to parenthood. Another significant feature is the general shift towards more negative affect - especially as reflected in depressive symptoms - in the more recent cohort in all countries. Although life satisfaction also reduced across cohorts, that shift was much weaker.

Contextualising the latent classes

How can we best characterise these role status configurations, contextualising them in their own national contexts historically and culturally, and relate them to theories concerning the transition to adulthood in contemporary conditions and to adult functioning more generally? The nature of transition in three countries is the first issue to consider.

As GB industrialised first, it is perhaps not surprising that the cultural assumptions underlying GB youth transitions reside in residual Victorian beliefs about the role of education in society, i.e. supporting an ability hierarchy that maps into the occupational layers of the labour market, with professional and managerial occupations, for which the highest qualifications are needed, residing at the top. For the others, the routes are seen as primarily 'vocational' – leading to either skilled non-manual or skilled manual occupations - and until relatively recently, a large semi-skilled or unskilled group working in manufacturing or in such sectors as the building trade, for which no qualifications were needed.

Unskilled work declined steadily from the late 1970s through the 1980s (the period of cohort comparison) and has continued to do so ever since. Its replacement has come largely from the marginalised group embracing the adult members of fragile families, with a poor labour market record rooted in poor educational achievement, and the ubiquitous policy label describing their status when still teenagers as NEET (Not in Education, Employment or Training) (Bynner and Parsons 2002). For men, the adult record was likely to comprise casual work interspersed with unemployment. For women, it often included early entry to parenthood. Although aspirations rose in all sectors, the expectations going with them were still fundamentally that white-collar jobs were for the more educated and middle class groups. For the others, expectations lay in gaining skills through vocational pathways in further education colleges or via apprenticeships, or learning what they needed to know to do the job, on the job itself. Unlike the US and Finland, home ownership, or aspiring to it, was also a strong component of all GB latent class membership, many of the work orientation without children and traditional family groups were already property owners.

The US is not hugely different, except that the great majority of all young people have expected, for a much longer time, to progress post-18 to higher education. The goal is to make the key transition from high school by moving either direct to university or via two-year college, which may also offer a vocational preparation programme. Those who do not pursue this track, i.e. fail to graduate from high school by leaving before the 12th grade, are variously described as 'non-college-bound youth', 'sub-baccalaureate' or more simply, 'dropouts' (Norton Grubb 1999). However, reinforced by such provisions for war veterans as

the post-World War II 'GI Bill' offering free access to higher education, and perhaps a stronger individualistic 'can-do' ethos than in other countries, the aspiration to go to college remains. And for those with very poor educational achievement behind them, doing evening classes, to take the General Education Development (GED) tests in place of high school graduation, is always a possibility.

The numbers involved in higher education at the time of the study were therefore substantially higher in the US than in GB and Finland. But despite the very high entry into some form of post-18 college education, dropout at this stage was also considerable. Social class is much less in evidence as an explanation than in GB, tending to be replaced by 'race' i.e. the black ethnic minority and immigrant population; though again, long-term education goals still tend to be retained.

In Finland, much regarded for its world-beating levels of educational achievement, (e.g. the OECD Programme for International Student Assessment [PISA] survey), we see another transition variation. This time, there was a clear division at 16 between general educational (academic) high school (gymnasium) routes to higher education and the professions, versus vocational school of a very high standard to skilled occupations, which all other young people not going to gymnasium were likely to enter; less than 2% fail to do so. A place in a polytechnic - the more technically-oriented counterpart to university - may follow. The expectation is that all except a negligible minority will gain the relevant qualifications before leaving. The other main feature of the Finnish system, as indicated earlier, is the strong welfare provisions to support the transition from family home to adult independence.

The most striking contextual change for youth transitions in all western industrialised countries, is that following the labour market transformation of the 1970s and 80s (Rifkin 1995) the structurally determined 'standard' routes to positions in the adult labour market - 'like father like son', 'like mother like daughter' - gave way to a much bigger role for personal agency and resources – *'individualization'* subject to *risk* (e.g. Beck 1992; Giddens 1991). However in practice, then and now, parental support is likely to be needed for some time to establish the personal autonomy that is sought. It is not surprising therefore that as Schulenberg and Schoon (2012) point out, although there has been a clear shift in the way pathways to adulthood are shaped, structural constraints remain very much part of them, i.e. 'bounded agency', the term used by Shanahan (2000) or 'structured individualization' as Furlong and Cartmel (1997) and Roberts, Clark and Wallace (1994) describe it.

Such constraints operate at all levels of the labour market to which different levels of education give access, but are felt most strongly at the bottom levels, where educational achievement on the part of job applicants is likely to be weakest. The lack of personal and family resources to bolster progress in education and the labour market tends to close down access to opportunity, and in the long term, the prospect of long-term social exclusion strengthens. Nevertheless, aspirations do not remain unresponsive to strong motivational advice and opportunity. The idea, that the foundations of pathways to adulthood are firmly fixed in the early years, fails to recognise the potential fluidity of experience in keeping open the possibilities of movement from a disadvantaged track (fragile families and slow starters) to a relatively advantaged one.

These effects can be seen in the four studies, especially through the role that education played in relation to each of the five classes. 'Work orientation without children' and 'highly educated' were the *resource rich,* with access to the highest occupational levels that good qualifications brings. For them, individualization had real meaning. 'Traditional families' and 'slow starters' had more modest educational accomplishments, typically based in Finland and GB, on vocational education and training (VET). Their opportunities for identity 'exploration' (Arnett 2004) were more restricted and in the case of traditional families, their freedom was further constrained by family responsibilities and associated costs. The most limited opportunities were with the 'fragile families', lacking the human capital bound up with qualifi-cations to improve life chances, and faced with family pressures that probably gave their top priority to 'making ends meet'.

Whether these characterisations of our latent classes identify them as precursors of the grim 30/30/40 society that Hutton (1995) predicts (30% excluded; 30% insecure; 40% affluent), is an open question; but they certainly resonate with parts of it. As considered in the next section, more research along the same lines is needed to find out.

Substantive and methodological considerations

The latent classes identified in the four studies reflect of course, not just role statuses at age 26 and the transitions that led to them, but trajectories established through the whole of the life course. The lives in which such trajectories are embedded, may have been subject to unresolved conflicts and strains and the building of negative 'affect' in which psychiatric disorders are founded. This makes the point that the slice of life taken at age 25 to 27 and implicitly the period leading to it- is just that: a relatively small but highly significant part of a stage of the life course, that may involve numerous 'false starts, labour market test runs, cyclical revolving door trajectories between education, training and employment over an extended period of time' (Bynner and Chisholm 1998). The outcome statuses are unlikely to stabilise fully much before the mid-thirties. All model fitting, involves to a certain extent, 'capitalisation on chance', cautioning against placing too much trust in cross-sample model stability. There is also a risk in attaching undue theoretical significance to the role status classes – a reflection of the danger of 'reification', which many writers about latent class analysis warn against (e.g. Sandefur et al 2005). Within these limitations, on the positive track, we may expect partnership, family and employment statuses and on the negative track, the possibility of a set of mentally disabling conditions rooted in economic disadvantage and earlier maladjustment.

The process can be seen as a virtuous cycle to wellbeing and fulfilment, or a vicious cycle downwards, often accompanied by drug abuse and crime, towards the fringes of mainstream society and long-term exclusion.

Despite the effects of social stratification from an early stage on the basis of family class and circumstances, trajectories start with a degree of homogeneity as structured by the statutory requirements of the education system. Differentiation is mainly evident from 16 onwards in Finland and GB and mainly from 18 in the US. Schulenberg and Schoon (2012) use the idea of 'fanning out' of trajectories, into the various occupational and domestic family situations and geographical locations in which adulthood is located. This is the so called 'Matthew effect', whereby 'the rich get richer and the poor get poorer' (Merton 1968). And its existence underlines the potential complexity of the interactions between the developmental processes involved.

For those young people continuing to higher education, the prospect of an established career and good earnings is some way off. It is therefore all the more surprising that a small but significant minority, driven by the biological need to achieve this 'developmental task', manage, and appear to gain psychologically from the experience, compared with those who instead pursue an occupational career without children, at least initially. Clearly, the latent role statuses tap into these developmental processes. But to understand them more fully, the longitudinal features of the data such as job, housing, relationship histories and so on need to be exploited, where available, to reveal the dynamics of development, as well as its outcomes. The idea of slow and, by implication, fast tracks, implies a life course process towards an outcome role status that has yet to be completed, or has completed perhaps too quickly. But as Schulenberg and Schoon point out (2012), this conceptualisation tends to downplay the continuation of and complexity, of what are sometimes, temporary, transient or intermediate staging posts on the route to stability that not all longitudinal data sets are able to capture.

Complementing the cross-sectional features of role configurations analysed by latent class methods, latent trajectory analysis, available for longitudinal data but rarely reported (Muthén and Muthén 2007), supplies a means of doing this. It is with this suggestion in mind that the authors of the research presented in this Special Section need to consider taking previous studies to a further stage in a more integrated research design.

Such a design would still be constructed post-hoc, but have comparative study built into it from the outset. The design would be based ideally on a harmonised matched dataset, drawing on longitudinal studies that have comparable designs in all countries e.g. the cross-national equivalent file (CNEF) compiled from harmonized household panel data in first 5 and now 8 countries (Burkhauser and Lillard 2007). The long term longitudinal cohort studies deliver the antecedent conditions of family, economic circumstances and educational achievement, from which the role statuses at age 26 arise. Comparing studies against the quite different national contexts of the US, GB and Finland, and

perhaps more countries, for two cohorts across a 12-year interval makes good sense. But perhaps the age of 30 or 35 rather than, or in addition to, age 26 for comparison, would offer the prospect of strengthening further the insights already gained into the impact of labour market transformation on young people's transitions and role statuses. It would also give some leverage on the 30/30/40 hypothesis, i.e. that the gap between cohorts should be getting wider with age.

The possibility of matching individuals between datasets on demographic characteristics such as gender, socio-economic status and education level, should also be considered as another option, i.e. to avoid the confounding of statistical significance with sample size, and to strengthen the analysis of interaction. That is to say, each study sample would be used as a sampling frame for what amounts to a quasi-experimental design (Bynner and Heinz 1991; Shadish, Cook and Campbell 2001). The measurement could also be matched more precisely across cohorts in terms of content and timing, and robustness. It could also be strengthened further, by taking account of measures prior to role status achievement at age 26 as well as after it, i.e. by conditioning out earlier psychological states and wellbeing measures, from the effect on later wellbeing of role status itself.

Finally there is a need to contextualise the latent class models in terms of the history of which the particular transition processes under investigation are a living part (e.g. see Wadsworth and Bynner 2011), and to uncover the role of cultural meanings and assumptions in them. Such a programme involves quantitative and qualitative enquiry through ethnographic study, anthropology and also cultural history.

Ascending and descending methodology

Grootings (1983) makes the point that comparative research cannot sensibly be seen as simply a matter of comparing nation states comprising individuals, their families, their communities and the society of which they are a part. The exercise is fundamentally a study of the interactions between individual agency, social relations and cultural location, with society as a whole. In this scenario, the unit of analysis therefore should properly be defined by the interaction between the individual and the society of which they are a member, i.e. as it is effectively in the four studies examined here.

Trying to understand the significance of such interactions in the development of life course trajectories, including their transitions and their outcomes, forcefully reminds us of the need for methodology equipped to handle this, of which latent class and latent trajectory analysis clearly have a central part to play both inductively – '*ascending methodology'* and deductively '*descending methodology*'- as Van Meter (1990) describes the distinction. Descending methodology derives, exhaustively, sub-classes of a population from variable-based splits, such as by social class and gender, of a representative sample. In contrast, ascending methodology derives such groups from their shared characteristics i.e. capitalising on their inter-relationships, to construct, sometimes overlapping, populations of scientific significance from the bottom up, i.e. 'fuzzy sets' (Ragin 2000). Such a strategy sees levels of analysis (not synonymous with aggregation) as lying at the interface between society and developmental science, extending Ragin's 'dialogue' between '*cases* and *variables*' (Ragin 1987) to '*levels of analysis'* as well.

Conclusion

The strategies suggested offer much promise, for using the data sets and methods deployed in the Special Section projects, for improving understanding of youth transitions in a changing socio-historical context in each of the three countries and cross-nationally. They point to the need for unlocking data from a, perhaps at times, too tight adherence to hypothetico-deductive reasoning, at the expense of new insights to be gained from observation of the life course as it unfolds. Ascending methodology builds on qualitative explorations of the possibility of new configurations between statuses and transition patterns that are given statistical realisation from the communalities among individuals through the characteristics that they share. The aim will be, through such a dialogue between *cases* and *variables* and *levels of analysis*, to reshape continually existing constructs and structural models of their relationships, on which descending methodology, including model fitting and hypothesis testing, can then be put to work.

The present studies make an important contribution to scientific understanding in a particular way. As Schulenberg and Schoon point out (2012), most past studies have concentrated on only one type of transition at a time, such as the transition from education to employment, or the transition to parenthood. There is a pressing need to move away from studying these different youth transitions in isolation. For as Schulenberg and Schoon' put it ..."Failure to recognize their interdependence constitutes a key gap in the literature, and addressing this gap is at the core of the four studies in this Special Section, conceptually and methodologically." The studies' alternative strategy favours the more *holistic* approach of capitalising on the interdependency to identify, by means of latent class analysis of age 26 transition outcomes, key components of the processes through which this stage of the life course is constructed.

The research teams are therefore to be commended in helping to open the door to the much richer programme of comparative research that should follow. The benefits that ensue are likely to be considerable not only scientifically, but in pointing to, and clarifying more effectively, the strengths and weaknesses in national systems for managing youth transitions. The insights thus gained will help supply the means of both strengthening the positive pathways to fulfilling outcomes in adult life, and protecting young people against the negative ones. The US, GB and Finland projects reported in the Special Section are a major step on the way.

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Father involvement, family poverty and adversity, and young children's behaviour in stable resident two-parent families

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Abstract

Using data from the first two data collection points (age 9 months and 3 years, respectively) of the UK's Millennium Cohort Study (MCS), we explored the association between father involvement and young children's emotional and behavioural adjustment in stable resident two-parent families (N = 9,498). We also investigated the role of father involvement at age 9 months in moderating the association between contextual risk (family-level adverse life events and family-level socio-economic disadvantage) and young children's adjustment at age 3 years. We found that early father involvement was negatively associated with later emotional symptoms, but no other problem behaviour, and dampened the association of socio-economic disadvantage, but not adverse life events, with emotional symptoms. Our findings highlighted the importance of considering specificity at the level of both child outcome and contextual risk when modelling father involvement effects.

Keywords: child behaviour; cross-lags; fathers; MCS; parenting; temperament

Introduction

The research on the association between father involvement in parenting and child behaviour has grown substantially in recent years (Barber, Stolz and Olsen 2005; Davidov and Grusec 2006; Enns, Cox and Clara 2002; Denham et al 2000; Galambos, Barker and Almeida 2003). This research usually follows the standard family environment model (Burt et al 2008, for a recent review), which assumes that the type and the quality of the parent-child interaction affect child outcomes, even after taking into account the role of children's characteristics and behaviours in influencing family processes (Coley, Votruba-Drzal and Schindler 2008; Jaffee et al 2004). Most of this research is based on USA samples, and explores associations between father involvement and school age children's outcomes. We carried out this study, using longitudinal data from the first two sweeps (age 9 months and 3 years, respectively) of the UK's Millennium Cohort Study (MCS), to investigate the association between fathers' involvement and young children's emotional and behavioural adjustment. We also sought to establish if father involvement moderates the effect of family contextual risk (family-level adverse life events and family socio-economic disadvantage) on young children's emotional and behavioural adjustment. Both these types of contextual risk are strongly associated with child outcomes in the short as well as the long-term (Amone-P'Olak et al 2009; Flouri, Tzavidis and Kallis 2010; Schoon et al 2002; Tiet et al 1998). Although there is evidence for the role of high father involvement in buffering the effect of psychological risk on young children's emotional and behavioural adjustment (Chang, Halpern and Kaufman 2007), its role as a factor promoting better than expected emotional and behavioural outcomes in young children exposed to high levels

of contextual risk is not well-established. Previous work with MCS (Malmberg and Flouri 2011) has shown that, among preschool children, the effect of socio-economic disadvantage on the emotional ('internalizing') and behavioural ('externalizing' or 'acting out') problems of children was not moderated by the quality of the father-child relationship, a correlate of father involvement. Although the quality of the mother-child rather than the father-child relationship moderated the effect of socio-economic disadvantage (although only on emotional problems), neither moderated the effect of family adversity on acting out behaviour. However, despite being closely inter-related, father's involvement (usually measured as father's time spent in direct caregiving activities) and quality of the father-child relationship are distinct constructs (Pleck 2007), with studies suggesting that the former usually predicts the latter, especially in toddlerhood (Kwon, Jeon, Lewsader and Elicker 2012). Because father involvement and its 'effects' on children may vary in stable and changing families (Carlson 2006), in this study we focused on young children in stable resident two-parent families, that is, two-parent families in which both parents were co-resident with the child at both MCS sweeps.

Analytic approach

We solved the selection problem that moderation by family structure would cause if we were to simultaneously model changes in family structure and father involvement, by limiting our analysis to stable resident two-parent families where both partners responded to Sweep 2 (MCS2). We fitted a series of structural equation models (SEMs) to meet our research objectives. In our SEMs we allowed the involvement of the father and the adjustment of the child at MCS2 to be predicted by their respective Sweep 1 (MCS1) prodromes, that is, MCS1 father involvement and MCS1 temperament, respectively. We also allowed cross-lagged effects between father involvement and child behaviour (i.e. temperament at MCS1 and adjustment at MCS2), and we adjusted for known covariates of both child behaviour and father involvement (Cabrera et al 2000). In particular, we controlled for quality of the inter-parental relationship (Sturge-Apple, Davies and Cummings 2006), maternal parenting (Feldman and Klein 2003), father's and mother's depressed mood (Klein et al 2005) and ethnicity (Deater-Deckard, Atzaba-Poria and Pike 2004), father's social class (Coley and Hernandez 2006) and father's biological relation to the child (Hofferth and Anderson 2003), as well as child's age (Tamis-LeMonda, Kahana-Kalman and Yoshikawa 2009) and sex (Lytton and Romney 1991). As both parenting and child behaviour are related to both family adversity (Dunn et al 2000; Grant et al 2006) and family-level socio-economic disadvantage (McLoyd 1998), each of these two types of contextual risk was modelled to predict both father's parenting and child behaviour. Good fit for our SEMs was indicated by values below .05 on the Root Mean Square Error of Approximation (RMSEA) and the Standardised Root Mean Square Residual (SRMR), and above .95 on the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI). Although chi-square is sensitive to sample size and model complexity (Browne and Cudeck 1993), we also report chi-square values.

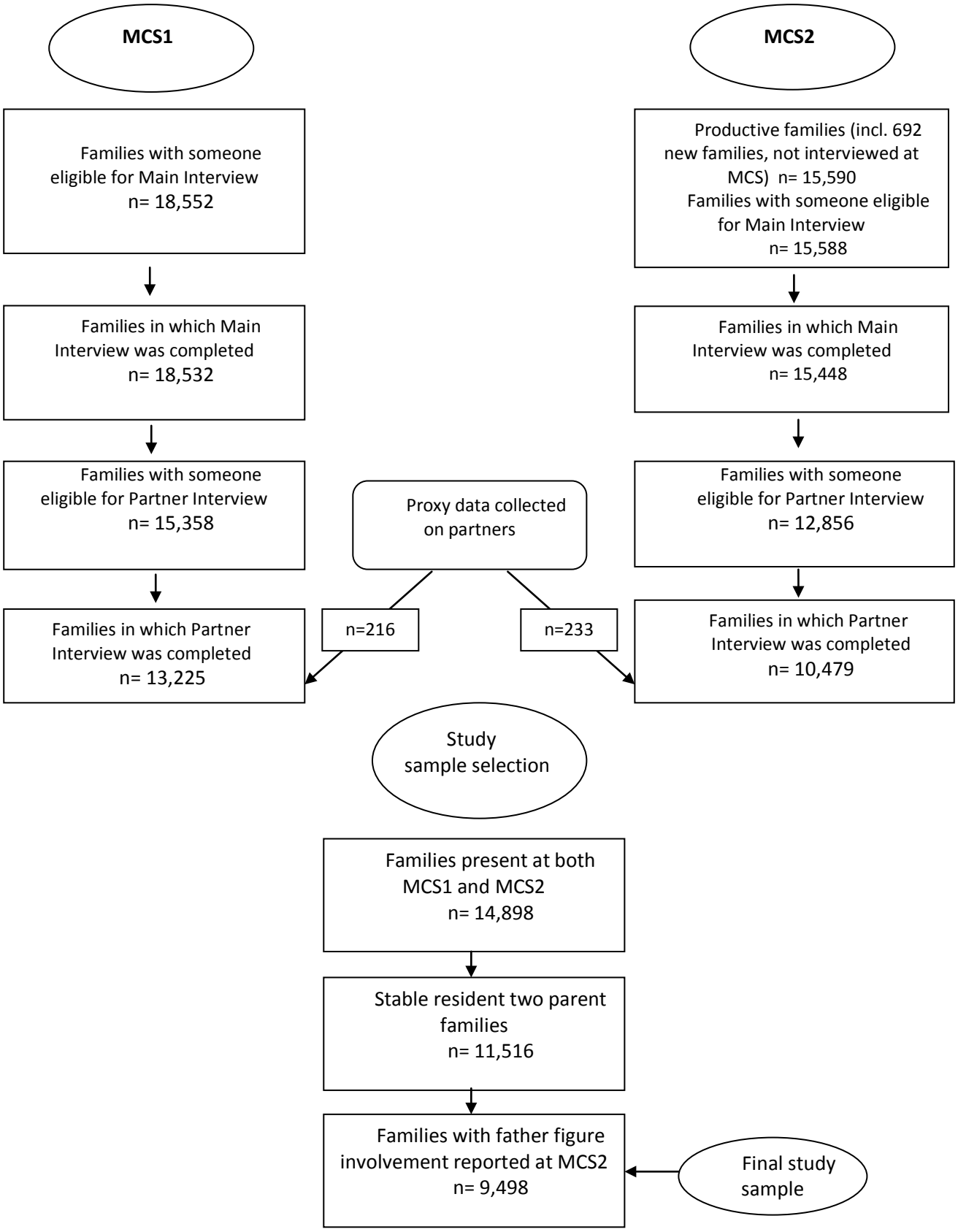
Method

Participants and procedure

We used data from the first two sweeps of MCS, a longitudinal survey drawing its sample population from all live births in the UK over 12 months, beginning on 1 September 2000 in England and Wales. The sample was drawn three months later in Scotland and Northern Ireland (Plewis 2007). MCS1 took place when the children were aged 9 months, and MCS2 took place when the children were 3 years of age. The MCS sample was selected from a random sample of electoral wards, disproportionately stratified to ensure adequate representation of all four UK countries, deprived areas and areas in England with high concentrations of ethnic minority families. In all, there were nine strata, i.e. England-advantaged, England-disadvantaged, England-ethnic, Wales-advantaged, Wales-disadvantaged, Scotland-advantaged, Scotland-disadvantaged, Northern Ireland-advantaged, and Northern Ireland-disadvantaged.

Unlike many child development studies, MCS interviewed fathers/mother's partners if they were resident in the child's household. In general, any parents (including step, foster and adoptive) of cohort members and partners (including same-sex partners) of parents were eligible for interview. If there were no parents in the household, the main carer of the cohort member (and their partner) was selected for interview. The flowchart in Figure 1 shows how the final study sample was achieved. It

Figure 1. Sample selection



gives the number, in each sweep, of main and partner interviews. The vast majority of the main respondents were female. At MCS1 there were 28 male main respondents, all natural fathers, 18 of whom were lone fathers. At MCS2 the main respondents were again overwhelmingly female, but the number of them who were not natural mothers increased from 9 at MCS1 to 55. The number of male main respondents also increased from 28 at MCS1 to 187 (two of whom were not natural fathers). Part of this change was an increase of lone-father informants (to 62), but it was mostly due to a rise in the number of two-parent families in which the main response at MCS2 was collected from the father (Hansen 2010). Our initial study sample was all families that were present at both MCS1 and MCS2 (N = 14,898). If MCS children were twins or triplets, the child coded as cohort member ''a'' was included in our sample. Of these 14,898 families, 11,516 were stable resident two-parent families. This number includes same sex partnerships (2 families in total). We further reduced this study sample to those families about whom father figure (henceforth 'father') involvement was reported in the Partner Interview module at MCS2 (N = 9,498, our final study sample).

Measures

The majority of our measures were based on the data provided by the main respondent (who was, as explained above, usually the mother). All father-related variables (i.e. involvement, depressed mood, social class, ethnicity) were father-reported for resident fathers in MCS. For one measure, adverse life events, we used a combination of responses, and we describe this measure in detail below.

Children's emotional and behavioural adjustment was measured at MCS2 with the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997). The SDQ measures four difficulties, i.e. hyperactivity, emotional symptoms, conduct problems, and peer problems (www.sdqinfo.org). Each difficulty is measured with 5 items on 3-point scales (0 = not true, 1 = somewhat true, and 2 = certainly true). Sample items are: 'Often complains of headaches, stomach-aches or sickness' (emotional symptoms), 'Often has temper tantrums or hot tempers' (conduct problems), 'Rather solitary, tends to play alone' (peer problems), and 'Constantly fidgeting or squirming' (hyperactivity). Cronbach's alpha was $\alpha = .56$, $\alpha = .67$, $\alpha = .48$, and $\alpha = .71$, respectively.

Temperament was assessed at MCS1 with fourteen items from the Carey Infant Temperament Scale (Carey and McDevitt 1978). The items included in MCS index three dimensions of the baby's temperament, namely mood (measured with five items such as 'is pleasant'), adaptability (measured with five items such as 'is rarely or almost never wary of strangers') and regularity or rhythmicity (measured with four items such as 'gets sleepy at about the same time'). Cronbach's alpha was $\alpha = .55$, $\alpha = .68$, and $\alpha = .72$, respectively.

Father involvement was measured at MCS1 and MCS2. Father involvement at MCS1 was measured by items asking fathers how often they look after the baby on their own, change nappies, feed the baby, and get up at night. At MCS2 the variables assessing father involvement were: frequency of looking after the child on own, reading to the child, playing with the child, and putting the child to bed. All items were measured on six-point scales (1 = never to 6 = more than once a day).

Family-level adverse life events ('family adversity') between the child's birth and MCS1 was measured, as in Flouri et al (2010), with eight events from Tiet et al's (1998) Adverse Life Events Scale (ALES). The ALES is composed of 25 possible events over which children had little or no control, and is a modification of the Life Events Checklist (Coddington 1972), a psychometrically sound (Gray et al 2004) measure of exposure to potentially traumatic events. The ALES measures exposure to adverse life events at both family and child levels. In view of this study's research aims, the eight events used measured only family-level risk, were developmentally appropriate, and could be reconstructed from the MCS data. These items were: 'family member died' (0.0% of study sample N = 9,498), 'family member was seriously injured' (7.3%), 'negative change in parent's financial situation' (76.2%), 'family member had mental/emotional problem' (41.9%), 'family moved' (9.3%), 'got a new brother or sister' (0.04%), 'one of the parents went to jail' (0.01%) and 'parents separated' (0.02%) . Six of these eight items were based on maternal reports. One ('family member had mental/emotional problem') used responses from both mother and father, and one ('one of the parents went to jail') was recorded

as 'yes' (= 1) if a proxy interview had to be carried out with a parent because the other one was in jail.

Family socio-economic disadvantage at MCS1 was measured with a 5-item summative index of overcrowding, lack of home ownership, receipt of income support, income poverty (below the poverty line) and lack of access to a car or van (Malmberg and Flouri 2011).

The *child-level covariates*, were age and sex, measured at MCS1. *The family-level covariates* were biological relation of the child to the father, maternal parenting, maternal and paternal depressed mood and ethnicity, and paternal social class - also all measured at Sweep 1. In view of the evidence for the strong association between father's involvement and concurrent quality of the marital/partner relationship, partner relationship quality as reported by both mothers and fathers was measured at both sweeps. All family-level covariates were assessed with well-validated measures. Mother's parenting was measured with four 5-point scales (with higher scores indicating attitudes reflecting poor quality child caretaking), originally derived by the European Longitudinal Study of Pregnancy and Childhood, and used in other UK longitudinal studies (such as the Avon Longitudinal Study of Parents and Children). Mothers were asked to indicate to what extent they agreed with statements such as 'it is important to develop a regular pattern of feeding and sleeping with a baby'. Maternal and paternal depressed mood was assessed in MCS1 with nine items from the 24-item Malaise Inventory (Rutter, Tizard and Whitmore 1970), a reliable and valid measure (Rodgers et al 1999) of psychological distress. The Malaise symptoms are positive responses to items such as 'feel miserable and depressed' and 'get annoyed by people'. Paternal social class was measured using the 7-point National Statistics Socio-economic Classification[i], which ranges from 'routine' to 'high managerial'/'professional'. Partner relationship quality was measured at both sweeps with seven items from the Golombok Rust Inventory of Marital State (Rust et al 1990).

Results

We first tested whether stable resident two-parent families with fathers present but not reporting father involvement at MCS2 were different (at $p < .001$) in any way to those in the final study sample (N = 9,498) on our covariates. Non-response for father involvement at MCS2 was systematic[ii]. In particular, lower social class and ethnic minority fathers/partners were more likely to miss data on father involvement at MCS2, as were fathers/partners reporting lower levels of father involvement at MCS1. Main respondents in the families in which there were no father involvement data at MCS2 tended to also be ethnic minority, have lower qualifications, report lower partner relationship quality at both sweeps , and endorse attitudes reflecting poor quality child caretaking. These families tended to also score higher on our index of family socio-economic disadvantage (results available from the authors). As regards any differences in the emotional and behavioural adjustment in the children of these two groups of families, there were none in emotional symptoms, peer problems, conduct problems, or hyperactivity (ps > .05). However, children in stable resident two-parent families with data on father involvement at MCS2 tended ($p = .05$) to score lower on total difficulties (i.e. the sum of the scores on the four SDQ difficulties) than children in stable resident two-parent families with no data on father involvement at MCS2 (i.e. in essence, as we explained, children in stable resident two-parent families with fathers present but not responding to the second MCS sweep). They also scored higher on adaptability and regularity (ps < .001), although not on mood ($p > .05$).

Missingness on the study variables in the final study sample of 9,498 families was negligible (4.7%), although it ranged from 0 to 27.9% across variables. Therefore, we generated five multiple imputed datasets in SPSS 18 using the Markov Chain Monte Carlo (MCMC) procedure, which gave a relative efficiency of around 98% (Little and Rubin 2002). In the imputation we included all the child, family and area study variables as predictor and predicted variables in a fully inclusive model (Collins, Schafer and Kam 2001). Thereafter, we fitted SEMs in Mplus (Muthén and Muthén 2009) which pooled the results from the models fitted in each imputed dataset. In all SEMs we included MCS sampling stratum as covariate. The inherent assumption in this approach is that conditioning on the design variables the sampling mechanism is ignorable. We accepted $p < .01$ significance for effects given the number and complexity of the models fitted.

Confirmatory Factor Analysis (CFA) and SEMs

We carried out a confirmatory factor analysis (CFA) of the MCS items assessing father involvement to decide on the variables for the constructs. As can be seen in Table 1 which presents the CFA results, all the MCS1 father involvement items loaded on a single factor. The items were: frequency of looking after the baby on own, of changing nappies, of feeding the baby, and of getting up at night. At MCS2, the items loading on the father involvement construct were: frequency of reading to the child, of playing with the child, and of putting the child to bed. As Table 1 shows, fathers tended to report high levels of involvement at both sweeps, especially in some activities (e.g. playing with and reading to the child at MCS2).

Our first SEM modelled the nine main latent constructs (i.e. father involvement at MCS1 and MCS2, emotional, peer, conduct and hyperactivity problems at MCS2, and mood, adaptability and regularity at MCS1). We modelled each indicator to load on its respective construct, and we parcelled items when there were more than three indicators per construct. Parcelling decreases error variances, reduces non - normalities, and increases common variance and model parsimony (Little et al 2002), under the assumption that the factor to be parcelled is uni-dimensional (Bandalos 2002). In this first SEM we allowed each of the five main latent constructs at MCS2 to be regressed on each of the four main latent constructs at MCS1. The model fitted data well ($\chi^2_{[314]}$ = 2319.40; p < .001, RMSEA = .025; SRMR = .022; CFI = .952. TLI = .943). In the next model we added covariate effects as well as socio-economic disadvantage and family adversity effects on all the main latent constructs. This was the final main effects model. The model fitted data well, although the TLI was somewhat low ($\chi^2_{[759]}$ = 4545.06; p < .001, RMSEA = .023; SRMR = .022; CFI = .922; TLI = .895). Tables 2 and 3 show the model results. As can be seen in Table 2, even after adjusting for father involvement and temperament at MCS1, paternal depressed mood at MCS1 was associated negatively with father involvement and positively with child problem behaviour at MCS2. Father involvement was also positively associated with concurrent maternal depression and with concurrent father-reported quality of the partner relationship. Although socio-economic disadvantage was associated negatively with father involvement at MCS2, and positively with all child problem behaviours at MCS2, family adversity was associated only with hyperactivity and conduct problems at MCS2. As can be seen in Table 3, correlation among the various dimensions of child behaviour (i.e. the three temperament dimensions and the four emotional and behavioural adjustment measures) was low to moderate, and so it did not constrict the variance available for statistical analysis. The latent correlation between MCS1 and MCS2 father involvement was, as expected, also of moderate size. Indeed, the SEM model presented evidence (not shown in the Tables) for continuity of father involvement between sweeps (β = .54, p < .001). It also showed some evidence for cross-lagged effects. In particular, mood was negatively associated with father involvement at MCS2 (β = -.05, p < .01), and father involvement at MCS1 was negatively associated with emotional symptoms at MCS2 (β = -.06, p < .01). As expected, there were also associations between temperament and problem behaviour. In particular, more positive mood predicted fewer emotional (β = -.06; p < .001), conduct (β = -.11; p < .001), and hyperactivity (β = -.08; p < .001) symptoms. Higher adaptability predicted fewer emotional (β = -.17; p < .001), conduct (β = -.05; p < .01), and peer (β = -.13; p < .001) problems. Higher regularity predicted fewer emotional (β = -.08; p < .001), conduct (β = -.07; p < .01), and peer (β = -.10; p < .001) problems.

Table 1. Confirmatory Factor Analysis (CFA) of father involvement at Sweeps 1 and 2, and descriptive statistics (raw data)

									Father involvement (CFA in imputed data set [a])		
	N	**Min**	**Max**	**M**	**SD**	**Ske**	**Kur**	**α**	**MCS1**	**MCS2**	**R^2**
Looks after baby on own, MCS1	8754	1	6	3.95	1.36	-0.05	-0.79		0.44		0.20
Changes nappy, MCS1	8756	1	6	4.56	1.54	-0.91	-0.16		0.77		0.59
Feeds baby, MCS1	8756	1	6	4.54	1.28	-0.81	0.27		0.78		0.61
Gets up at night, MCS1	8754	1	6	3.95	1.36	-0.05	-0.79		0.36		0.13
Father involvement, MCS1	8756	1	6	4.25	1.09	-0.36	-0.25	0.80			
Reads to child, MCS2	9498	1	6	4.32	1.37	-0.75	0.08			0.47	0.22
Plays with child, MCS2	9498	1	6	5.17	0.90	-1.02	0.80			0.35	0.13
Puts child to bed, MCS2	9498	1	6	3.77	1.07	-0.86	0.57			0.60	0.36
Father involvement, MCS2	9498	1	6	4.42	0.78	-0.69	0.42	0.45			

Note. *[a] = Model fit: $\chi^2_{[13]} = 264.65$; $p < .001$, RMSEA = .045; SRMR = .022; CFI = .970. Correlation between latent constructs was $\rho = .59$.*

Table 2. Standardized regression coefficients of child, father and mother covariates on main constructs (MCS1 and 2 father involvement, and MCS1 temperament and MCS2 emotional and behavioural adjustment); all covariates at MCS1 unless otherwise specified; MCS1 stratum effects adjusted but not presented)

	MCS1 main variables				MCS2 main variables				
	Father involvement	**Mood**	**Adaptability**	**Regularity**	**Father involvement**	**Emotional symptoms**	**Conduct problems**	**Hyperactivity**	**Peer problems**
Age	0.02 *	-0.02	0.00	-0.04 **	0.00	-0.01	-0.01	-0.01	-0.02
Girl	-0.03 *	0.02	-0.06 ***	-0.01	-0.01	0.00	-0.07 ***	-0.14 ***	-0.10 ***
Mother is non-white	-0.14 ***	-0.03	-0.15 ***	-0.10 ***	0.04	0.08 **	-0.02	0.05	0.10 ***
Mother's depressed mood	0.07 ***	-0.10 ***	-0.11 ***	-0.07 ***	0.01	0.13 ***	0.13 ***	0.10 ***	0.08 ***
Mother-reported partner relationship quality (MCS1)	0.14 ***	0.16 ***	0.09 ***	0.04 **	0.04 *	0.01	0.01	-0.01	-0.04 *
Mother's parenting	-0.02	-0.05 **	-0.08 ***	-0.23 ***	-0.06 ***	0.04 *	0.05 ***	0.04 ***	0.07 ***
Mother-reported partner relationship quality (MCS2)					0.09 ***	-0.07 ***	-0.15 ***	-0.10 ***	-0.12 ***
Father is non-white	-0.13 ***	-0.01	-0.05	0.03 ***	-0.03	0.01	-0.05	-0.03	0.06
Father's social class	0.00	-0.06 ***	0.00	0.02	0.13 ***	-0.05 ***	-0.08 ***	-0.12 ***	-0.10 ***
Father is biological	0.02	-0.02	0.01	0.03 *	-0.02	0.01	-0.01	0.02	0.01
Father's depressed mood	-0.06 ***	-0.04 *	-0.01	-0.01	-0.05 **	0.01	0.04 **	0.01	-0.02
Father-reported partner relationship quality (MCS1)	-0.01	-0.03	-0.01	-0.01	0.00	0.03	0.00	0.01	0.03
Father-reported partner relationship quality (MCS2)					0.06 **	-0.05 **	-0.02	-0.02	-0.05 **
Socio-economic disadvantage	-0.04 **	0.00	-0.10 ***	-0.14 ***	-0.09 ***	0.12 ***	0.15 ***	0.08 ***	0.08 ***
Family adversity	0.03 **	-0.03 *	0.04 **	-0.01	0.02	0.02	0.04 **	0.05 ***	0.02

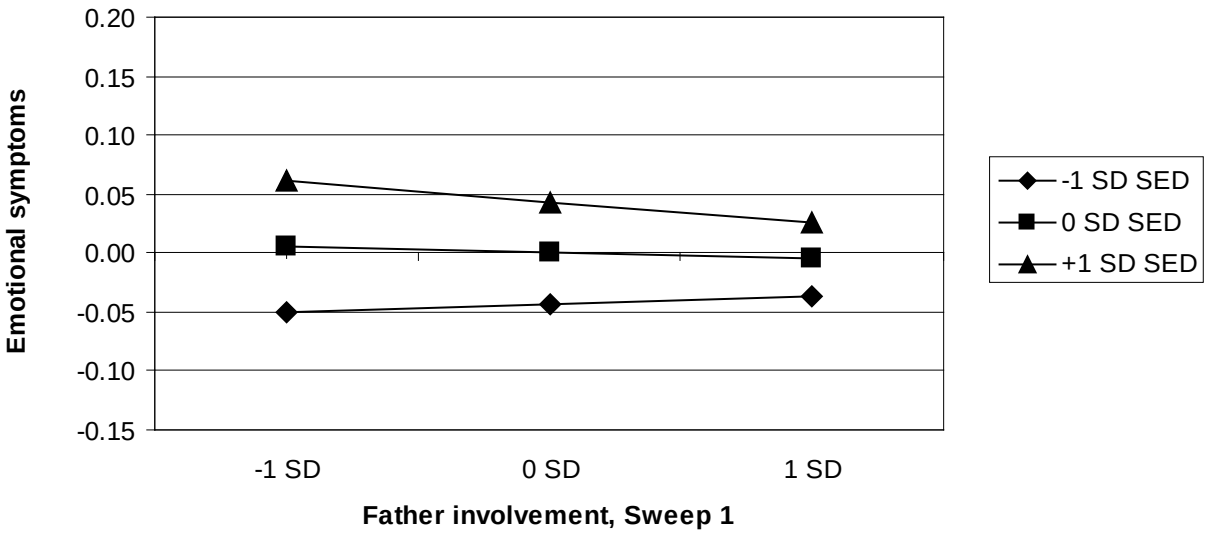
**p < .05; **p < .01; ***p < .001.*

Table 3. Latent correlations of main variables (model presented in Table 2)

	1.	2.	3.	4.	5.	6.	7.	8.
1. Father involvement, MCS1								
2. Mood	0.03							
3. Adaptability	0.18	0.18						
4. Regularity	0.10	0.18	0.11					
5. Father involvement, MCS2	0.60	0.00	0.16	0.17				
6. Emotional symptoms	-0.17	-0.16	-0.30	-0.23	-0.20			
7. Conduct problems	-0.06	-0.18	-0.15	-0.20	-0.17	0.47		
8. Hyperactivity	-0.05	-0.13	-0.11	-0.17	-0.13	0.36	0.63	
9. Peer problems	-0.14	-0.12	-0.25	-0.27	-0.23	0.64	0.46	0.39

We fitted another two models to investigate the effect of the interaction of early father involvement by adverse life events and the effect of the interaction of early father involvement by family socio-economic disadvantage on all five main latent constructs at MCS2. The first of these models added to the final main effects model the interaction term between early father involvement and adverse life events on the five MCS2 latent constructs, and the second added to the final main effects model the interaction term between early father involvement and family socio-economic disadvantage on the five MCS2 latent constructs. Of the interaction effects tested, one - that of socio-economic disadvantage by father involvement on emotional symptoms - was significant (b = -.02; se = .01, p < .01). As shown in Figure 2, the association between socio-economic disadvantage and emotional symptoms was dampened at higher levels of father involvement.

Figure 2. The interaction between father involvement and socio-economic disadvantage (SED) at MCS1 on emotional symptoms at MCS2



***Note**: Latent interaction effects were estimated in Mplus using the XWITH command (Muthén and Muthén 2009). Latent variances of all constructs were derived from the measurement model. The variance for SED was the average variance across the five imputed datasets.*

Discussion

This longitudinal study of almost 10,000 stable resident two-parent families in the UK explored the role of early father involvement in predicting young children's emotional and behavioural adjustment, and in dampening the effect of early family contextual risk on young children's emotional and behavioural adjustment. Corroborating findings from research with school age children (Coley et al 2008), it found evidence for father involvement effects. Father involvement at 9 months was negatively associated with internalizing symptoms at 3 years, even after adjusting for father involvement at age 3 and for a wide range of family, area and child influences on children's problem behaviour. It also highlighted the importance of considering specificity at the level of both child outcome and contextual risk when modelling father involvement effects. Father involvement was negatively associated with later emotional symptoms, but no other problem behaviour, and dampened the effect of family socio-economic disadvantage, but not family adversity, on emotional symptoms.

These are important findings. The role of fathers' parenting in young children's internalizing problems is a relatively unexplored but very promising area (Bögels and Phares 2008). In this study, we found a negative correlation between children's internalizing problems and fathers' scores on our composite measure of paternal play and caregiving. This finding is in line with Bögels and Phares' (2008) suggestion that direct father

involvement (such as father-child play) promotes an active, competitive, autonomous, and curious attitude in children, which, in turn, promotes cognitive and social development, and buffers avoidance and anxiety. On the other hand, our finding that the association between family socio-economic disadvantage and children's internalizing problems was dampened at high levels of father involvement is an important contribution to the research of risk and resilience in children, as it suggests that father involvement can moderate the effect of not only psycho-social (Chang et al 2007) but also socio-economic risk on young children's behaviour.

However, a suggestion that this study showed evidence for the importance of high father involvement in dampening the effect of contextual risk on child adjustment cannot easily explain why father involvement did not moderate the effect of either type of contextual risk considered here on young children's externalizing problems. Previous work with MCS has similarly shown that, among pre-school children, the effect of socio-economic disadvantage on externalizing problems was not moderated by the quality of the father-child relationship (Malmberg and Flouri 2011). Although the quality of the mother-child rather than the father-child relationship moderated the effect of socio-economic disadvantage (although also only on internalizing problems), neither moderated the effect of family adversity on acting out behaviour. At first glance these findings, taken together, may seem to simply suggest that specific parent-level protective factors may be related to specific child outcomes in the presence of only specific contextual risks. However, on closer inspection they also suggest that different aspects of maternal and paternal parenting can buffer the effect of family poverty on young children's emotional symptoms.

Our findings also extend previous research on the antecedents of father involvement, and on the role of paternal inputs in child outcomes. For example, corroborating previous research, we found that paternal depressed mood was associated negatively with father involvement and positively with child problem behaviour (Ramchandani et al 2005). In line with previous findings that a father's relationship with his child is contingent on his relationship with the child's mother (McBride et al 2004; Paley et al 2005; Schacht, Cummnings and Davies 2009), we showed that a father's involvement with his child was associated positively with his satisfaction with the partner relationship. Contrary to our expectations and previous findings (Paulson, Dauber and Leiferman 2006), we found that a father's involvement with his infant was associated positively, not negatively, with a mother's concurrent depressed mood.

Conclusions

Extending findings from studies showing resident father involvement effects on school age children's outcomes, our study showed evidence for an inverse correlation between father involvement and young children's internalizing behaviour in stable resident two-parent families. It also suggested that father involvement may function as both a resource and a protective factor for children in these families. Fathers were more involved with their children when children were more 'difficult' and when mothers were at risk of depression, whereas the positive association between socio-economic disadvantage and children's emotional symptoms was weaker when fathers' involvement was higher. It is necessary to reiterate that our sample of stable resident two-parent families was of low socio-economic risk, and included families in which mothers were happy with their relationship with their partners, and fathers were not only present but also involved with their infants. Children with an experience of lone motherhood were not covered in this sample which was conditional on father being present. Therefore, it remains to be seen whether children with no or unstable resident fathers fare better or worse than those whose father was present but with low levels of involvement. It also remains to be seen, in analyses of future sweeps of MCS, if our pattern of results changes later in childhood, when children are more exposed to outside influences such as schools, peers, and neighbourhoods.

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Endnotes

[i] I.e. not applicable to the 'never employed'.

[ii] Note that although our attrition analysis was carried out to test for patterns of non-response to father involvement at MCS2, it also points to patterns of fathers' non-response to MCS2, as the overwhelming majority of fathers missing data on father involvement at MCS2 tended to miss data on all our MCS2 father-reported measures. For example, of the 11,516 fathers eligible for inclusion in our study sample, only 4 fathers missing data on father involvement at MCS2 did not also miss data on father-reported partner relationship quality at MCS2.

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The Panel Study of Income Dynamics: overview, recent innovations, and potential for life course research

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Abstract

Spanning over four decades, the Panel Study of Income Dynamics (PSID) is the world's longest-running household panel survey. The resulting data archive presents research opportunities for breakthroughs in understanding the connections between economic status, health and well-being across generations and over the life course. The long panel, genealogical design, and broad content of the data represent an unique opportunity for a multi-perspective study of life course evolution and change within families over multiple generations. Based on relational data structures and advanced web-based archiving and delivery tools, the PSID has a publicly available web-based facility for users worldwide to create customized data extracts and codebooks, based on nearly 70,000 variables from over 70,000 individuals over 44 years. This paper provides an overview of the PSID and its supplemental studies, the Disability and Use of Time Supplement, the Child Development Supplement, and the Transition into Adulthood study, and describes features and recent enhancements that have increased the potential of the archive for studying life course development.

Keywords: panel study, life course, data collection, human development, time use, young adulthood, aging

1. Introduction

The world's longest-running household panel survey was originally created in the United States of America to assess President Lyndon Johnson's 'War on Poverty'. In 1966 and 1967, the Office of Economic Opportunity (OEO) directed the U.S. Bureau of the Census to design and field the Survey of Economic Opportunity (SEO) to provide data for a national assessment of War on Poverty programs. A representative national sample of approximately 22,000 households and an over sample, in census enumeration districts with large non-white populations, of approximately 15,000 households was drawn by the Census Bureau and interviews were completed with 30,000 of these households. Interest in continuing the study with the primary goal of understanding the dynamics of economic well-being led the OEO to approach the Survey Research Center (SRC) at the University of Michigan about continuing to interview a sub-sample of low-income SEO households. Professor James N. Morgan, who eventually became the study's first director at Michigan, argued successfully for adding a cross-section of households from the SRC national sampling frame so that the study would also include non-poor

households and hence represent the entire population of the U.S. In addition, a fortuitous decision was made to follow family members who moved out of study households, such as children who came of age during the study. This allowed the sample to remain representative of the nation's families and individuals over time. This study became what is now called the Panel Study of Income Dynamics (PSID; Hill, 1992). [i]

Launched in 1968, PSID will soon mark its 44th anniversary. The data are a cornerstone of social science research in the U.S.: more than 3,200 peer-reviewed publications are based on the PSID, nine U.S. federal agencies utilize the data in fulfilling their missions, annually nearly 25,000 data extracts are downloaded by over 2,500 different users world-wide, and there are nearly 5 million visits to the PSID website each year. As an indicator of its significance, the study's lead sponsor, the U.S. National Science Foundation (NSF), named PSID as one of the 60 most important innovations that NSF played a key role in creating.

Starting in the late 1990s, several developments increased the potential of the PSID archive for studying life course development. Most notably, content was expanded in the areas of health, wealth, expenditures, philanthropy, child development, the transition to adulthood, and time use. This paper provides a detailed profile of PSID and recent supplemental studies, highlighting the features that enhance the value for longitudinal and life course research. The sections below describe the design and content of the PSID main interview, the Disability and Use of Time Supplement, the Child Development Supplement, and the Transition into Adulthood study, the distribution of data and documentation, funding and administration, the analytic potential for life course research, including research examples designed to stimulate new ideas and discoveries, and what the future holds for PSID.

2. The PSID Main Interview

The primary source of information on PSID sample members has been a survey conducted annually through 1997 and biennially thereafter. This survey, called the "main interview," is described in this section. Subsequent sections describe supplemental data collections on PSID sample members.

2.1. Study design and following rules

The original aim of studying the dynamics of income and poverty led the 1968 sample to be formed from an oversample of 1,872 low income families from the SEO and a nationally representative sample of 2,930 households designed by the SRC. Approximately 18,000 individuals lived in these original families at that time, and are considered to have the "PSID gene" making them eligible to be followed for subsequent interviews. In addition, all individuals born to or adopted by an individual with the PSID gene acquire the gene themselves, becoming PSID "sample persons" who are followed in the study. As members of sample families grow up, move out, and form their own economically independent households, they are interviewed separately, increasing the overall number of interviews conducted each wave. [ii]

This unique design of following children of sample members as they themselves become adults, replenishes the sample and helps to maintain its national representation, as well as facilitating the study of outcomes across generations.

In 1990, 2,043 Latino households, including families originally from Mexico, Puerto Rico, and Cuba, were added to the study. While this sample represented three major groups of immigrants, it did not include all post-1968 immigrants. Because of this crucial shortcoming, and a lack of sufficient funding, the Latino sample was dropped after 1995.

In 1997, because of the escalation in costs driven by the doubling of the sample size during its 30-year history, PSID was forced to drop some families from the SEO oversample. At the same time, a sample of 511 families who had immigrated to the U.S. after 1968 was added, in order to maintain the national representation of U.S. families in the study. [iii] Budget constraints limited the size of the addition, preventing it from being large enough to support the analysis of immigrant subgroups. Because some of these families created split-off families, their overall number increased to 638 by 2009.

2.2. Respondents and sample sizes

The definitions and terminology used to describe the PSID sample were adopted from the Census Bureau in 1968 and, although dated, are maintained for consistency and for their straightforward following

rules. A single primary adult serves as the respondent. In a married-couple family, the Head is defined as the husband—unless he is physically or mentally incapable of being interviewed. The Head can also be a single female. The term Wife is used for a female in a married couple and "Wife" is used for a cohabitating female (henceforth, the former term is used for both married and cohabiting female partners). PSID attempts to interview the same family member in each wave to maximize consistency over time; approximately 95% of families that appear in successive waves have the same respondent for both interviews.

PSID respondents provide information about themselves, their spouse/partner, and all other family members living together, who are referred to as the "family unit." Individuals who are not Heads or Wives are classified as "other family unit members" if, at the time of interview, they are members of the respondents' family and either residing in the interviewed family unit or temporarily away in an institution (e.g. college, jail, hospital, or the military). Family members are individuals who are related to the Head/Wife by blood, marriage, or adoption, although unrelated individuals are included if they are permanently living together and share income and expenses.

Table 1 shows that in 2009 the PSID sample was comprised of 8,690 family units consisting of 13,410 Heads/Wives and 23,102 individual family members (including Heads/Wives). There are substantial sample sizes of individuals at all ages: 7,511 at ages 0-18, 7,396 at ages 19-39, 5,678 at ages 40-59, and 2,517 aged 60 and older. In 2009, 13,041 individuals with the PSID gene had been part of the interviewed sample for at least five waves; 5,876 had survived and participated in every wave since 1968, providing large samples of individuals who have been observed over a substantial portion of their life course.

Table 1. Numbers of PSID individuals and Heads/Wives in 2009 by age group

	Individuals[1]		Heads/Wives	
Age Group	N	%	N	%
0-18	7511	32.5	28	0.2
19-39	7396	32.0	5700	42.5
40-49	2891	12.5	2744	20.4
50-59	2787	12.1	2621	19.6
60-69	1397	6.1	1287	9.6
70 +	1120	4.8	1030	7.7
All ages	23102	100.0	13410	100.0

[1] *Includes individuals currently residing in family unit*

2.3. Response rates

The PSID has consistently achieved response rates equal to or higher than other panel surveys world-wide (Schoeni et al forthcoming). Response rates are calculated for each of the "sample types" within PSID. The sample is defined across two different strata: first, whether it is considered "core" versus "immigrant refresher", and second, whether in the previous wave, the sample type is "re-interview" versus "split-off" versus "re-contact." In regards to the first strata, the "core" sample consists of all families except those added in the 1997 immigrant refresher sample. In regards to the second strata, the "re-interview sample" includes families who were successfully interviewed in the previous wave. "Split-off" families consist of individuals who left a PSID family unit and established their own economically independent unit. Finally, the "re-contact" sample consists of families who did not respond in the previous wave, but were respondents in the wave before the previous wave. PSID attempts to re-contact and interview these families in subsequent waves, as a way to minimize attrition and maintain the representativeness of the sample.

Table 2. Response rate each wave by sample type and interview type: 1968 to present

		Core					Latino (1990-95)/ Immigrant (1997-present)				
Year	Total	Re-interview	Re-contact	Split-off	Re-contact split-off	Total	Re-interview	Re-contact	Split-off	Re-contact split-off	Total
1968	76.0										
1969	81.4	89.0		60.4		81.4					
1970	95.7	97.0		84.0		95.7					
1971	96.5	97.0		86.0		96.5					
1972	97.8	98.5		88.0		97.8					
1973	97.8	98.5		88.9		97.8					
1974	97.6	98.0		92.5		97.6					
1975	97.8	98.4		88.6		97.8					
1976	97.0	98.0		87.0		97.0					
1977	97.6	98.0		90.3		97.6					
1978	98.0	98.3		90.0		98.0					
1979	97.5	98.2		86.5		97.5					
1980	97.6	98.0		90.0		97.6					
1981	97.7	98.3		85.7		97.7					
1982	98.0	98.8		86.0		98.0					
1983	98.0	98.3		88.3		98.0					
1984	97.7	98.0		92.4		97.7					
1985	97.3	97.7		92.0		97.3					
1986	97.1	97.4		89.5		97.1					
1987	97.2	97.8		82.9		97.2					
1988	97.6	98.0		87.2		97.6					
1989	97.4	97.9		83.3		97.4					
1990	91.7	98.3		89.2		98.0					74.8
1991	96.1	98.2		86.1		97.8	92.3		64.7		90.2
1992	96.0	98.0		85.7		97.6	92.6		66.7		90.4
1993	92.2	95.5	52.1	67.9	47.4	94.7	87.7	na	54.5	na	84.5
1994	na	95.9	na	na	na	na	na	na	na	na	na
1995	na	97.0	na	na	na	na	na	na	na	na	na
1996	na	97.6	na	na	na	na					
1997	na	95.7	na	na	na	na					na
1999	90.7	96.0	54.6	82.3	50.0	93.1	82.8	32.9	65.5	0.0	66.4
2001	91.7	96.7	52.0	79.7	0.0	93.0	88.5	31.1	61.4	0.0	76.4
2003	92.7	96.6	57.6	79.6	42.9	93.4	93.9	48.9	58.1	0.0	83.9
2005	93.9	97.4	58.2	81.4	42.9	94.6	93.1	38.5	67.7	0.0	85.4
2007	93.2	96.4	46.3	85.5	71.4	93.9	92.3	31.7	73.7	66.7	85.1
2009	94.3	97.0	53.5	88.7	53.8	94.7	95.5	44.4	84.6	0.0	89.8

Notes. na=not available

Table 2 presents response rates for each wave from 1968 to 2009. The core re-interview sample accounts for roughly 85% of the entire sample in recent waves and has a wave-to-wave response rate in almost all waves of 95-98%. The core split-off sample experiences response rates typically in the mid-80% range. The core re-contact sample has response rates in the 50% range in recent waves, and the core re-contact split-off sample is small with variable response rates (e.g. 71% in 2007, 54% in 2009). The response rates for the 1997 immigrant refresher sample are slightly lower than for the core sample; in 2009 the response rates were 96% for the immigrant re-interview sample, 85% for the immigrant split-off sample, and 44% for the immigrant re-contact sample.

2.4. Data collection and panel maintenance

The Survey Research Operations group at the Institute for Social Research has fielded every wave of PSID. Interviews were conducted annually between 1968 and 1997 and biennially thereafter through to the most recent wave in 2011. Since 1973 the majority of interviews in each wave have been conducted via telephone and a computer-assisted telephone collection technology has been used since 1993 (see Couper and Nicholls 1998).

Although most cross-sectional surveys have experienced major declines in response rates over the past several years (de Leeuw and de Heer 2002; Curtin et al 2005; Card et al 2010), response rates in the most recently completed wave were as high as any in the entire history of the PSID. These high rates are attributable to a number of factors, including: incentive payments that translate into roughly $1 per average minute of the interview, that are mailed to respondents within a few days of the interview; an additional small incentive for completion of the interview on a cell phone to compensate for use of paid minutes; maintaining experienced interviewers who are repeatedly matched with the same families; tailored refusal conversion techniques; a respondent newsletter highlighting the importance of the study; inter-wave communications with respondents that include a small incentive for providing updated contact information (McGonagle et al 2011). PSID regularly runs methodological experiments to further improve response rates. Results from a recent experiment indicate that sending respondents a small incentive for providing updated contact information between waves reduces field effort and costs (McGonagle et al 2011a, b; McGonagle et al 2009).

2.5. Sample representativeness

Despite consistently high response rates, there is evidence that lower income families have higher cumulative attrition (e.g. Fitzgerald et al 1998; Fitzgerald 2011). However, parameter estimates of interest have not been found to be biased. In a recent analysis of the effects of cumulative attrition in PSID up to 2007, Fitzgerald (2011) finds little-to-no evidence of biased estimates of sibling correlations, or of parameters, in inter-generational models of health outcomes. The close alignment of weighted estimates from PSID with those from other U.S. benchmark studies – the March Current Population Survey for income (Gouskova et al 2010), the Survey of Consumer Finances for wealth (Bosworth and Anders 2008), the National Health Interview Survey for health status and health behaviors (Andreski et al 2009), the Consumer Expenditures Survey for expenditures (Li et al 2010), and the American Time Use Survey for time use behaviors (Cornman et al 2011)—support the claim that PSID remains representative of the U.S. population. In other words, cumulative effects of modest wave-to-wave attrition do not appear to have biased the PSID's cross-sectional representation of key economic or health factors. Although families comprised entirely of post-1997 immigrants are not part of the sampling frame, this group is a small segment of the U.S. population and over time joins the PSID sample through intermarriage. Nonetheless, the addition of a post-1997 immigrant refresher sample remains a high priority for the project's strategic plan.

Item non-response is also low, with very few questions missing responses for more than 3-4% of cases (Killewald et al 2011). Sample weights are provided for each wave to account for differential probabilities of selection due to the original sample design and subsequent attrition, including longitudinal individual weights, longitudinal family weights, and cross-sectional individual weights. Information about the construction of these weights and their analytic use is provided in companion documents on the PSID website.
http://psidonline.isr.umich.edu/Guide/documents.aspx

2.6. Content domains

A central aim of the PSID since its inception has been to collect and distribute detailed information on income and family demographics in order to support research on the dynamics of economic well-being. With input from its Board of Overseers and the broader scientific community, the Study has been expanded over time to collect and distribute data in many domains, to allow the study of topics of emerging scientific and policy interest. Data have been collected on a wide array of social, demographic, economic, and health topics, which have in turn supported unique multidisciplinary research. In 2011, the 89 minute interview collected data on: employment, earnings, income from all sources, expenditures covering 95-100% of total household spending (Charles et al 2004), housing, foreclosure and mortgage distress, geospatial data, health status, health behaviors, adult and childhood health conditions, health insurance, marriage and fertility, program participation, vehicle ownership, wealth and pensions, debt, and philanthropy. As Table 3 shows, many of these areas have been included in the instrument since 1968. Thousands of additional variables in other domains have been collected throughout the history of the PSID.

Table 3. Content of the PSID 2011 main interview

Economic content	**Year first collected**
Housing characteristics (foreclosure and mortgage distress), utilities	1968 (2009)
Employment	1968
Income	1968
Government transfer program participation	1968
Consumption expenditures	1984
Wealth and active savings	1968
Pensions	1976
Philanthropic giving and volunteering	2001
Housework and child care	1968
Health content	
Work and activity limitations	1968
Health insurance	1968
Smoking and alcohol	1968
Workers' compensation	1977
Hospital and nursing care	1981
Social security disability insurance	1984
General health status	1984
Exercise	1986
Height and weight	1986
Activities of daily living / Instrumental activities of daily living	1992
Health conditions	1999
Emotional distress	2001
Overall life satisfaction	2009
Health expenditures	1999
General health status in childhood	1999
Health conditions in childhood	2007
Medication use	2011

(Table 3 cont'd)

Social and demographic content	
Family composition and residential changes	1968
Deaths	1968
Marital and birth histories	1968
Education of head, wife, children, and parents of head and wife	1968
Current and first occupation/industry of head, wife (occupation of parents of head and wife)	1968
Restricted data available under contract	
Geospatial data (tract, block, county where grew up)	1968
Vehicle model	1999
Cause and date of death (National Center for Health Statistics)	1979
Medicare claims (Centers for Medicaid and Medicare Services)	1991
Secondary school characteristics (National Center for Education Statistics)	1968
Housing subsidies (Department of Housing and Urban Development)	1968

Two modules were recently added that present special opportunities for life course research. Added in 2007, the childhood health calendar was designed to provide data on the reasons for the strong and persistent relationship between health status and socio-economic status and its evolution over the life course. The module includes a series of retrospective questions on whether and when Heads and Wives experienced a set of health conditions during their own childhood, including: asthma, diabetes, respiratory disorders, speech impairment, depression, drug or alcohol problems, and other emotional problems. The collection of these data enhances the power of the PSID to examine the effects of health on life course development, by providing markers very early in the life span. Analyses of these data have demonstrated their validity (Smith 2009).

Starting in 2009, new questions were added about mortgage distress, including foreclosure activity, falling behind in payments, mortgage modifications, and expectations about payment difficulties in the coming year. These data can be used to examine the medium-term effects of the recent economic recession on a range of outcomes, including family formation and dissolution, childbearing, and educational attainment. Researchers can examine, for instance, whether higher unemployment rates and declines in income and wealth have led young adults to postpone or avoid higher education, marriage and cohabitation, and childbearing. The estimation of causal effects is made possible by the repeated measures on respondents, the presence in the data of siblings, cousins, and other related individuals, regional variation in the severity of the recession, and the long and rich historical record on individuals and families.

To maintain respondent confidentiality, some PSID data are available only through restricted use contract to users who follow an appropriate data safeguarding plan, including geospatial identifiers and a variety of linked administrative records. Geospatial identifiers, including Census tract, block-group, and block, are available for the current residence at each wave for all families since 1968.[iv] County-level data on where PSID individuals and their parents grew up are also available. Links to external administrative data sources have been expanded in recent years, with information now available under restricted use contract on: date and cause of death from the National Center for Health Statistics National Death Index for decedents since 1979; health care claims for 1991-2008 from the Centers for Medicare and Medicaid Services; whether the family has received housing subsidies from the Department of Housing and Urban Development; and school characteristics from the National Center for Education Statistics for primary and secondary public and private schools attended by sample members.

3. Disability and Use of Time Supplement (DUST)

Fielded in 2009, the scientific aim of DUST was to produce a rich and nationally focused data archive to support innovative research on disability, time use, and well-being for older married couples (Freedman and Cornman, 2011). A total of 755 PSID Heads and Wives were each interviewed about two randomly selected days - one weekday and one weekend day. Information was obtained using time diaries about what respondents did, where they were, who did the activities with them, who else was there, how they felt, and (for household and care-related activities) for whom the activity was performed. Detailed information was obtained about health, functioning, well-being, and stylized time use/participation measures. The inclusion of data from the main PSID allows for analyses about *how* time use varies, as a consequence of pre-existing health, disability, and economic status of the family, from both care givers' and care recipients' perspectives. Linkages to subsequent waves of PSID will allow analysis of the *implications* of time use for a variety of future health outcomes. Plans are underway to collect a second wave of DUST on all PSID individuals aged 60 and older in 2013.

4. The Child Development Supplement (CDS) and the Transition into Adulthood (TA) study

Beginning in 1997, the CDS collected information on up to two randomly-selected 0-12 year old children (N=3,563) and their caregivers in PSID families. The scientific aim was to provide researchers with a comprehensive, nationally representative (with child-based weights), prospective database of young children and their families, for studying the dynamic process of child development. The same children and their caregivers were re-interviewed in 2002/2003 and again in 2007/2008 with a child-based response rate exceeding 90% in the most recent wave. Topics included: health, skills assessments, parenting styles, time use, school resources and the learning environment in the home, and socio-emotional characteristics of children and their parents.

In 2005, in recognition that the years from 18-24 are critical for life span development, the PSID began a new study designed to follow the children from CDS who had turned age 18 and had completed or left high school and had families still active in PSID, called the Transition into Adulthood (TA) study. The primary scientific aim of TA is to understand the causes and consequences of social, economic, and health transitions of young adults. Information is collected about educational pursuits, employment, occupational choices, education and career expectations, family responsibilities, skills and abilities, intimate relationships, and more. Along with data collected during the CDS, detailed information is available about development from early and middle childhood through adolescence and into adulthood; additional information will be collected on this cohort over its life course as these youth transition to economic independence and become PSID Heads and Wives. TA data have been collected biennially for 2005-2011 and will be collected through 2015 at which time all children from CDS will have been observed at least once in the study. The response rate for TA was 92% in the most recent wave. The CDS-TA-PSID archive is unique in the scientific research opportunities it presents for inter-generational and life course analysis.[v]

5. Data distribution and documentation

The majority of PSID data and documentation have been freely and publicly available on the Internet since 1996 through the PSID Data Center (www.PSID.org). Information is currently available on nearly 70,000 variables, on nearly 70,000 individuals, and for all waves of main PSID data and supplements. Users can create customized data extracts from any set of waves by searching or browsing for variables, obtain customized codebooks specific to their data extract, and can archive data extracts for shared and future use. Users "load" their data carts with variables by wave. Variable descriptions, including univariate statistics and names of the same variable in other waves, are viewed by clicking an "open-book" icon next to each variable. Users can edit their cart by removing or adding variables through a return to the "data aisle." Data carts may be saved, allowing specific extracts to be shared with colleagues,

reviewers, and students. A range of file formats is available when the user is ready to "check out," including SAS, STATA, SPSS, dBase, Excel, and ASCII.

PSID developed an online cross-year variable index that facilitates searching and browsing all variables across the full archive from 1968 to the most recent wave, and for all waves of CDS and TA. Organized by content domains, the index is integrated with the Data Center so that users can view the codebook and add variables directly to their data cart from the index.

PSID has developed user tutorials covering a variety of topics. The most recent tutorial provides instruction on creating parent-adult child pairs to examine inter-generational transmission of wealth, health, and other outcomes. These tutorials have been positively received by the research community and by teachers (Stafford and Chiteji 2004).

Finally, an application is available called the Family Identification Mapping System (FIMS) that automatically creates a customized file containing identifiers for PSID respondents' relatives (including biological and adoptive children, parents, grandparents, great-grandparents, and siblings). FIMS greatly simplifies the process of creating genealogical samples by automatically generating a data extract based on user input.

6. Ethical approval, funding, and administration

The majority of PSID data and documentation are freely and publicly available on the Internet. Before downloading public data, users must register with the PSID and agree to conditions of use, which include pledging to make no attempt to identify study participants, and to report any identification of study participants or data errors immediately to PSID. Individuals wishing to obtain restricted data such as geospatial identifiers must provide a data security plan that meets PSID data safeguarding requirements, and have approval from their institution's human subjects review and/or privacy board (described here: http://simba.isr.umich.edu/restricted/RestrictedUse.aspx). The University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board conducts annual reviews of the PSID data collection and distribution protocols and survey instruments to ensure the rights and welfare of its research participants are protected.

The National Science Foundation has been the lead funder of PSID over the past several decades. Recent support has also been received from the following organizations: National Institute on Aging, *Eunice Kennedy Shriver* National Institute on Child Health and Human Development, Economic Research Service of the U.S. Department of Agriculture, the Center on Philanthropy at Indiana University, the Assistant Secretary for Planning and Evaluation of the Department of Health and Human Services, and the Department of Housing and Urban Development. The study has been housed at the Institute for Social Research, University of Michigan, from its beginning in 1968 to the present and is directed by a team of social scientists. Since 1982, a Board of Overseers has fostered input from the national community of scholars, researchers, and policymakers.

7. Research potential of the PSID for life course research

The extended time series and consistently high response rates of the PSID provide substantial analytic power to study antecedents and consequences of a range of social, health, and economic factors. For older sample members in particular, the history available is extraordinarily rich. Since individuals are followed over the entire life course, the number of waves that an individual appears in the sample is related to their age. However, individuals who were born into PSID families also have substantial information on their childhood circumstances from their parents' and grandparents' reports. This combination of information on childhood circumstances and later adult behavior and outcomes represents a major analytical strength that supports a variety of different analyses. Moreover, the analytical samples are large. For instance, approximately 3,000 individuals in the original cohort under age 18 in 1968 were ages 50 or older by 2007 and are therefore represented in the data for a full 40 years of their lives. This cohort, born 1950-1968, overlaps substantially with the 1946-1964 Baby Boom generation and is now reaching the ages where life events such as acute health shocks, chronic disease, and labor force transitions occur. For

children in the CDS and TA, a wealth of information exists on their behavior, health, and development as they passed through early, middle, and late childhood and into adolescence and young adulthood, and, increasingly, as members of the main PSID. The resulting data can be used to better understand how early circumstances, such as childhood socio-economic status, health, neighborhood and school characteristics, and educational choices, shape health and well-being over the life course.

The following of sample members who are descendants of the original 1968 sample yields inter- and intra-generational samples, which are powerful additions to the study of life course development. The inter-generational sample is comprised of adult children who split off from their sample parents to form their own households and who are recruited into the study. Intra-generational analyses have focused on outcome comparisons among siblings, as a means to control for, or examine, unmeasured family effects (e.g. Conley and Glauber 2007). Relative-pairs that can be examined in the PSID include dyads formed from parents and children, from siblings, and from grandparents and grandchildren. There are hundreds, and in many cases thousands, of these pairs within the PSID; they are typically observed for many years, leading to a large number of relative-pair-year observations. In 2009 alone, PSID had 4,626 Heads/Wives who had a parent in the study, and 4,927 had a sibling in the study who was also a Head or Wife in that year (yielding about 2500 sibling pairs). Among Heads or Wives aged 50 and older in 2009, 2,858 had an adult child participate in the main intervew (many more had children interviewed in CDS-TA), 1,285 had at least one sibling interviewed, and 722 had a parent interviewed. For many PSID families, self-reported information is currently available on up to four generations within the same family, at various points in their life course.

7.1. Illustrative research examples

This section provides a small sampling of ways the data have been used for life course research, that may generate new ideas and future scientific discovery. The PSID website provides a complete bibliography of all studies using the data.

Effects of the Great Recession on young adults

PSID and TA data provide an unprecedented opportunity to examine how recent economic adversity starting at the end of 2007 in the U.S., in combination with secular changes in federal financial and mortgage policies, have shaped schooling and employment choices of young adults. Recent work has shown that changes in a household's housing wealth in the four years prior to a child being of college-age affects the likelihood that the child attends college (Lovenheim 2010). Data from the recent PSID foreclosure and mortgage distress module can be used to study how exposure to financial adversity defines early labor force participation and its link to later employment opportunities and educational trajectories over the life course. The choices and experiences in these cohorts can be compared with those of young adults who reached age 18 or 19 before the financial crisis.

Marital transitions

Studies using the PSID have examined trends in marriage, cohabitation, divorce, and separation, and the causes and consequences of marital transitions. Studies have found that factors influencing marital transitions include risk preferences (Schmidt 2008), education (Ono 2009), household bargaining (Cooke 2006), child support (Chiappori and Weiss 2007), and job loss (Charles and Stephens 2004). Studies have advanced scientific understanding of the impact of marriage, cohabitation, divorce, and separation on numerous outcomes, including labor supply (Aughinbaugh 2010), expenditure patterns (DeLeire and Kalil 2005), child development (Page and Stevens 2005; Bjorklund et al 2007), assets and debt among women (Fisher 2005), and bankruptcy filings (Fisher 2006). The data have been used to document the weakening over the past three decades of marriage and the nuclear family in the U.S. (Clark and Withers 2009; Seltzer et al 2005).

Fertility and birth outcomes

PSID is an important data source for understanding the causes and consequences of teen childbearing, with recent work (e.g. Sullivan et al 2010; Wolfe et al 2007; Lopoo 2005) building on numerous studies from the 1990s and early 2000s (Geronimus and Korenman 1992, 1993; Haveman et

al 1997, 2001; Corcoran and Kunz 1997; Hoffman et al 1993; Foster et al 1998a, 1998b). Studies of the determinants of fertility among women of all ages have examined the effects of child support (Plotnick et al 2007), tax policy (Huang 2008), state-level welfare programs (Ryan at el 2006), and neighborhood poverty (South and Crowder 2010). The data have been used to examine the effects of birth outcomes and health in early childhood on health and well-being in later life (Johnson and Schoeni 2009; Haas 2007; Smith 2009).

Effects of neighborhoods over time

The availability across the life course of PSID individuals' census tract of residence (and census block beginning in 2009), through a restricted use contract, permits the study of neighborhood effects on development. A number of studies have used the data to examine neighborhood effects on child, adolescent, and young adult development (Dearing et al 2009; Jackson and Mare 2007; Timberlake 2009a, 2009b; Wimer et al 2008), health (Do and Finch 2008; Halliday 2007; Halliday and Kimmitt 2008; Johnson and Schoeni 2009), education (Brooks-Gunn et al 1993; Crowder and South 2003; Galster et al 2007; Harding 2003), income and earnings (Sharkey 2008), the inter-generational transmission of neighborhood context (Dawkins 2005a; Sharkey 2008; Solon et al 2000), and fertility behavior (Clark 2009; South and Crowder 2010; South 1999, 2001a, 2001b). Because of its oversample of African American families, the data have been used to examine levels and trends in racial equality in neighborhood economic status and migration (Sharkey 2008; Dawkins 2005b, 2006; Freeman 2005a, 2005b, 2008; South and Crowder, 2005; Timberlake 2007; White et al 2005; Vartanian et al 2007; Crowder and South 2005).

Socio-economic outcomes across and within generations of the same family

Because PSID follows adult children as they form their own households, it is uniquely positioned to investigate intergenerational effects. The data have been used to examine correlations across generations in health (Davis et al 2008; Valerio et al 2009), socio-economic status (Charles and Hurst 2003; Eberharter 2008; Gouskova et al 2010; Lee and Solon 2009; Mayer and Lopoo 2005; Solon 1992; Vartanian et al 2007), and philanthropic behavior (Wilhelm 2008). In fact, because of the length of the panel, PSID is now being used to estimate *changes over time* in the intergenerational transmission of economic status (Lee and Solon 2009; Mayer and Lopoo 2008). Researchers are also beginning to use the health data in conjunction with the socio-economic data to examine the extent to which transmission of health across generations within the same family accounts for the transmission of socio-economic status, and vice versa (Johnson and Schoeni 2009).

Life course consumption, savings, and wealth accumulation

The economic position of individuals nearing retirement is heavily influenced by saving and consumption decisions made during their working years. The experience of the large Baby Boom generation – the leading edge of which turns age 65 in 2011 -- is particularly well-represented in the PSID. Boomers were ages 4 to 22 years old when the PSID began in 1968, and most were still living in their parents' home. Substantial data collected on savings and wealth over several decades can be used to provide insights into how the financial behaviors and decision-making over the lifetimes of this generation has shaped their economic well-being as they reach retirement age.

Comparative research over time and across countries

The design of the PSID offers both flexibility to study emerging trends, and harmonization of key content to facilitate cross-national comparisons across all age groups. Comparable panels which facilitate study of the interplay of social and economic policies, health trajectories, and economic well-being over the life course (Banks et al 2003, 2009; Bjorkland et al 2007; Burkhauser et al 2005; Eberharter 2008) include the UK Understanding Society study, the German Socio-Economic Panel Study, the Household, Income and Labour Dynamics in Australia Survey, and many others. The Cross-National Equivalence File Project at Cornell University has further facilitated comparative analysis, by aligning variables between PSID and its companion surveys.

8. The Future of PSID

As of this writing, data collection of the 2011 main interview has concluded and the data are being processed for release in 2012. Plans are underway to collect new information in 2013 that will respond to emerging research questions and policy issues. For example, in recognition of the role of the extended family as an increasingly important source of assistance over the life course (Bianchi et al 2008), PSID will provide a more complete enumeration of members of extended families and assess short-term transfers of time and money and long-term, life-cycle transfers for education and housing. Moreover, to enhance information available describing the earliest stage of life, additional data will be collected about between-wave births, and a protocol for obtaining links to birth records will be tested. An education update will be collected from all family members, yielding timely information about investments in education over the life course. In 2014, PSID plans to collect new data on psychological well-being, providing an unique opportunity to study influences of social and economic factors on well-being across all age groups. Finally, two high priorities in the next few years are the addition of a post-1997 immigrant sample refresher, and the implementation of a new PSID Child Development Supplement, in order to collect detailed information on the health, development, and well-being of all (nearly 7,000) children under age 18, including biomeasures such as DNA (Sastry et al 2009).

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Endnotes

[i] Detailed information about the study design, following rules, and wave-specific information may be found in the PSID Main Interview User Manual on the PSID website: http://psidonline.isr.umich.edu/data/Documentation/UserGuide2009.pdf.

[ii] See Table 2 of the PSID User Manual for the number of original sample members who have been interviewed in each wave and Table 3 which lists the number of sample members in each wave who have left the study, died, or were dropped from the sample: http://psidonline.isr.umich.edu/data/Documentation/UserGuide2009.pdf.

[iii] See the PSID Technical Series Paper here for details on the immigrant sample addition http://psidonline.isr.umich.edu/Publications/Papers/tsp/2000-04_Imm_Sample_Addition.pdf

[iv] Starting with the 2007 wave, three levels of PSID geospatial data are available, in order of descending precision: Census Tract, Block Group, and Census Block. Census Block is the smallest level of data made available by PSID. Several Blocks make up Block Groups, which in turn make up Census Tracts.

[v] For more information see the CDS and TA User Guides here: http://psidonline.isr.umich.edu/Guide/documents.aspx

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Social class returns to higher education: comments on a paper by Bukodi and Goldthorpe with a response from the authors

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In a recent paper - Bukodi E and Goldthorpe JH. (2011) 'Social class returns to higher education: chances of access to the professional and managerial salariat for men in three British cohorts'. *Longitudinal and Life Course Studies*, 2, 185-201, 2011 - the authors adopt a particular methodological approach to the study of 'causality' in life course research. This highlights an important area of contention among social scientists. We have therefore, with the authors' agreement, taken this as an opportunity to open it up to a wider debate. In this issue of the journal we publish two commentaries, by Clarke, and by Legewie and Solga, that take issue with the Bukodi/Goldthorpe position on causality. The commentaries also question the relationship of the paper's contribution to the existing economics literature on 'returns to education' and the manner in which 'missing data values' are handled by the authors. See also a relevant tutorial published in the journal - Goldstein H. (2009) 'Handling attrition and non-response in longitudinal data'. *Longitudinal and Life Course Studies*, 1, 63-72, 2009 - that discusses methods for dealing with missing data. We also publish a response by Bukodi and Goldthorpe to these commentaries.

We are very grateful to the original authors as well as to those who contributed the commentaries, for taking the time to prepare their carefully argued positions. We hope that this kind of debate will form a regular feature of the journal and help to illuminate important methodological controversies, about which, of course, readers will form their own judgements.

Commentary by

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The authors take a refreshing look at the well-worn subject of assessing returns from education. In doing so, they raise a number of interesting issues en route to justifying their methodological approach. The purpose of this commentary is not to criticise the authors' article, but instead to focus on some of the issues they raise that I believe are of wider interest to the readers of *Longitudinal and Life Course Studies*.

Causal and descriptive analyses

The first issues are those surrounding the authors' decision to eschew causal analysis in favour of a "descriptive" interpretation. To some extent, this is wise and understandable, because it is difficult to justify that a statistical analysis of observational data leads to estimates that can be interpreted causally. On the other hand, a causal interpretation is desirable because it implies that the effect of education on salariat membership has been isolated from that of other pathways *not* driven by educational attainment. A causal interpretation is also necessary to influence policy makers, because such estimates approximate what we would expect to happen to people's salariat membership by improving their educational attainment.

A strictly descriptive interpretation provides no such information for understanding the social process or for policy: it merely states whether groups of individuals can be distinguished by their average outcomes. Perhaps the general tendency to play safe and avoid causality goes back to R.A. Fisher's remark that "statistics cannot prove causality", which is echoed by mathematical

statisticians like Philip Dawid. Dawid argues strongly that scientists should concern themselves only with "the effect of causes", where the 'cause' itself is controlled by the experimenter. The alternative is described as looking for "the cause of effects", namely, establishing which factors led to the observed outcomes taking those particular values. However, this is criticised as relying on "meta-physical" assumptions that cannot be tested on the study data (Dawid, 2000).

It is ironic that Fisher's remark was made around the time that evidence of the link between smoking and lung cancer started to emerge. The success of epidemiologists in establishing this link has led today to a situation where most applied scientists would agree that such objections are too limiting for practice. Scientists ultimately seek definitive proof, but work towards it by gathering evidence to support their hypotheses as part of an on-going dialectic: some hypotheses will gain support as evidence accumulates, and others will fail. In this sense, the causal interpretation of any estimate has validity as far as one believes the initial hypothesis, and the extent to which competing explanations have been accounted for. As such, the authors' analysis is somewhere between being descriptive and being causal, like most analyses carried out in quantitative social and biomedical research. After all, why would we be interested in reading a paper that reported a series of spurious correlations?

There is much mystique about "causal" analysis, but it is in fact based on a very simple idea. The most popular way of thinking about causality is based on the so-called Neyman-Rubin model, under which each individual has a set of potential outcomes; this is the approach widely used for the analysis of clinical trials in medical statistics. Under this model, an *individual* causal effect is the impact of a particular exposure on the potential outcomes of that individual. An example of an individual causal effect here is the difference between his/her (potential) salariat memberships after being exposed to different levels of education, say 'high' and 'low'. The actual causal effect of an exposure on any individual is thus inherently unobservable, because it is a comparison between two alternative experimental scenarios for the same individual occurring at the same point in time and space; the *only* difference between these scenarios is in the level of educational attainment.[i]

However, the fact that such effects are unobservable does not prevent estimation of *average* causal effects, which is where randomisation comes in: we know there are no systematic differences between the two randomised groups prior to exposure, and so the difference between the two groups' average responses (e.g. for low and high educational attainment) is due entirely to the exposure and estimates the average causal effect, namely, the average of the unobservable individual causal effects for the target population.

The authors say on page 186 that:
"This understanding of causation does, however, give rise to problems in that education is to a significant degree a matter of choice rather than simply a 'treatment' that is received […] this choice is likely to be influenced by factors that may have their own direct effects on earnings."

I see this as a comment on the historical relationship between causal effects and randomised experiments, but this link does not in itself rule out a causal approach. While prominent authors have also argued that a prerequisite for causal analysis is that a study can at least be *conceived* of as an experiment (e.g. Rubin 2008), the experiment does not have to involve either randomisation or a treatment-type intervention.

Rosenbaum and Rubin (1983) eloquently showed that the key to causal analysis is to model the exposure selection process.[ii] However, selection is a nebulous term that describes any form of non-constrained individual choice, assignment or institutional selection, and it does not have to involve randomisation. The temporal ordering of events means that the selection model can depend only on factors determined prior to selection. The difficult part is that, here and more widely, the mechanisms by which exposure is selected are rarely well understood. Theory and/or prior information must be used to identify the key pre-attainment factors most strongly associated with exposure selection, and one would not expect theory to identify all of these factors, or for all of these factors even to be measured.

The authors do include other variables in their analysis, but write:
"We include measures of ability and of social class origins not simply as controls but because they too are of substantive interest to us. We wish to know how these factors are associated with chances of

access to the salariat, considered both independently and in interaction with education" (page 187).

In other words, the authors acknowledge that the other variables are acting as controls, but that their interest also concerns the distinct effects these variables have on salariat membership.

As such, it seems straightforward to characterise their analysis as estimating the effect of educational attainment on salariat membership, while adjusting for some obvious alternative explanations. Hence, while this analysis cannot be regarded as an accurate representation of what an experiment would produce (if indeed such an experiment were possible), it could be a useful approximation based on the authors' sound understanding of past evidence and theory.

Causality in economics

I am neither an economist nor an econometrician, but in my experience few of them view causality solely in terms of experiments and treatments. For instance, within the discipline there is a 'structural' modelling tradition based on models for the social and economic processes of interest. The rationale behind this approach is that, if these processes can be modelled satisfactorily, structural models can be used to predict the causal effects of intervening and changing how these processes operate.

Structural models are based on economic theory and can represent complex interactions between non-linear processes over time; but structural models can also be simple. For example, the simple linear regression model

$$y = \alpha + \beta x + e \quad (1)$$

has a structural interpretation. This model (and its generalisation to multiple regression) remains a staple of contemporary applied economics. The structural interpretation of the regression coefficient β here is as what happens to an *individual's* outcome if we intervene and change x by one unit while holding e constant, where e represents the combined effect of all other factors affecting the outcome. It is clear from this definition that a structural model is simply a model of the potential outcomes, and thus causal.

In practice, the structural coefficient β cannot be estimated by fitting model (1) to the observed data if e and x are associated - that is, x is 'endogenous' - which is exactly what happens if there are factors associated with the outcome that are also associated with exposure selection. Economists thus go to considerable lengths to develop explicit and plausible 'identification strategies' that enable estimation of 'structural' β. Other quantitative scientists also employ identification strategies for structural models in all but name, by including confounding variables in the model. One of the fundamental differences between economists and other social scientists, however, is that the former are sceptical of whether adjusting for observed confounders (so-called selection on observables) can ever satisfactorily adjust for confounding bias, which is why they will often say that analyses like this are not causal. I do not agree.

Instead, economists often seek identification by using an 'instrumental variable' that predicts exposure, but is independent of e and affects y only through its effect on x. The advantage of this approach is that the analyst does not have to identify and adjust for all of the confounding factors, and models like (1) can be analysed using, for example, two-stage least-squares. But choosing a valid instrumental variable is notoriously difficult, and often leads to supporting arguments that can test the limits of credulity. However, there is currently considerable debate within the discipline about whether researchers in the past were too lax in their choices of instruments, and the role of structural models in identifying causal effects (e.g. Heckman and Vytlacil 2007; Angrist and Pischke 2008).

Handling missing data

The authors use the missing data indicator method to handle the problem of missing covariates, in which the covariate is extended to include an extra 'missing' category (see tables 2 and 3). Unfortunately, there is a problem with this approach: even if the data are missing *completely* at random (i.e. in a way that has nothing to do with the variables in the analysis) then the resulting estimates will generally be biased.

Greenland and Finkle (1995) demonstrate why this approach is problematic for linear regression models, but exactly the same arguments apply for other generalised linear models. To see why, consider a situation where only the educational attainment variable has missing values. The missing data indicator method involves fitting the model

$\text{logit}\{\Pr(y_{ic} = 1|x_{ic}, z_{ic})\} = \alpha + \beta x^*_{ic} + \gamma z_{ic}$

where x^*_{ic} is a series of dummy variables representing the effect of educational attainment with a separate category for 'missing', and z_{ic} is a fully observed measure of ability.

The problem here is that the group with missing values (i.e. those people for whom x^*_{ic} equals the missing category) comprises people who have different (but missing) educational attainments, and so the effect of ability (z_{ic}) cannot be estimated by holding educational attainment fixed, which is essential for estimating the regression coefficients of any generalised linear model. Only if educational attainment and ability are completely independent of each other will the indicator method work, and this rarely holds in practice.

It is clearly tempting to use the missing data indicator method because it is simple and enables data from the incomplete cases to be kept in the analysis. However, it is difficult to justify a method that is biased even if data are missing completely at random. If one does not wish to drop incomplete cases, then methods for multiple imputation should always be preferred (e.g. Royston 2005; Carpenter et al 2011).

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Endnotes

[i] At least, individual causal effects are unobservable without further assumptions about the equivalence of the experimental conditions at different points in time; for example, cross-over trials in pharmaceutical research.

[ii] Both Rosenbaum and Rubin (1983) and Rubin (2008) actually advocate the use of propensity scores for causal analysis. I do not go into this approach here, which is required primarily to avoid unnecessary modelling assumptions, but I refer to the reader to either of these papers for further details.

Commentary by

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Introduction

Bukodi and Goldthorpe (2011) present an interesting analysis of the changing relation between education and social class position across three British cohorts from 1946, 1958, and 1970. In the introduction, the authors define their objectives: First, they intend to make a sociological contribution to the debate on returns to education by focusing on social class rather than on earnings. Second, they believe their focus on social class will help enrich the theoretical debate on returns to education by highlighting social relations and employment contracts as central aspects of economic life. Third, they dismiss the focus on causality, replacing it with what they call a "descriptive" approach—that is, examining the effects of education, ability, and social class origin in combination (and without controlling for confounding variables).

In our commentary, we argue that Bukodi and Goldthorpe's paper is more of a *critique* than an *extension* of the (economic) returns to education literature. By dismissing causality, the paper essentially fails to contribute to the literature on educational returns because the concept of *returns* to education is inherently causal. On the other hand, we believe Bukodi and Goldthorpe make an important, albeit implicit, contribution by challenging the underlying ideas in the returns to education literature, namely that of free markets and that of education solely as an indicator of productivity.

Returns to education as "treatment" or "choice"

Bukodi and Goldthorpe analyze the social class returns to higher education using a "descriptive" approach based on logistic regressions and marginal estimates of parameters. They argue that returns to education from a causal perspective "give rise to problems, in that education is to a significant degree a matter of choice rather than simply a 'treatment' that is received, and also, in that this choice is likely to be influenced by factors that may have their own direct effects on earnings" (Bukodi and Goldthorpe 2011, 186). Whereas the authors rightly point out that education is also a matter of choice and influenced by other factors, they fail to acknowledge that economists would wholeheartedly agree. In particular, the mainstream economists would say that education is a "choice" based on calculations about human capital investments and returns to these investments. Sociologists would, rather, argue that this choice is limited, given the fact that educational opportunities are socially structured and unequally distributed. The term "treatment" does not imply that there is no choice. It rather points at the question of randomization in experimental studies and causal inference. This leads us to the second part of our comment.

Returns to education as an inherently causal concept

The concept of returns to education is an inherently causal concept (Brand and Xie 2010). At its core is a counterfactual question about the differences or "gains" with respect to some outcome (usually earnings, or social class position in this case) under different levels of education: "How much more would Emma earn had she received three more years of education?" Any confounding variables—that is, variables that are causally prior to education and systematically related to both education and the outcome—undermine this concept. In particular, it becomes meaningless to speak of *returns* to education if the relation between education and the outcome can be attributed to confounding variables and not to education itself. Parents' aspirations for their children, for example, might influence both the child's education and his or her later occupational or social class position. As a consequence, part of the relation between education and social class might be due to the confounding influence of parents' educational aspirations so that the effect is biased upwards.[i] While potentially interesting, this upward bias in the effect of education on social class challenges the interpretation of the relation as *returns* to education: Does it make sense to talk about *returns* to education if the actual reason for the effect is not education itself but some other confounding variable, such as parental aspirations for their children? Thus a

descriptive approach, as favoured by the authors, does not capture *returns to education*, if in the end a person's likelihood of obtaining a higher class position or higher earnings is not a consequence of their higher educational attainment, but of a different, causally prior attribute.

In addition, economists are generally willing to include factors such as cognitive ability, if available, as a proxy for individuals' competences. We have to acknowledge that in the 'returns to education' literature, education and educational degrees are taken as proxies of an individual's productivity, skill endowment, and (train)ability. As soon as economists have more detailed information (such as competence or ability measures), they do use this information in their analyses (see Hanushek et al 2010). The research on returns to early life course investments in human capital (or education, respectively) by Nobel Prize winner James Heckman, for example, shows that even non-cognitive skills (such as personality traits) are treated as part of human capital (see Heckman and Yona Rubinstein 2001). Accordingly, including ability measures is not an extension of the returns to education literature for the simple reason that economists are happy to investigate the relative impact of the cognitive and non-cognitive dimensions of human capital.

"Social class" as a (sociological) *critique* of the returns to education literature

By framing their paper—incorrectly, in our view—as an "extension" of the returns to education literature, Bukodi and Goldthorpe undermine the real contribution of their analysis to this line of research. We believe their true contribution is not simply to add a dependent variable (social class position instead of earnings) but to offer a lively *critique* of the returns to education literature. In particular, the authors' emphasis on the social class context of skill formation, and their sociological differentiation between education as certificate and education as development of cognitive abilities, undermine the underlying ideas in the returns to education literature, namely that of free markets and that of education solely as a an indicator of productivity. Such a critique is neither at odds with the authors' actual research questions (p 187, as opposed to the way the paper is framed in the introduction) nor with their empirical analysis. In particular, we see an implicit, twofold critique as the actual contribution of Bukodi and Goldthorpe's paper—a contribution, however, that the authors fail to make explicit.

First, the authors emphasize the importance of social origin and cognitive ability as additional, possibly interconnected factors for labour market outcomes. Examining these three factors in combination (education, class origin, and cognitive ability) and across three birth cohorts, brings the authors closer to a sociological perspective on skill formation (Müller and Jacob 2008). It points to the necessity to distinguish different dimensions of "education"—such as Bourdieu's or Collins's distinction between education as certificate (as institutionalized cultural capital or credential) or education as development of cognitive competences (as incorporated cultural capital or skills) (Bourdieu 1982; Collins 1971). Relating their findings to these sociologically informed concepts of skill formation would have yielded a much richer sociological contribution to the returns to education literature, one that would have raised the question: returns to what—to education as certificate or to education as cognitive competences? As the first dimension is often overlooked by economists, this framing would have allowed a pointed critique of the dominance of human capital theory, with its emphasis on competence and skills, in the research on returns to education.

Second, the authors promote social class simply as an additional outcome in a literature allegedly focused on earnings: "(…) there is no reason, from either an academic or a policy point of view, why *only* earnings returns should be considered. In this paper we focus instead on social class returns" (Bukodi and Goldthorpe 2011, 186). The true contribution, however, would have been to emphasize the importance of social class as a relational concept, thereby challenging the underlying idea of free markets in the returns to education literature. In particular, with their focus on the "chances of *access* to the professional and managerial salariat" (ibid), the authors question rather than extend the concept of "individual returns". They point at the structural conditions that inhibit a direct translation of education into earnings through processes such as social closure and other mediating factors related to the class concept. "When we hear from all sides the demand for an introduction of regular curricula and special examinations, the reason behind it is, of course, not

a suddenly awaked 'Thirst for education' but the desire for restricting the supply for these positions and their monopolization by the owners of educational certificates. Today the 'examination' is the universal means of this "monopolization" (Weber 1994, 130). In this way, Sørensen (2000) criticized the human capital literature by framing the returns to education process as a rent-seeking process—that is, "as returns on assets that are in fixed supply because single owners of the asset [social classes] control the supply of those assets so that the supply will not respond to an increase in price" (Sørensen 2000, 1525, our addition). More recently, Weeden (2002) used social closure processes at the occupational level to partially account for earnings inequalities between occupations (which, in Weber's sense, are means of social class closure, connected to educational certificates, differences in skill requirements, and employment contracts). With their focus on social classes, Bukodi and Goldthorpe implicitly highlight the structural conditions that shape the relation between education and earnings through processes such as social closure.

These are important aspects of the social class concept that are relevant for the debate on returns to education and not merely the fact "that individuals' earnings come from the *jobs* that are offered by employers" (Bukodi and Goldthorpe 2011, 186). For this argument, economic segmentation theory would be sufficient, attributing earning differentials to differences in individuals' marginal productivity, based on job content, skill requirements, working conditions, and work contract (e.g. in terms of employment duration). What is more important to social class is the fact that neither access to higher education nor access to jobs—even when recruiting via educational credentials—are solely based on individuals' productivity (as the returns to education literature suggests). Instead, both returns and individual productivity depend on access, and access is shaped by social closure and practices such as "opportunity hoarding" —that is "categorically unequal access to valued outcomes (…), e.g. how to sort students, whom to hire etc." (Tilly 1998, 11 and 15). Although the authors briefly touch on this argument in their introduction (p 186), they fail to embed their work in this literature and do not explicate the implications for the returns to education literature. Understanding Bukodi and Goldthorpe's contribution in these terms merits a truly sociological critique of the literature on returns to education.

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Endnote

[i] Note that this example refers to parental aspirations that are prior to the child's education.

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Causes, Classes and Cases

The commentaries on our paper by Clarke and by Legewie and Solga, which we appreciate, concern three main topics: causality, social class as a restriction on the supply side of labour markets, and missing data. Our response is structured accordingly.

Causes

Our general position in this regard is that of 'causal pluralism': i.e. we do not believe that there is any one 'right' characterisation of causality, but rather that different approaches to causality will be more or less appropriate to different substantive areas of inquiry and to the problems that arise within them (cf. Cartwright 2007). We would not therefore wish to accept what Clarke refers to as the Neyman-Rubin approach, in which a causal effect is understood as the impact of exposure to some intervention or treatment, as in some way capturing the essentials of the matter. On grounds set out at greater length elsewhere (Goldthorpe 2001) we would regard this approach as one that is in fact largely *in*appropriate to the social sciences, and not only because it derives from experimental research of a kind rarely possible for social scientists; two further reasons can be advanced.

First, as some of the more sophisticated proponents of the approach do indeed recognise, it has difficulty in dealing with cases where causation could be thought to inhere in individuals' goals, beliefs, reasoning and decisions. Thus, to take an example from Holland (1986), 'She did well on the exam because she was coached by her teacher' is a claim that can be accommodated to an understanding of causality as the effect of a treatment; but not the claim 'She did well on the exam because she studied for it'. In this latter case, as Holland accepts, a causal account involving the student's goal of doing well, her - correct - belief about the means of achieving this goal, and her reasoned decision to take this route, is scarcely compatible with the idea of her being exposed to a treatment analogously, say, to a patient being given a drug.

Secondly, as Clarke himself acknowledges, the Neyman-Rubin approach is concerned with the effects of causes - with, say, 'average treatment effects' - and not with the causes of effects. This focus may be entirely appropriate in many areas of applied research including, in the social sciences, policy evaluation studies. But it does at the same time seem excessively restrictive. A central scientific concern has always been with the causes of effects. As Popper has remarked (e.g. 1972, 115), in all the sciences *it is effects that raise the problem*: i.e. that constitute that which is to be explained and for which causal explanations are sought.

This last point is one directly relevant to our concern with description. In our view, the primary role to be played by statistics in the social sciences, or at least in sociology, *is* a descriptive one. It lies in establishing, and in determining the precise form of, social regularities - of a probabilistic kind - within specific populations. These regularities we would see, following Popper, as constituting the *explananda* of sociology. Clarke suggests that causal rather than descriptive interpretations of statistical results are desirable because they imply the isolation of different effects. But what we would stress is that a concern with isolating effects and checking for spurious relationships, is just as relevant in analyses that aim at description, as in those with causal ambitions. Thus, in our paper, our main aim was to establish patterns of association - hopefully, non-spurious - between individuals' social origins, their cognitive ability, their educational qualifications and their chances of access to the professional and managerial salariat, and the way in which these patterns have changed over time[i].

In a social science context, we would in general favour an interpretation of the results of regression analyses as having only descriptive force - rather than regression being seen as a means of moving, as Freedman has put it (1997), 'from association to

causation'. Clarke observes that a descriptive interpretation of regression means that one can speak only about how different groups of individuals, as defined by the independent variables of the analysis, are distinguished - i.e. about how they vary - in relation to the outcome variable. This we would accept - apart from the implication that description is then in some way an inferior task. We would, rather, see the accurate description of social regularities or, in other words, the task of getting the *explananda* right, as one that is important in itself and *prior to* that of trying to explain why the regularities established are as they are.

A causal interpretation of regression would appear warranted insofar as coefficients can be taken as having, in Freedman's words (1997, 117), 'a life of their own', outside of the data from which they are estimated. But this seems far less likely to be the case in the social than in the physical sciences, and primarily because of less developed theory. For example, in quantifying Hooke's Law (Freedman 2010, 11-15), the coefficient obtained from regressing the extension of a spring on its load could be regarded as capturing an inherent property of that spring, or type of spring, and one that itself causes the data from which the estimate is made to be as they are. But do regression coefficients for the earnings returns to education have such a life of their own? There seems no compelling evidence for believing so - for believing that the underlying theory is strong enough for 'structural βs', in Clarke's phrase, to be identified; and in turn we would doubt the validity - and, so far as policy is concerned, the wisdom - of taking such coefficients as a basis for counterfactual propositions.

In the approach to causality that we would ourselves wish to follow, what is important is not determining the effects of causes - i.e. of treatments - but rather gaining an understanding of the causal processes, or mechanisms, that generate established effects. As Cox has observed (1992, 297), it is a 'major limitation' of the Neyman-Rubin approach that 'no explicit notion of an underlying process' is introduced - no notion of a process 'at an observational level that is deeper than that involved in the data under immediate analysis'.

Thus, to take the case of smoking and lung cancer to which Clarke refers, epidemiologists did, as he states, establish a robust association between the two -which could be, and was, taken as highly suggestive of a causal relation. But the actual demonstration of a causal, generative process came only with the isolation of known carcinogens in cigarette smoke, histopathological evidence from the bronchial epithelium of smokers with lung cancer, and so on. An understanding of causal processes in this sense could in fact be regarded as a *prerequisite for* any attempt at producing structural models - for knowing, in the first place, the proper variables to include. As Duncan has pointed out (1975, 152), there were no structural models for the epidemiology of malaria 'until the true agent and vector of the disease were identified, although there were plenty of correlations between prevalence of the disease and environmental conditions'[ii].

In sociology, the established effects are the empirical social regularities that descriptive statistical analyses can demonstrate, and what is then required is some account of how these regularities are actually produced. Such causal accounts cannot be cranked out from statistical analysis itself but will, we believe, have in general to be given in terms of some theory of social action: that is, in terms of the goals, beliefs, reasoning and decisions of individuals acting within particular structures of opportunity and constraint. That is to say, they will be accounts entailing precisely the understanding of causality that the Neyman-Rubin approach is not designed to handle. Statistics are of course likely to come again into play in testing the validity of such accounts, although in this case the relevant data could be quite different – at, say, a more 'micro' level - from those from which the regularities constituting the *explananda* were derived.

We will elaborate further on the foregoing in the course of our discussion of the second of the topics we take up.

Classes

As we understand them, Legewie and Solga have two main concerns about our paper. First, they see it as unfortunate that we decline to make causal claims because we can then do little to extend economists' analyses of returns to education; and second, they think that we also miss an opportunity to develop a critique of economists' analyses that is implicit in our paper, relating to the part played by social class in imposing restrictions on the supply side of labour markets.

On the first issue, we have already set out why we believe that the description - as accurate as possible and as sophisticated as necessary - of what is to be explained should precede attempts at explaining it; and, further, why we believe that, at least in sociology, such explanatory attempts require the specification of causal processes in terms of individuals' actions rather than the estimation of treatment effects. We would certainly be responsive to suggestions of the kind Legewie and Solga make of further variables that might be included in our analyses. Thus, in current work (Bukodi and Goldthorpe, 2011) we develop the concept of social origins, in relation to children's educational attainment, so as to include parental social status and parental education as well as parental class; and in future research we plan to include measures of various of children's non-cognitive attributes. But all this is with the aim, in the first place, of arriving at better description rather than that of producing causal accounts of the kind in which it is variables rather than individuals that do the acting. So far as extending economists' analyses is concerned, our main concern was in fact quite different to what Legewie and Solga would have it be. It was simply to argue that the relation between education and individuals' class positions could be of greater interest than that between their education and their (current) earnings in view of the evidence that class position is a more comprehensive indicator of individuals' economic situation and life-chances.

On the second issue, we would agree with Legewie and Solga that social class imposes restrictions on the supply side of labour markets, and to a greater extent than tends to be recognised in at least mainstream economics. But it was not our aim to enter into this contested terrain in the paper under discussion. We intend to do so in future - but then, we have to say, on different lines to those that Legewie and Solga would have us follow, and for reasons that derive directly from our position as set out in the previous section.

Legewie and Solga see the main bases for a critique of economists' analyses of the earnings returns to education as lying in the existing sociological literature on 'credentialism', 'social closure' and 'segmented' labour markets. We are less impressed by what has been achieved in pursuing these concepts. We find two other literatures more promising, and primarily because they do comprise attempts at accounts of causal processes that could generate established empirical regularities.

First, in the case of inequalities in educational attainment associated with individuals' class origins, we would note research (Erikson *et al.*, 2005; Jackson *et al.*, 2007; Jackson and Jonsson, eds., forthcoming) that seeks to distinguish between 'primary' effects, as reflected in class differences in actual educational performance, and 'secondary' effects as reflected in class differences in educational *choices*, given performance (these latter effects being usually discussed, and often underestimated, by economists under the rubric of 'credit constraints'). Relevant models of educational choice, hypothesising underlying causal processes, are then available (Erikson and Jonsson, 1996; Breen and Goldthorpe, 1997) and have been quite widely subject to empirical test with, so far, encouraging results (Goldthorpe, 2007, vol. 2, ch. 4).

Second, as regards the association between individuals' educational attainment and the jobs, forms of employment relations and thus class positions into which they enter, we would be more appreciative than Legewie and Solga of what certain economists have proposed as alternatives, or at least complements, to the dominant human capital theory. Again, possible underlying causal processes have been at least outlined, and appear, from a sociological standpoint, more realistic and comprehensive than those invoked or implied by human capital theory.

For example, signalling and screening theory (cf. Weiss, 1995) suggests that rather than, or as well as, education enhancing productivity, it serves to indicate it and allows employers to identify it in potential employees - with the possibility then being raised of *other* attributes of individuals associated with their social origins being similarly used in signalling and screening processes. Job competition theory (Thurow, 1976) proposes that job returns to education are prior to earnings returns and, further, that in job competition what matters is not how much education an individual has but rather how much *relative to others* - so that families in more advantaged classes are likely always to engage in 'defensive' expenditure in order to maintain their children's educational edge. And 'incentive enhancing preference theory' (Bowles, Gintis and Osborne, 2001a,b) sees

education increasing individuals' productivity not simply through the transmission of knowledge and skills but through schools and colleges reinforcing - or in some cases perhaps offsetting - processes of family socialisation so as to endow individuals with values, norms and preferences of a kind that make them more responsive to the incentives and sanctions that employers can deploy.

In a research project on which we are about to begin (together with Heather Joshi and Jouni Kuha) we will aim to test further the causal claims deriving from such theories - with a view to their refinement and development - against the data of the British cohort studies. These will allow us to follow men and women from their social origins, through their educational careers and then through the job, occupational and class trajectories that they follow up to their middle years.

Cases

Clarke raises the problem of missing data, and expresses doubts about the way we handle it - i.e. through the 'missing data indicator' method. We recognise the importance of the problem but we would further observe that with the data-sets of the cohort studies that we use, attrition - i.e. the permanent loss of cohort members over successive sweeps of the studies - could be reckoned as a more serious source of missing data than that of item non-response on which Clarke appears to focus. Statisticians have given a good deal of attention to identifying the nature and extent of biases that might result from attrition; but far more work would still seem needed, on the lines of that of Hawkes and Plewis (2006), aimed at modelling attrition as a basis for some form of corrective weighting.

Against this background, the 'missing data indicator' method then has obvious attractions in helping to keep up the number of individual cases represented in each cohort. Nonetheless, we see the force of the arguments that Clarke sets out, and we have in fact come to accept that the potential dangers of the method in introducing bias into estimates do outweigh its advantages. In more recent research (e.g. Bukodi and Goldthorpe 2011) we have therefore reverted to the 'complete cases' procedure - i.e. that of including in analyses only those cases in which there is no missing data on the set of variables of interest. We may, though, add that we have repeated the main analysis of the paper under discussion using only complete cases - with a reduction of the total N of about 25% - and that the results obtained, available on request, do not differ in any consequential way from those originally reported using missing data indicator variables (Table 2): one marginally significant effect now becomes non-significant. Is more to be learnt from this than that we just got lucky?

Clarke proposes that if one does not wish to lose incomplete cases, then methods of multiple imputation (MI) should be applied. Until recently, it could be said that MI has been far more often recommended by statisticians than practised by social researchers, and chiefly because of the apparently high start-up costs involved. However, software developments now make its use more attractive. In the research project referred to above, we plan to use MI and, in the early stages of the project, to treat various substantive issues through analyses based both on complete cases and on MI. Some methodological interest may again attach to the comparison of the results obtained.

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Endnotes

[i] Legewie and Solga claim that in taking over the concept of 'returns' to education from economists we imply causality. But what matters here, in our view, is usage, not the supposedly 'inherent' meanings of words; and we see no difficulty in talking about the 'returns' of one kind or another that are *associated with* education, while leaving open questions of causal process (see further below).

[ii] Our view that in sociology the results of regression analyses are in general better interpreted in descriptive rather than causal terms does in fact go back to Duncan. For a revealing discussion of his position, see Xie (2007) and the distinction made between Gaussian and Galtonian conceptions of regression.