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Work value development from adolescence to adulthood

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ABSTRACT

This study examines three forms of development in work values, or the importance people attach to various rewards of working, including whether young people become more selective in their work values with age, whether work values become more stable with age, and whether work values become more predictive of later work outcomes with age. Drawing on multi-cohort panel data from ages 18 to 30 (the Monitoring the Future senior classes of 1976–1990), we find that the range of job features valued highly narrows with age; that interindividual differences in work values become more stable with age along seven dimensions of work values; and that with age, work values become stronger predictors of both the pay and intrinsic rewards of jobs. Despite significant social change altering the context of vocational development in adolescence and early adulthood, these developmental changes were highly similar across cohorts who were high school seniors between 1976 and 1990.

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1. Introduction

Major changes have occurred in the labor market over the past forty years, tied to an interlocking set of factors including globalization, technological innovation, and a changing relationship between employers and employees (Danziger & Ratner, 2010). Educational careers have lengthened (Fitzpatrick & Turner, 2007), there are fewer life-long careers (Farber, 2007), and both the costs of and returns to higher education have risen dramatically (Goldin & Katz, 2007). Adolescents' occupational planning in the U.S. is increasingly occurring in a context of uncertainty, with high stakes, and without the same degree of institutionalized structures linking school and work as in other Western industrial nations (Kerckhoff, 2003).

Adolescents' work-related preferences and values have long been considered important to understanding occupational planning and career outcomes (e.g., Davis, 1965; Rosenberg, 1957). Along with educational expectations,

occupational aspirations, and other work-related orientations, work values help adolescents navigate their way through schooling and occupational opportunities (Schneider & Stevenson, 1999:4; Schulenberg, Vondracek, & Kim, 1993) to eventually work in jobs of varying statuses and other qualities (for reviews, see Mortimer, 1996; Schleicher, Hanson, & Fox, 2011).

Whereas adolescence has been the life stage of most interest for understanding the development of these orientations, work values and occupational aspirations are unlikely to be set by the end of adolescence (Jacobs, Karen, & McClelland, 1991; Johnson, 2001b; Schulenberg et al., 1993). Moreover, the lengthening of educational investments and ongoing occupational exploration that occurs during an increasingly drawn out transition to adulthood may produce even more development in these preferences and goals.

Understanding ongoing development in work values is important for several reasons. First, work values influence both educational attainment and the levels of key work rewards of later jobs, including pay and autonomy (Johnson, 2001a; Johnson & Elder, 2002; Lindsay & Knox, 1984). They are also believed to be a source of motivation

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for workers (Brown, 2002; Vroom, 1964), and various models of job satisfaction point in one way or another to work values or the match between work values and job characteristics as major sources of job satisfaction (Brown, 2002; Kalleberg, 1977). To the extent social scientists can identify the types and forms of change in people's work values, we will gain better leverage in understanding the goal-attainment link in the work arena, as well as worker well-being. Finally, major changes in the structures of the economy and labor markets may alter patterns of work value development and change. As noted above, adolescents finishing high school towards the end of the twentieth century faced a different world than even that of several decades earlier.

Drawing on the panel data from the Monitoring the Future (MTF) surveys (for the senior classes of 1976–1990), this paper considers development in work values from twelfth grade (approximately age 18) through age 29–30. More specifically, we pursue analyses to address three research questions:

- (1) Do individuals become more selective about what work features they value highly during the transition to adulthood?
- (2) Do interindividual differences in work values become more stable as adolescents become young adults?
- (3) Are work values assessed at older ages better predictors of work features in adulthood compared to those assessed in adolescence?

The multi-cohort panel data from the MTF surveys also provides us with a unique opportunity to assess cohort differences in young people's work value development from the mid-70s to 1990, a period of change in both the labor market and in educational institutions.

1.1. Work values

Work values lie within a set of orientations that guide adolescents through a maze of important decisions affecting their future attainments. These work orientations have been studied under a variety of names, including work, job, or occupational "values" (Davis, 1965; Schulenberg et al., 1993), or alternatively, "judgments about work" (Johnson, Mortimer, Lee, & Stern, 2007; Kohn & Schooler, 1969). They indicate the importance young people place on a range of potential work features that transcend occupational categories, such as pay, job security, autonomy, and opportunities to be creative. Work values are more general than occupational aspirations, making them particularly useful during times of social change. While specific occupations come and go, each can be characterized by these sorts of features. Work values develop in childhood and adolescence and reflect differences in occupational opportunities and socialization by class, gender, and race (Bridges, 1989; Lindsay & Knox, 1984; Marini, Fan, Finley, & Beutel, 1996; Martin & Tuch, 1993; Weisgram, Bigler, & Liben, 2010).

Work values are usually conceptualized along multiple dimensions, with most configurations distinguishing extrinsic and intrinsic orientations, though often identifying

additional dimensions as well (Johnson et al., 2007). Herzog (1982) and Marini et al. (1996), both drawing on the same measurement instrument as the current study, have distinguished among seven types of work rewards that may be highly valued. Extrinsic rewards include instrumental and status-attainment rewards, such as income, advancement opportunities, and prestige. Security captures work stability. Intrinsic rewards reflect the inherent interest of the work, the learning potential, and the opportunity to be creative. Influence, though often combined with intrinsic rewards, refers to the opportunity to exercise power through involvement in decision making and performing challenging work. Altruistic rewards are derived from doing things for others, such as directly helping others or making a contribution to society. Social rewards are interpersonal and include positive relations with co-workers, the opportunity to make friends, and working with people. Finally, leisure includes the opportunity for free time, vacation, and freedom from supervision.

1.2. Zeroing in

Adolescents generally consider a wide range of job rewards to be very important (Johnson, 2002; Marini et al., 1996), evidencing a degree of "wanting it all" in their work values. We expect, however, that one important change in work value development during the transition to adulthood is in increasing selectivity about what one truly considers important in one's work. Thus, our first study objective is to evaluate whether young people become more selective in their work values with age, a process we refer to as "zeroing in," and to determine how quickly this occurs. We develop a measurement strategy to capture this process that, to our knowledge, has never been examined in-depth before.

We expect to observe zeroing in for two reasons. First, a substantial body of research documents that change in work values over the life course operates through a process of reinforcement and accentuation. Workers tend to prefer and obtain jobs with features that are consistent with their importance ratings (Johnson, 2001a; Judge & Bretz, 1992; Mortimer & Lorence, 1979). Beyond this selection into jobs, workers also come to place greater importance on rewards that they obtain in their jobs (Johnson, 2001a; Mortimer & Lorence, 1979). Adolescents' work values generally exceed what will be available to them in the labor market as adults (Marini et al., 1996). As such, becoming more selective with age is part of becoming more realistic, letting go of desires for rewards that are not received in sufficient quantities. Second, more intense periods of vocational exploration may make potential work rewards more salient and therefore entail heightened importance ratings on a variety of work rewards before young people eventually settle into their preferences (Schulenberg et al., 1993).

The tendency to value a wide range of potential work rewards in adolescence has been evident among cohorts of teenagers at least since the 1970s, but there has been no attempt to track its extent over time. In contrast, studies have monitored educational and occupational aspirations quite closely, documenting growing ambitiousness. Both educational and occupational ambitions have risen

dramatically, with much of this change concentrated in the period since the 1970s (Bachman, Johnston, & O'Malley, 2010; Goyette, 2008; Reynolds, Steward, Sischo, & McDonald, 2006; Schneider & Stevenson, 1999). In the case of work values, average levels of work values have been charted among high school students over time, through the early 1990s, without directly addressing whether cohorts became more ambitious – increasingly likely to “want it all” (Marini et al., 1996; Schulenberg, Bachman, Johnston, & O'Malley, 1995). The trends revealed in these studies are suggestive, however. The average rated importance of extrinsic rewards, influence, security, and leisure all increased across cohorts of high school seniors in the Monitoring the Future project between 1976 and 1991, particularly among young women; the average rated importance of altruistic rewards decreased only slightly over this period (Marini et al., 1996). If values are not substantially weakening in any area while they are strengthening in others, it would seem “wanting it all” has become more pervasive.

“Wanting it all” may be more common among recent cohorts, in part due to an increased focus on their going to college. Young people (and their parents) are very aware of the earnings advantages of post-secondary education, and their educational ambitions reflect that fact (Schneider & Stevenson, 1999). They also reflect young people's deeply felt uncertainty about what jobs will be available in the future (Csikszentmihalyi & Schneider, 2000). In this context, education is thought to facilitate adaptability. In addition, Rosenbaum (2001) argues that major historical changes in the educational system, including the massive expansion of community colleges with open enrollment policies, contribute to the belief that all adolescents should and can go to college. Yet a singular focus on getting into and attending college may delay serious vocational thinking and planning (Mortimer, Zimmer-Gembeck, & Holmes, 2002). As such, more recent cohorts may finish high school having narrowed their work values to an even lesser extent than earlier cohorts. Thus, we expect a rise in the degree of “wanting it all” across the cohorts we observe from the mid 1970s to 1990.

Cohorts may also differ in how quickly they “zero in” as they make the transition to adulthood. We propose two competing possibilities. First, if vocational development has been delayed or extended in more recent cohorts, it may be that growing clarity of desires regarding one's future work simply occurs later, in which case young people may hold on to a wider range of work rewards they consider highly important into older ages. With lengthening investments in school, more time spent in non-career jobs, and a general postponement of adulthood, experiences that prompt re-evaluation and prioritization occur at older ages. In that case young people's rate of adjustment in their work values would be slower. Second, and alternatively, if more recent cohorts do manifest greater tendencies to “want it all,” but still face the major obstacles to realizing desirable work rewards in a similar period, they may have greater adjustments to make overall within this transitional life stage. Larger adjustments over a similar period of time could translate into more rapid change. In this case, life course change would provide a correction to the historical rise in “wanting it all.”

1.3. Growing stability

Whereas our first objective focuses on whether individuals narrow the range of work rewards they consider important with age, our second attends to growing stability in interindividual differences in work values with age. In other words, are individual differences in work values increasingly maintained with age? As people get older, can we say that those who were most extrinsically oriented continue to be the most extrinsically oriented, and those most socially oriented continue to be so later as well?

Persistence of individual differences is a form of stability usually referred to as normative or differential stability, or when assessed among age-homogeneous groups as we do here, molar stability (Alwin, 1994). The aging stability hypothesis predicts increased stability across a range of personality traits, attitudes, and values with age, because either people have fewer opportunities for change with age or because they have less capacity for change (Alwin, 1994; Glenn, 1980). Aging stability can occur alongside zeroing in, as a complimentary indicator of maturation. Aging stability in work values likely occurs as young people sort out and become more committed to what they find important about work. In addition, as young adults' employment lives become more stable, opportunities that prompt reconsideration of work values should also decline. Job changing is quite frequent in the young adult years, but declines with age (U.S. Dept. of Labor, 2006).

The limited evidence to date testing aging stability in work values finds support for it. Johnson (2001b) documented rising stability in four dimensions of work values (extrinsic, intrinsic, altruistic, and social) from the ages of 18 to 32. Our analysis also focuses on the transition to adulthood, but expands consideration to a broader set of work value dimensions.

Greater delay in vocational development that we expect to manifest in more “wanting it all” in work values across cohorts can also be expected to alter the pattern of aging stability across cohorts. At the youngest ages observed, in the late teens and early twenties, stability should be lower for more recent cohorts than for older ones. More young people are pursuing postsecondary schooling and “churning” in the labor market has been increasingly common (Farber, 2007; Fitzpatrick & Turner, 2007). It is more difficult to predict what might happen as young people approach their 30s. It may be that more recent cohorts that start at lower levels of stability continue to register lower levels of stability than older cohorts, even as they show rising stability with age. Alternatively, though they experience lower levels of stability in the younger years, by the time they get to 30 they may have caught up with older cohorts and demonstrate similar levels of stability. As such, we test for historical change in aging stability without imposing a constant historical difference between panels as they age.

1.4. Strengthening connection to work

As young people sort out what they value most among work rewards, their work values should become better

predictors of occupational outcomes. Compared to work values as expressed in high school, those expressed after some labor market experience, and for some, additional schooling, should be more strongly related to the work young people do in their thirties and beyond. Thus, socialization at work throughout the young adult years should produce better correspondence between values and work conditions, even years later (when very few will actually hold the same job for the duration). We expect that even adolescents' work values will predict later occupational outcomes, but that work values will also change in ways with age that strengthen that relationship.

Assessing such a prediction is complicated by the confounding of unequal durations between measurements, regardless of what developmental processes are contained within them. Put simply, work orientations should be stronger predictors of job conditions when assessed close in time to one another compared to over longer durations. For example, the match between occupational aspirations and occupation of employment is stronger the closer in time they are assessed (Rindfuss, Cooksey, & Sutterlin, 1999). Our expectation goes beyond this, however, grounded in the idea that zeroing in and growing stability in work values tightens the connection between what young people find desirable in work and the jobs in which they work. Thus, in addition to examining whether work values assessed at an older age better predict work features in adulthood than those assessed in adolescence, we make further comparisons in which the duration between assessments is held constant, but the age of assessment varies.

With respect to differences across historical cohorts, delayed vocational development could also be expected to weaken the connection between adolescents' work values and later work attainments. This has already been shown not to be the case, however. Drawing on the same panel data as the current study, we (Johnson & Monserud, 2010) found no support for the hypothesis that more recent cohorts' 12th grade work values were less predictive of work conditions at age 30 than was the case for earlier cohorts. The lack of difference not only indicates that recent cohorts' work values are as connected to later work conditions as they were in the past, but casts considerable doubt on the arguments above about whether recent cohorts are increasingly likely to "want it all" or that they demonstrate lower stability in their work values, since these changes should weaken the predictive power of work values in adolescence for later work outcomes.

It may be that work value development has been largely similar throughout the period under study. One reason may be that in contrast to occupational aspirations and educational expectations, work values are more abstract and general. Another is that adolescent employment is very common, and much work value development occurs in jobs teens hold while in school. Mortimer and colleagues (Mortimer, Pimentel, Ryu, Nash, & Lee, 1996) show work values do change in response to work features in high school jobs. College students have become more likely to work while in school (Bernhardt, Morris, Handcock, & Scott, 2001; Fitzpatrick & Turner, 2007). Thus, young people are still getting work experience, even as they

remain in school until older ages. Finally, the availability of data restricts how far back historical comparisons can be made. The Monitoring the Future data, which we draw on in the current study, is the only study to systematically collect data on young people's work values across cohorts, and it did not begin until the mid 1970s. Considerable change in the labor market occurred throughout the period between the 1970s and the end of the century, but even the earliest cohorts we can observe would have been affected by these changes to some extent, albeit at somewhat older ages than members of later cohorts. Thus, while sufficient rationale exists to justify testing historical comparisons in work value development, and doing so will enable an assessment of how sensitive that development is to macro-historical processes, it is unclear at the outset whether differences will truly manifest.

2. Methods

2.1. Data

The data for this research are from a panel component of the Monitoring the Future (MTF) surveys, collected by the Institute for Social Research at the University of Michigan (Johnston, O'Malley, Bachman, & Schulenberg, 2007). Using a multistage cluster sampling technique, a nationally representative sample of about 16,000–18,000 high school seniors have participated each year since 1976. In order to include a wider range of topics, participants were randomly assigned to one of multiple forms of the survey instrument. Approximately 2500–3500 high school seniors responded to the form containing measures of work values annually. From the original senior year participants, a representative subsample of approximately 2400 participants was chosen each year to participate in a panel study, again spanning multiple survey forms.

This analysis focuses on panel participants from fifteen senior-year cohorts, 1976–1990, that completed the form containing the measures of work values ($N = 7098$). Later cohorts are still too young to have participated in and have their data available for all the relevant follow-up surveys. Data for this study were taken from respondents' senior year (referred to here as wave 1) and six biennial follow-up surveys (waves 2–7). For half of each cohort, the first follow up occurred one year after the base year; it occurred two years after the base year for the other half. This eleven to twelve-year period from the senior year of high school through approximately age 29–30 covers the primary ages of the transition to adulthood. MTF data is invaluable for this type of research examining historical as well as age-related change, as it provides data across the exact same ages for repeated cohorts of individuals.

2.2. Measures

Work values were measured in every data collection by the question, "Different people may look for different things in their work. Below is a list of some of these things. Please read each one, then indicate how important this thing is for you (1 = not important, 2 = a little important, 3 = pretty important, 4 = very important)." Following

previous studies of work values that used the MTF data, seven work value domains were distinguished (Herzog, 1982; Marini et al., 1996). The wording of the items for each value dimension is shown in Table 1. Using confirmatory factor analysis, we determined that these dimensions, measured by the items listed, demonstrated structural invariance over time and did not vary by cohort.¹

We created scales for each dimension at each wave of assessment by averaging the ratings across the component items. To address our first study objective, focused on the degree of “wanting it all” demonstrated in young people’s work values, we created an additional measure representing the proportion of these seven dimensions that were rated very highly. We considered a dimension to be rated very highly if a respondent’s score on the scale exceeded 3.00. While we considered simply calculating the proportion of all the individual work features that were rated very highly, we were concerned that such a procedure might overestimate the tendency to value many types of rewards highly. For example, someone could easily value six work features highly, but they might all represent intrinsic work features. Similar ratings across the six intrinsic items is to be expected, and is considerably different from highly valuing work features across multiple dimensions. Thus our measure captures the degree of importance attached across reward types.²

The original scales for each dimension were used to address our second study objective, testing the aging stability hypothesis. The scales for intrinsic and extrinsic orientations also became the measures for analysis for the third study objective, examining the links between work values and the features of later work. We restricted our attention to these two dimensions for the third study objective because these are the only dimensions for which corresponding data were collected on the features of jobs held.

One primary independent variable of interest is cohort, which refers to the year the respondent was in 12th grade

Table 1
Measurement of work values.

Each item rated from 1 (not important) to 4 (very important).	
Extrinsic Rewards:	
	a job where the chances for advancement and promotion are good
	a job which provides you with a chance to earn a good deal of money
	a job that most people look up to and respect
	a job that has high status and prestige
Security:	
	a job that offers a reasonably predictable, secure future
	a job which allows you to establish roots in a community and not have to move from place to place
Intrinsic Rewards:	
	a job which uses your skills and abilities – lets you do things you can do best
	a job where you can see the results of what you do
	a job where the skills you learn will not go out of date
	a job where you can learn new things, learn new skills
	a job where you have the chance to be creative
	a job where you do not have to pretend to be a type of person that you are not
Influence:	
	a job where you get a chance to participate in decision making
	a job where most problems are quite difficult and challenging
Altruistic Rewards:	
	a job that gives you an opportunity to be directly helpful to others
	a job that is worthwhile to society
Social Rewards:	
	a job that gives you a chance to make friends
	a job that permits contact with a lot of people
Leisure:	
	a job which leaves a lot of time for other things in your life
	a job which leaves you mostly free of supervision by others
	a job where you have more than two weeks’ vacation
	a job with an easy pace that lets you work slowly

(in multivariate analysis, this is adjusted by subtracting 1975). For study objectives one and three, we also controlled for a variety of background variables associated with work values and occupational placement, all measured during the senior year. *Parents’ educational attainment* was measured by the educational attainment of the most educated parent on a six-point scale (completed grade school or less, some high school, completed high school, some college, completed college, graduate or professional school after college). Mother’s and father’s income and occupation were not measured in the MTF project. *Gender* was self-reported (female = 1). Self-reported *race* distinguished whites, blacks, or members of other races/ethnicities. *High school achievement* was measured by grade point average on a nine-point scale from 1 = D or below to 9 = A. *Curriculum track* distinguished those reporting they were enrolled in a college preparatory curriculum and those who were not. The MTF surveys did not include test scores or administer an intelligence assessment. *Self-rated intelligence* was measured by asking respondents to compare their intelligence to others their age on a seven-point scale from 1 = far below average to 7 = far above average. *Educational expectations* were indicated by the likelihood respondents attached to their completing a four-year university degree (1 = definitely won’t; 4 = definitely will). Table 2 provides descriptive

¹ One item used in these past studies, “a job that is interesting to do,” was dropped from the intrinsic orientations construct because tests demonstrated that its loadings could not be constrained to be equal across the various ages for which panel members were surveyed. All seven dimensions were examined together in these measurement models. We compared models in which factor loadings were freely estimated to those in which they were constrained to be equal across wave. To evaluate cohort differences we estimated measurement models for subgroups defined by cohort and compared models in which loadings were estimated freely across subgroup to those in which they were constrained to be equal across cohort. For these tests we evaluated cohort groupings two ways—cohorts divided into five equally spaced groupings (i.e. 1976–1978, 1979–1981, 1982–1984, 1985–1987, and 1988–1990) and then again with cohorts divided into three equally spaced groupings.

² While these two approaches produce different estimates of the degree to which young people “want it all,” the pattern of “zeroing in” with age, and the differences by cohort, are highly similar regardless of which is used. In early vetting of this study, we also received a suggestion to measure “zeroing in” using the within-person variance across the individual ratings. We explored this option, but ultimately discarded it, as variance across ratings is not necessarily maximized by those who are most selective. For example, while the variance across four ratings of 1, 1, 4, and 4 is higher than for a person wanting it all (with four ratings of 4, 4, 4, and 4), it is also higher than the more “picky” person with four ratings of 1, 1, 1, and 4.

Table 2
Demographic characteristics of the study sample.

	Range	Mean (SD)	Percent
Parents' educational attainment	1–6	3.97 (1.16)	
Female	0–1		52.4
White	0–1		80.4
Black	0–1		10.6
Other race/ethnicity	0–1		9.0
College prep. curriculum track	0–1		49.4
Grades	1–9	5.81 (1.70)	
Self-rated intelligence	1–7	4.96 (.98)	
Expects college	1–4	2.77 (1.04)	

N = 6467.

statistics on these measures characterizing the study sample.

The Monitoring the Future study collected limited information on the features of jobs respondents held in each wave after high school, though did include indicators of intrinsic rewards and a key extrinsic reward, pay. We created an *intrinsic work rewards* scale by taking the mean across four subjective evaluations ($\alpha = .85$). These included ratings of how interesting their work was as well as their opportunities to learn new skills, use their skills and abilities, and make good use of special skills they had learned (1 = not at all, 2 = to a little extent, 3 = to some extent, 4 = to a considerable extent, 5 = to a great extent). For the extrinsic dimension, we focused on *hourly earnings*, measured in 17 categories (0 = no pay, 1 = <\$3, 2 = \$3–3.49, 3 = \$3.50–3.99, 4 = \$4–4.49, 5 = \$4.50–4.99, 6 = \$5–5.49, 7 = \$5.50–5.99, 8 = \$6–6.49, 9 = \$6.50–6.99, 10 = \$7–7.99, 11 = \$8–8.99, 12 = \$9–9.99, 13 = \$10–11.99, 14 = \$12–14.99, 15 = \$15–19.99, 16 = \$20 or more) which we coded to the midpoint dollar amount of each category. For example, someone who reported earning \$9–9.99 per hour was coded as earning \$9.50 per hour. The MTF did not collect occupational histories or other data from which to assess job stability or continuity.

2.3. Analytic strategy

All analyses were weighted to adjust for the stratified sampling technique used to select participants from the senior year cohorts into the panels. The modeling approach and sample size varied across the analysis for the three study objectives, which we describe in turn.

To examine trajectories in the level of “wanting it all” and “zeroing in” as the panels aged, we estimated a series of two-level hierarchical models in which time of measurement (level 1) is nested within the individual (level 2). This type of model is often referred to as an individual growth model. We first estimate an unconditional model, that is, one without any covariates. In order to determine the form of change, we compared a model with a linear change term to one which included a linear and a quadratic one. These models provide information on whether young people “zero in” on a narrower set of work values with age, and how quickly that occurs. In a second model we estimate the effects of cohort membership on both the intercept (degree of “wanting it all” as 12th graders) and slope (rate of change in degree of “wanting it

all” with age) of the trajectory to determine whether more recent cohorts are more likely to “want it all” and differ in how quickly they “zero in.” Finally, we control a number of time-invariant background factors in a third model to examine whether cohort differences in Model 2 are a result of compositional shifts in 12th grade classes. The unit of analysis is person-years and our models make use of all observations, regardless of whether respondents contributed only one observation or the maximum of seven observations. Due to missing data on individual measures, as well as attrition in the panel, the sample size in our full model is 32,089 person-years, with 6234 individuals contributing from one to seven observation years each.

To examine the aging stability hypothesis, we compare the over-time correlation in each dimension of work values for each two-year period of the study. For example, we examine whether the magnitude of the relationship between extrinsic work values between waves 6 and 7 (representing the passage of two years) is larger than that between waves 5 and 6 (again representing a two-year interval), and whether that is larger than the relationship between extrinsic work values between waves 4 and 5, and so on. We present results based on the maximum number of cases available for each interval, but also compare the results to those obtained by restricting the analysis to those with valid work values measures in all seven waves.

Finally, to examine whether work values assessed at older ages are more predictive of adult work outcomes than are those assessed in adolescence, we estimate regression models separately for two outcomes: intrinsic rewards and pay, both for the job held at wave 7 (age 29–30). We compare the effects of work values measured at wave 4 (age 23–24) to those measured at wave 1 (age 17–18). These analyses are based only on those respondents who were employed in wave 7 and who had valid measures for the control variables and for work values at both wave 1 and wave 4 (*N* = 3344). Because models contrasting the predictive power of work values at two ages for work outcomes at age 30 represent different duration intervals, we also estimate a model regressing the same work outcomes assessed at age 23–24 on work values measured at wave 1. This holds the duration interval constant, but varies the ages of assessment. Drawing on both comparisons allows a more informed discussion of the role age plays in the relationship between work values and work outcomes.

2.4. Panel attrition

One limitation of these data, common to long-term panel studies, is panel attrition. Retention through wave 7 was 59%, and was higher among females, whites, higher achieving seniors, and members of the earliest cohorts. Respondents lost to attrition also held slightly stronger extrinsic, and slightly weaker intrinsic, orientations in the 12th grade, and rated slightly more work value domains highly as 12th graders (52% vs. 50%) compared to those retained for all waves.

The vast majority of missing data in this study is on the dependent variables, resulting from attrition, although there was a small amount of missing data on the independent variables as well. To explore the effect of missing data on our results, we compared the results presented here with those obtained with other strategies. First, we estimated all multivariate models using multiple imputation techniques. Because imputing missing values on the dependent variable does not improve estimation and creates additional noise in the estimates (von Hippel, 2007), we only imputed missing data on the independent variables. The results were highly similar to those using listwise deletion (results available on request). As mentioned above, however, most of the missing data was in the dependent variables, due to panel attrition. Thus, in our second approach we weighted the analyses by the inverse of the sampling weight as determined by the research design and the inverse of the predicted probability of being retained in the sample through wave 7, as generated from logistic regression analysis (see Clarke, O'Malley, Johnston, & Schulenberg, 2009 for a similar approach using these data). Again the results were very comparable to those obtained using the original panel study weights (results available upon request).

3. Results

3.1. Descriptive trends in senior year work values

Before pursuing our three primary objectives, it is useful to see how adolescents rate the various features of jobs and whether there were historical trends evident across cohorts in these ratings. Fig. 1a–f presents the ratings of job features for each dimension by cohort. The sample sizes on which these means were based appear in Appendix A. Whereas our later analysis looks at how work values change with age, these trends focus exclusively on panel members' twelfth grade ratings. These trends confirm that the importance of extrinsic rewards, influence, and leisure became slightly more important across cohorts of twelfth graders. In contrast there was almost no trend in the ratings for the items measuring security, altruistic rewards and social rewards. The ratings for intrinsic rewards were also quite stable, though creativity trended slightly upwards and being able to see the results of what you do trended slightly downwards. These findings also affirm that young people hold many job characteristics to be highly important. The mean rating on most items was at or above a 3 on a four-point scale.

3.2. Zeroing in

Our first set of analyses examines the extent to which adolescents place high importance on a range of work characteristics and then become more selective with age. The unconditional growth model (Model 1) provides information about an average trajectory across respondents, defined by an intercept (initial level of "wanting it all" in the senior year) and one or more slope terms (rate of change as the respondents aged). Based on comparisons between a model in which time is represented by a linear function and one in which it is represented by both a linear and a quadratic term, we selected the linear form as the best representation of change.³ That model appears in Table 3. Model 1 shows an initial starting point of nearly 50, indicating that respondents on average rated half of the dimensions very highly as twelfth graders. It also indicates respondents became more selective with age, dropping 2.4% for each two year period.⁴ The unconditional growth model also indicates the presence of statistically significant variation in both the intercept and slope across respondents, variation that a person-level covariate like cohort could explain.

Model 2 estimates cohort differences in the intercept and slope defining the trajectory of "wanting it all." The findings indicate statistically significant historical change in "wanting it all" among seniors in high school. Consistent with our expectations, more recent cohorts are less selective in their work values during adolescence. The rate of change in "wanting it all" with age (i.e. the slope) has picked up historically as well. More recent cohorts experience more rapid declines with age in the proportion of work value dimensions rated very highly. More recent cohorts start their trajectories higher and decline more steeply, becoming slightly more selective by the sixth follow up than the earliest cohorts. This is consistent with the argument that greater developmental corrections have accompanied the historical rise in "wanting it all." In Model 3 we examined whether other demographic and school-related variables accounted for the historical changes we observed. The cohort change in the initial level of "wanting it all" is reduced somewhat but is still statistically significant and the cohort difference in the rate of change remains the same. We conclude that the cohort changes are generally not a function of the changing composition of high school seniors over time.

³ Based on Chi-Square tests as well as a comparison of BIC values, the quadratic model actually demonstrated better fit. However, the linear and quadratic change components in that model were nearly perfectly correlated. In addition, both the mean and the variance of the quadratic component were quite small. We estimated our three models using both a linear specification and a quadratic one, yielding highly similar results. Based on the problems above, as well as parsimony in the face of comparable results, we decided to present the linear models.

⁴ It is beyond the scope of this paper to present growth models for each of the seven dimensions of work values themselves. In order to assess whether zeroing in results from change in only one or two dimensions, however, we did estimate these. These growth models indicated that the average trajectory of ratings on all dimensions were lowered with age except for security, which did not change with age, and for influence, which rose slightly with age.

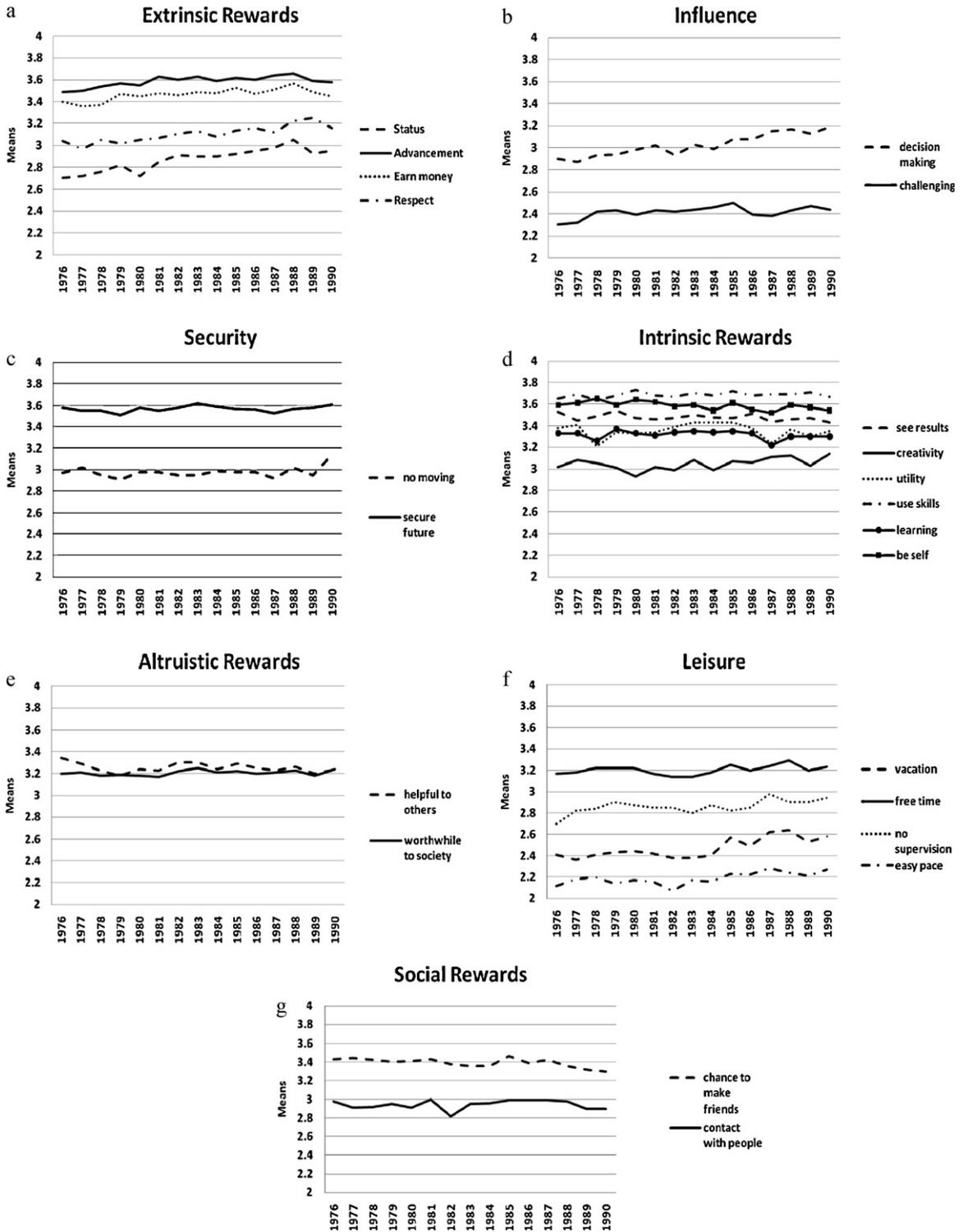


Fig. 1. Historical Trends in 12th Graders' Work Values.

Table 3
Individual growth models of the percent of reward domains valued highly.

	Model 1	Model 2	Model 3 ^a
Intercept (sr. year level)	49.53 (.29) ^{***}	47.83 (.63) ^{***}	55.38 (1.86) ^{***}
Slope	−2.40 (.07) ^{***}	−1.84 (.15) ^{***}	−1.65 (.46) ^{***}
Variance of intercept	327.46 (9.14) ^{***}	326.94 (9.13) ^{***}	311.87 (8.86) ^{***}
Variance of slope	9.36 (.45) ^{***}	9.30 (.46) ^{***}	9.28 (.46) ^{***}
Effects on the intercept			
Cohort		.21 (.07) ^{**}	.16 (.07) [*]
Effects on the slope			
Cohort		−.07 (.02) ^{***}	−.07 (.02) ^{***}

N = 32,089 (6234 respondents). Weighted analyses. Standard errors in parentheses.

^a Model 3 also controls parents' educational attainment, gender, race, college preparatory curriculum, grades, college expectations, and self-perceived mental ability.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

We present the estimated trajectory of “wanting it all” for the earliest and latest cohort in Fig. 2. Here it becomes clear that although highly significant statistically, these cohort differences are not particularly large. What is more striking is the amount of age-related change common across cohorts. Whereas seniors in high school, regardless of cohort, rate about half of the work value dimensions very highly, that drops to just over one-third of the dimensions by the time the panels reach the end of their twenties.

3.3. Growing stability

Our second objective was to assess the pattern of aging stability in work values across domain and cohort. Table 4 provides the over-time correlation coefficients for each work value dimension across each two-year interval as the panels age.⁵ In this case, we found no statistically significant cohort differences in stability at any age, so these estimates are presented for the cohorts pooled. Consistent with the aging stability hypothesis, the normative stability of each work value dimension rises with each age-interval, almost without exception. In each case, the stability coefficient at age 27/28–29/30 is significantly ($p < .001$) higher than the stability coefficient at age 17/18–19/20.⁶ The change is substantial, with the earlier measure explaining 11–17% more variance at the oldest interval compared to the youngest interval. (This represents a 21.4–38.6% increase in the magnitude of the stability coefficients.)

The estimates in Table 4 draw on the maximum sample size for each interval. In addition to the supplemental

analyses already noted, we also estimated normative stability for each interval holding the sample to only those cases with valid work value data for all seven waves ($N = 2878$) in order to explore possible biases that result from attrition. For example, the pattern of rising stability with age could stem from greater attrition of those whose work values change the most. The discrepancy in sample size between the two approaches is highest in the first interval. The stability coefficients for that interval were consistently higher with the more restricted sample size (those with complete data for all waves), lending some weight to this possibility, but they were only .01–.04 higher than the estimates in Table 4. Moreover, the pattern of aging stability persisted in the more restricted sample as well. For example, the corresponding coefficients for extrinsic work values were .59 for the first interval and .69 for the last interval (vs. .56 and .68 in Table 4). No cohort differences were evident with this more limited set of cases either. We conclude that all cohorts similarly experienced aging stability in their work values across the transition to adulthood.

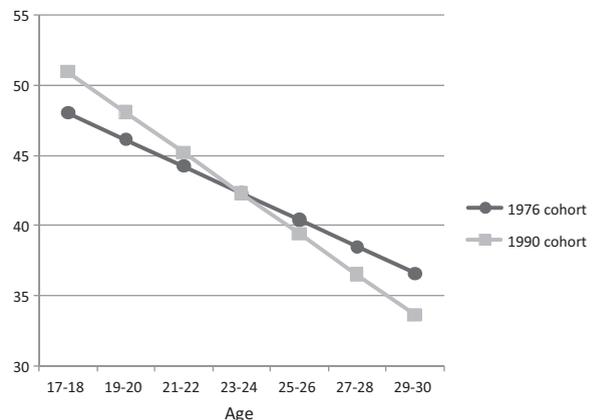


Fig. 2. Estimated proportion of work value domains rated highly with age for the earliest and latest cohort.

⁵ We also estimated these using latent variables in a structural equation modeling approach. The overall coefficients were higher but demonstrated the same pattern. We present the results from the scales to achieve consistency with the remainder of the analysis presented in the manuscript.

⁶ And in latent variable models, we estimated the intervals simultaneously and compared the fit of models allowing each stability coefficient to be free versus one in which all were constrained to be equal. For each dimension, the model forcing the stability coefficients to be constant across intervals (with advancing age) yielded a poorer fit as determined by Chi-Square tests and BIC statistics.

Table 4

Overtime correlations (weighted) for work values by domain for successive two-year intervals.

	Extrinsic	Security	Intrinsic	Influence	Altruistic	Social	Leisure
Age 17/18–19/20	.56	.44	.48	.44	.48	.46	.48
Age 19/20–21/22	.62	.49	.50	.51	.53	.50	.53
Age 21/22–23/24	.63	.54	.53	.55	.56	.57	.56
Age 23/24–25/26	.67	.57	.56	.58	.58	.57	.57
Age 25/26–27/28	.67	.56	.57	.58	.62	.61	.59
Age 27/28–29/30	.68**	.60**	.59**	.61***	.64***	.61***	.59***

Sample size varies across intervals (1st = 6703, 2nd = 5214, 3rd = 4995, 4th = 4722, 5th = 4214, 6th = 3396). Results based on the same cases across intervals are noted in the text.

* $p < .05$.** $p < .01$.*** $p < .001$.**Table 5**

Regression model estimates of the effects of work values on the intrinsic rewards of jobs at wave 7 (age 29–30) and Wave 4 (age 23–24).

	Intrinsic rewards of job held at wave 7			Intrinsic rewards of job held at wave 4
	Model 1	Model 2	Model 3	Model 4
W1 Extrinsic Orient.	.01 (.03)	–	.01 (.03)	.04 (.03)
W1 Intrinsic Orient.	.26 (.04)***	–	.15 (.04)***	.22 (.03)***
W4 Extrinsic Orient.	–	.00 (.03)	.00 (.03)	–
W4 Intrinsic Orient.	–	.35 (.04)***	.30 (.04)***	–
Cohort	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Educ. attainment	.08 (.01)***	.07 (.01)***	.08 (.01)***	.02 (.02)
Parents' educ. attainment	.02 (.01)	.03 (.01)	.03 (.01)	.02 (.02)
Female	–.04 (.04)	–.04 (.03)	–.05 (.03)***	–.02 (.04)
White	.07 (.07)	.07 (.07)	.08 (.07)	–.01 (.08)
Black	–.19 (.10)	–.18 (.10)	–.19 (.10)*	–.16 (.12)
College Prep. Curriculum	.06 (.04)	.06 (.04)	.06 (.04)	.04 (.05)
Grades	.05 (.01)***	.05 (.01)***	.05 (.01)***	.09 (.01)***
Expectations for B.A.	–.01 (.02)	–.01 (.02)	–.01 (.02)	–.04 (.02)
Mental ability	–.02 (.02)	–.03 (.02)	–.03 (.02)	–.08 (.02)***
Intercept	1.80 (.18)***	1.52 (.18)***	1.19 (.20)***	2.03 (.22)***
F	19.06***	22.50***	20.26***	8.14***
R ²	.06	.08	.08	.03
N	3344	3344	3344	3344

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

3.4. Strengthening connection to work

Our final study objective was to evaluate whether work values change with age in ways that make them more predictive of later work outcomes. Models for the intrinsic content of later jobs appear in Table 5 and those for hourly pay appear in Table 6. Models 1 through 3 regress the characteristics of the job held at Wave 7 on work values measured in the senior year (Model 1), work values measured at Wave 4 when respondents were age 23–24 (Model 2) and on work values measured at both time points (Model 3). Earlier, we raised the issue that work values at age 23–24 may be better predictors of work outcomes at age 29–30 than high school work values simply because they precede the outcome by only 6 years instead of 12. This difference makes it difficult to assess our argument that the increased realism and stability in work values improves their connection to later work conditions. In order to assess how problematic this differing time interval is, we also estimate a model in which work outcomes at age 23–24 are regressed on work values in the

senior year (Model 4). Such a comparison yields a six-year interval, but keeps the baseline, 12th grade, work values for comparison. If there is more going on than elapsed time, the magnitude of the effect of 12th grade work values on work outcomes at age 23–24 should be weaker than the magnitude of age 23–24 work values on age 29–30 work outcomes.

A comparison of Models 1 and 2 in Table 5 indicates that intrinsic orientations updated at age 23–24 are stronger predictors of the intrinsic content of jobs held at age 29–30 than were intrinsic orientations in high school. Indeed, when considered in the same model, intrinsic orientations at age 23–24 have a statistically significant independent effect on the intrinsic content of the job held at 30. Is that simply because work values assessed at 24 are closer in time to the age-30 job? A comparison of Model 4 with Model 2 suggests that is unlikely. In both cases, the work outcome is measured six years after the work values are measured. The updated intrinsic work values, assessed at age 23–24, remain the stronger predictor. Indeed, comparing Model 4 with Model 1, it is clear that senior year

Table 6

Regression model estimates of the effects of work values on the wages of jobs at wave 7 (age 29–30) and wave 4 (age 23–24).

	Wages of job held at wave 7			Wages of job held at wave 4
	Model 1	Model 2	Model 3	Model 4
W1 Extrinsic Orient.	.95 (.16)***	–	.43 (.18)*	.46 (.12)***
W1 Intrinsic Orient.	–.80 (.23)***	–	–.63 (.25)*	–.41 (.17)*
W4 Extrinsic Orient.	–	1.37 (.16)***	1.18 (.17)***	–
W4 Intrinsic Orient.	–	–.64 (.22)**	–.39 (.24)	–
Cohort	.25 (.02)***	.27 (.02)***	.26 (.02)***	.19 (.02)***
Educ. attainment	.77 (.07)***	.74 (.07)***	.75 (.07)***	.12 (.05)*
Parents' educ. attainment	.20 (.08)*	.20 (.08)*	.20 (.08)*	.15 (.06)*
Female	–2.06 (.20)***	–2.08 (.19)***	–2.01 (.19)***	–1.16 (.15)***
White	–.85 (.39)*	–.59 (.39)	–.63 (.39)	–.13 (.30)
Black	–2.51 (.54)***	–2.43 (.53)***	–2.48 (.53)***	–.50 (.42)
College Prep. Curriculum	1.35 (.24)***	1.30 (.24)***	1.34 (.24)***	.64 (.18)***
Grades	.12 (.06)	.14 (.06)*	.14 (.06)*	.20 (.05)***
Expectations for B.A.	.16 (.11)	.19 (.11)	.19 (.11)	–.02 (.09)
Mental ability	.35 (.11)***	.34 (.11)**	.34 (.11)**	.10 (.08)
Intercept	5.09 (1.03)***	3.20 (1.01)**	3.71 (1.14)**	4.03 (.78)***
F	100.62	104.82***	90.81***	32.74***
R ²	.29	.29	.30	.12
N	3020	3020	3020	3020

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

(Wave 1) work values were not any better at predicting later intrinsic rewards, even when the time horizon was cut substantially.

Although not our primary focus, a few other relationships from these models are notable. The respondent's own educational attainment and high school grades also significantly predict the intrinsic content of jobs held at age 29–30. For jobs held at age 23–24, respondents' educational attainment is not significant, but the effect for high school grades is stronger and the coefficient for self-rated mental ability is larger and statistically significant. These differences likely reflect that more educational careers are still in progress at this earlier age, and that the benefits to higher educational attainment have not fully paid off in the labor market yet.

The relationship between extrinsic orientations and the hourly pay of the job held at age 29–30 follows the same pattern. Regardless of when measured, stronger extrinsic orientations anticipate higher paying jobs. Yet extrinsic orientations at age 23–24 are a stronger predictor of pay at age 29–30 than those from the senior year of high school (Model 2 vs. 1), and have a significant independent effect beyond the influence of early orientations (Model 3). The effect of work values at age 23–24 on the pay of jobs held at age 29–30 (a six-year interval) is also much stronger than that of senior year extrinsic values on the pay of jobs held at age 23–24 (also a six-year interval; compare Models 2 and 4). And even more so than was observed for intrinsic rewards, shortening the interval didn't help the predictive power of senior year extrinsic orientations. Wave 1 extrinsic work values better forecasted earnings 12 years out than six years out (Model 1 vs. Model 4). This suggests that it also takes time for young adults to obtain jobs reflective of their orientations (Johnson & Monserud, 2010).

We also find significant effects of intrinsic orientations on the wages of later jobs. Such “cross-over effects” have

also been found in other studies (Johnson, 2001a; Mortimer & Lorence, 1979). In this case, the age-related change in the magnitude of the relationship differs from our other findings. It is early intrinsic orientations that hinder wage attainment more. Although intrinsic orientations at age 23–24 predict lower hourly pay at 29–30, the magnitude is smaller and its contribution is not statistically significant once earlier intrinsic orientations are controlled. Educational attainment, parents' educational attainment, gender, and race/ethnicity have well-known effects on wages and our models demonstrate these as well. The coefficients for cohort reflect, in part, that the categories used to measure wages were not adjusted for inflation.

Finally, it is notable that the explanatory power of the models is higher for the extrinsic rewards of the job held at age 29–30 compared to those for the intrinsic rewards. This difference lies in the predictive power of the control variables, which explain pay better than they do the intrinsic content of later jobs. In both cases the effects of the work values is relatively small. One likely reason is that despite the growing connection between work values and job conditions, there is still a six year lag in our models. Work values continue to change based on the conditions of jobs held in the interim. Given that our data do not contain information on starting and ending dates of jobs held, we selected this interval to minimize the chances that respondents held the same job throughout the period. The downside of that choice is that the relationships, though strengthening with age, are weaker overall.

4. Discussion

Work values continue to develop in important and predictable ways after adolescence. Our analysis of the Monitoring the Future cohorts documents three forms of development in work values, and in so doing, contributes

to a growing body of evidence demonstrating that considerable adjustment in work-related orientations occurs during the transition to adulthood (Jacobs et al., 1991; Rindfuss et al., 1999).

First, young people, who as teenagers tend to rate many potential work rewards very highly (Marini et al., 1996), “zero in” as they get older. Growth models of the proportion of work value domains valued very highly indicate that young people go from rating about half of the domains very highly as high school seniors to just over one-third of domains very highly as they reach the end of their twenties. This study is the first to show this particular form of development in work values, made possible by our unique approach focused on how young people hold sets of work characteristics up as important simultaneously.

Second, over these same years, young people’s work values within each domain become more stable. In other words, the rank-ordering of individuals on each value domain becomes more similar with age. It is remarkable how consistent the pattern is across the seven work value domains, with an increase in stability with almost every two year advance in age. This finding supports the aging stability hypothesis (Alwin, 1994; Glenn, 1980). Our results do not speak to whether this occurs because work values become increasingly resistant to change as young adults sort out with experience what is truly important to them, or whether the conditions of their work become more stable, offering fewer opportunities to stimulate value change over time. Both are plausible explanations for the pattern and could be assessed in future research.

Finally, our analysis demonstrates that work values change in the first few years out of high school in ways that make them more predictive of adult work outcomes. Examining the hourly earnings and intrinsic content of jobs held at age 29–30, we find that work values assessed at age 23–24 had stronger effects on corresponding outcomes than did work values assessed during the senior year of high school. Assessing work values at age 23–24 has the advantage of allowing time for the primary years of postsecondary education to play out and for young people to accumulate some work experience, and therefore make adjustments to orientations first developed in adolescence. But it also has a very practical advantage given the structure of the Monitoring the Future follow ups. It represents the mid-point, with a six-year period on each side. One could doubt our explanation for why work values assessed at an older age are more strongly connected to adult work conditions than are early work values, arguing that the updated work values are simply closer in time to the outcome. Yet taking advantage of the six-year interval on either side of 23–24, we also show that 12th grade orientations are weaker predictors of work outcomes at age 23–24 than work values assessed at age 23–24 are of work outcomes at age 29–30. Thus, the work value-job characteristics relationship is stronger at older ages, even when the duration between measurements is held constant.

How sensitive have these developmental patterns in work values been to the major changes in the economy and lengthening transition to adulthood across the last several decades of the twentieth century? Do recent cohorts of

adolescents “want it all” when it comes to a wide range of desirable work rewards? Are their work values less stable, at least in those first years out of high school? In ways idealized in life course studies but not often reached, this study paired a historical analysis with that of age-related change, revealing new insights about work orientations during a critical period of the life course.

Work value development for more recent cohorts was really not so different from that of their counterparts leaving high school in the mid 1970s. Our analysis of adolescents from the senior classes of 1976–1990 indicates a rise in “wanting it all” across cohorts as expected, but when measured against the change that occurs with the transition to adulthood, cohorts are much more similar than they are different. More specifically, the historical rise in educational expectations that has been of such great interest (e.g., Goyette, 2008; Reynolds et al., 2006; Schneider & Stevenson, 1999) was paralleled in young people’s work values, but to a much lesser degree than expected. High school seniors in more recent cohorts tended to be less selective about the rewards they hold important than were earlier cohorts at the same age. These recent cohorts also became more selective in their judgments at a quicker rate with age compared to earlier cohorts. Greater adjustments with age thus accompanied the historical rise in “wanting it all.” Both the rise in adolescent levels of “wanting it all” and the cohort difference in the pace of age-related adjustments in “wanting it all” were fairly small, however.

As insinuated above, the existence of age-related change provides a benchmark against which historical change can be evaluated. 18 and 30 year olds are more different from each other across the historical period than 18 year olds in recent cohorts are from 18 year olds in the mid 1970s. These findings suggest that “wanting it all” is more about adolescence, something individuals age out of, than it is a characteristic of today’s ambitious young people. Moreover, the current study found no differences in the pattern of aging stability across cohorts during this period, and earlier research (Johnson & Monserud, 2010) found senior year work values equally predictive of adult work outcomes across cohorts. Thus the findings of this study support the idea that there are developmental changes in work values during the transition to adulthood that were not affected by the economic and related social changes of the latter part of the Twentieth Century. It may be their level of generality, in comparison to educational expectations and occupational aspirations, that shields them. It is important to note, however, that the earliest senior year cohort in this data was 1976, and while it is reasonable to expect that they did not experience the same historical conditions in their early years of working as did the 1990 cohort, it is also true that they did not reach age 30 prior to any of these changes starting. Unfortunately, no data has been systematically collected on earlier cohorts.

It is also notable that the measurement models for work values demonstrated structural invariance across cohorts and ages. On the one hand, this fact is simply the evidence we need to confidently assess change over time knowing the meaning of the constructs are stable. At the same time, it also suggests that newer cohorts think in the same way

about the various job characteristics relative to one another, and that young people in all the studied cohorts think about these similarly across the transition to adulthood. Thus, the developmental changes we document here are built on a degree of stability, as it were.

Age, period, and cohort are notoriously difficult to separate analytically (Glenn, 2003). The data upon which we draw has the advantage that it followed 15 consecutive cohorts of 18 year olds through their twenties (covering 18 year olds in 1976–1990 through age 29–30 in 1988–2002). And while our study does not address work value change among adults at older ages, which might help sort out whether period effects occurred, the minimal cohort differences we observe (which could theoretically result from true cohort effects or period effects) strongly point toward age-related processes rather than historical ones. For example, if there were a period effect, in which work values hypothetically became more stable in the population the 1990s, we should have observed “cohort” differences in stability within at least some age intervals, which we did not.

Several limitations to the study need to be acknowledged. First, in a study spanning twelve years, panel attrition becomes a problem and may have biased our results. While we made efforts to minimize this risk, and our results were robust across strategies for addressing potential bias, those retained in the study were more advantaged than those lost to attrition. Second, all study measures were self-reported, including our indicators of

academic achievement and ability. While these controls do not play a key role in addressing our first and second research questions, they are important in ruling out selection and spurious processes in our analyses of the influence of work values on adult work outcomes. Third, when panel respondents are presented with the same questions repeatedly, the potential for panel conditioning arises. The stronger correlations we observe across work values with age could reflect a learning effect rather than growth in stability with age. To test this possibility, longitudinal data from a sample with some age variation is needed.

Finally, it is also important to note that our focus on broad patterns of developmental change in work values has by necessity set aside other important questions about individual variation in development. We have not focused on the characteristics of young people who are more or less selective in the importance they attach to potential work rewards, or the characteristics of those whose work values are more or less stable. We have also not considered the work environments or other experiences that foster zeroing in or growing stability in work values. To do so would have required more cursory attention than we have been able to give to the broad patterns themselves. The current study therefore provides an important foundation for informed study of individual variation by documenting these three forms of development in work values, and establishes their relative insensitivity to recent historical changes.

Appendix A. Sample sizes for cohort trends of 12th grade work values by year of assessment

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1990
Extrinsic rewards														
Status	441	477	467	475	486	496	471	471	487	489	482	489	490	406
Advancement	444	478	467	479	489	498	472	473	486	490	485	489	489	406
Earn money	447	478	466	478	489	498	473	473	487	490	485	489	487	407
Respect	447	478	468	475	485	498	470	471	485	487	483	488	489	405
Security														
No moving	445	477	467	477	489	498	473	472	488	491	485	489	490	407
Secure future	447	478	468	478	488	499	473	471	489	488	485	488	489	407
Influence														
Decision making	443	477	467	475	488	498	472	472	489	490	481	488	489	405
Challenging	446	476	467	476	488	498	473	471	488	488	484	487	489	406
Intrinsic rewards														
See results	446	477	469	478	489	499	474	472	488	491	485	489	491	407
Creativity	447	476	467	479	487	498	471	472	489	490	484	488	488	407
Utility	445	478	467	477	488	499	472	469	485	488	485	488	490	406
Use skills	446	477	469	477	489	499	473	470	488	488	485	489	489	406
Learning	446	478	468	478	488	498	472	471	489	489	484	488	489	406
Be self	446	478	470	475	486	498	470	471	488	489	484	487	489	406
Altruistic rewards														
Helpful to others	444	476	468	476	489	498	472	471	489	490	484	488	490	406
Worthwhile to society	438	474	468	473	485	497	471	470	483	490	481	484	487	402
Social rewards														
Chance to make friends	446	476	468	478	488	496	472	473	489	490	484	489	489	406
Contact with people	446	477	468	474	487	497	473	469	489	488	485	488	487	407
Leisure														
Vacation	445	479	468	476	486	497	473	471	488	488	485	489	489	406
Free time	446	476	466	475	485	497	470	469	487	489	485	489	489	403
No supervision	446	479	467	476	489	499	473	471	489	491	485	489	488	407
Easy pace	446	477	466	477	488	497	473	471	489	488	485	488	489	407

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