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The Development of Motivation and Amotivation to Study and Work across Age-Graded Transitions in Adolescence and Young Adulthood

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Abstract

People's motivation to engage in studying and working is an important precursor of participation and attainment. However, little is known about how motivation and the lack of motivation develops normatively across adolescence and young adulthood. Furthermore, there is no comparison of motivation and amotivation development across sequential age-graded transitions such as the mid-schooling transition in adolescence and the school-to-work transition in young adulthood. The current study explored trajectories of motivation and amotivation development in Finland, using piecewise growth curve modelling to analyze five waves of data (age 15 – 22-years) from a sample of 878 youth (52% male). Indicators of amotivation (disinterest, futility and inertia) decreased, whilst the indicator of motivation (attainment value) increased across both transitions. Reductions in disinterest and inertia were steeper for youth transferring into vocational education at the mid-schooling transition and for youth transferring from an academic track to higher education at the school-to-work transition. Amotivation and motivation shifted most at the school-to-work transition, signaling the importance of this period for motivation development. Overall, the results suggest that young people became more motivated and less amotivated as they aged from adolescence through young adulthood, in line with normative maturational and gradual social changes and transfer into increasingly personalized environments.

Keywords

Motivation, amotivation, task-value, school transition, school-to-work transition.

Introduction

People's participation and subsequent attainment in studying and working is impelled by their motivation, which has been described as the process underpinning the energy, purpose and durability of people's activity (Skinner, Kindermann, Connel & Wellborn, 2009). In expectancy value theory (Eccles, Fredricks & Baay, 2015), motivation is created when people think tasks are useful (utility value), of personal importance (attainment value), interesting (intrinsic value) and worth investing energy in (cost). These indicators of motivation are referred to as task-values. Conversely, people can experience amotivation when they feel tasks lack value (futility), interest (disinterest), when they do not invest effort in the task (inertia) and perceive a lack of ability to master it (negative self-concept) (Shen, Li, Sun, H., & Rukavina, 2010). Amotivation can lead to disaffection and disengagement in major tasks such as going to school (Skinner et al., 2009).

In many Western societies, motivation towards one's main task (i.e. schooling, working) shifts at the mid-schooling transition when adolescents move from lower secondary to upper secondary education (Symonds 2015) and at the school-to-work transition when young people move from school to a range of main activities, for example employment, tertiary education and unemployment (Schoon & Silbereisen, 2017). However, little is known about how motivation or amotivation develop over one transition compared to the other, nor across both. Recently, researchers have called to extend the timeframe of research on task-values, as most research on task-values is conducted during adolescence (Wang, Chow, Degol & Eccles, 2017).

The current study sought to understand how motivation and amotivation developed across a six-year period as young people moved from comprehensive school to vocational or academic track at age 16-years, and then to a range of activities including higher education, polytechnic and working at age 19-22-years in Finland. It was assumed that amotivation would decrease and motivation increase across both transitions, as individuals established a closer match between their interests and new available opportunities. Previous evidence suggests that

young people who valued their main task as a means to attaining their career aspirations and independent living (Lent & Brown, 2014) found a greater fit between their skills and interests and the new occupational or academic environment (Eccles, 2004). Furthermore, the rate of change was expected to be moderated by the track young people attended at the end of schooling (vocational or academic), given that these tracks are found to impact study burnout (feelings of apathy, cynicism and inadequacy), engagement (Salmela-Aro, 2017) and educational aspirations (Salmela-Aro & Upadyaya, 2017) in Finland.

Perspective on Motivation and Amotivation

In expectancy value theory (Eccles et al., 2015), task-values represent motivation. For example, feeling that a task is highly useful, interesting, relevant and helpful for oneself and worth investing energy in, can impel a person to action. Conversely, research on amotivation conceptualizes that a lack of task-values, specifically perceiving the task as worthless and unappealing and feeling a lack of personal ability and effort relating to the task, inhibits action (Cheon & Reeve, 2015). Task-values and lack thereof are "conceptualized as task-specific… shaped by qualities of different tasks that influence the probability an individual will engage in them" (Gaspard et al., 2015, p.56). To date, research has primarily concerned how people feel about the tasks of studying in specific school subjects including mathematics, science and physical education. However, these tasks are part of a multilevel framework, spanning from the micro to the macro-level. For example, a five-minute lesson activity (e.g. reading comprehension questions) is also a task, just as studying at school in general is also a task. Close examination of the task of schooling identifies it is made up of nested sub-tasks for example going to class, studying mathematics in class, and solving an algebra problem in mathematics class. Qualitative research finds that motivation develops in accordance with this multi-level structure, with children's overarching feelings about school (e.g. liking or disliking school) forming due to their daily emotional and identity-oriented experiences with teachers, peers and school-work

(Symonds & Hargreaves, 2016). The current study examines the motivation and amotivation in relation to the broadest level of main task for the sample, which was studying at school in then studying or working in young adulthood.

Perspective on Motivation and Amotivation Development

The development of motivation and amotivation across the lifespan can be examined in relation to three mechanisms: biological maturation, gradual social role change, and age-graded transitions. Normative trajectories of psychological development are discernable in quantitative research as mean-level change across samples or populations. These trends are created through typical biological maturation such as puberty in early adolescence, as well as social role change created by shared social norms impacting a specific age group, for example the societal expectation that young people will move towards more independent living in young adulthood (Roberts, Walton & Viechtbauer, 2006). Third, age-graded transitions intersect with social role changes and maturation to create salient shifts in the young person's psychology and in the sociocultural context surrounding them.

Of interest to this research, age-graded transitions occur when people transfer from one sociocultural environment to another at a similar age, for example leaving compulsory schooling at age 18/19-years. Transitions can be conceptualized as three concurrent phases of person-environment interaction: preparation (preparing for the new environment), encounter (encountering the environment for the first time), and adaptation (adapting to the new environment over a longer time period) (Symonds & Galton, 2014). Together the mechanisms of maturational change, gradual social role changes and age-graded transitions can be fitted to a lifespan perspective on motivation and amotivation, with development proceeding along different trajectories according to how these mechanisms interact.

Throughout the lifespan, motivation and amotivation is thought to respond to the fit between people's sociocultural context and their needs for autonomy, competence and

relatedness (Ryan & Deci, 2000). For example, people can suffer from amotivation and burnout when their main task (e.g. studying) is unsupported socially and emotionally by other people (De Wit, Karioja, Rye & Shain, 2011). Age-graded transitions present important opportunities for these interactions to change. In stage-environment fit theory (Eccles, 2004), continuities and discontinuities in the features of the pre-transfer and post-transfer environments, for example moving from more supportive to less supportive teachers, interact with people's current maturation and social state and impact motivation development. At the mid-schooling transition adolescents can become amotivated if they desire greater learner autonomy in their new school but move to classrooms where teachers are more controlling. In comparison, motivation can increase when schools meet adolescents' needs for autonomy, relatedness and competence (Zimmer-Gembeck, Cipuer, Hanish, Creed & McGregor, 2006).

The mid-schooling and school-to-work transitions in Finland (and elsewhere) present opportunities for enhanced experiences of autonomy and competence through increasingly personalized tasks, which should in turn positively impact motivation development. In the national social structure a general educational curriculum gives way to more specialized education (either academic or vocational) then to a specific task of a university or polytechnic program, job, apprenticeship, or other type of post-school activity. Theoretically in this scenario young people can spend more time doing tasks that are a closer fit to their skills and interests as they age across adolescence and young adulthood. This increasing personalization of main task should allow young people to optimize their engagement experiences and support their self-concept, in turn facilitating increase in motivation and a decline in amotivation as predicted by stage-environment fit theory (Eccles, 2004).

Normative Maturational and Social Role Influences on Motivation and Amotivation Development

Young people's motivation and amotivation towards their main task for example studying or working is assumed to follow a general positive trajectory according to assumptions about self-evaluation and psychological investment. From middle childhood, people are better able to use social perspective taking and social comparison to evaluate themselves in relation to others (Harter, 2006), meaning they have greater cognitive potential to self-identify with skills-oriented tasks such as mathematics or studying at school. In adolescence, growing attention to identity and future career make it likely that people's motivation will increase within tasks supportive of identity development, for example a person interested in becoming a dancer might have increasing motivation in performing arts throughout adolescence. The importance of investing psychologically in one's main task can increase in late adolescence and throughout young adulthood as many people aim for greater independence from their families in Western, industrialised societies (Toguchi Swartz & Bengston O'Brien, 2017). Investing psychologically in career goals and plans, making career decisions and striving to obtain them become more central at this time (Lent & Brown, 2014). Although there are no meta-analyses of motivation development across the life-span at the time of writing, meta-analyses of other psychological characteristics including self-esteem (Orth, Erol & Luciano, 2018) and personality (Roberts et al., 2006) have increased sequentially from adolescence until late adulthood, possibly within the same broader dynamic system of human development in industrialised societies.

Motivation and Amotivation Development Across the Mid-Schooling Transition in Finland

The mid-schooling transition in Finland plays a key role in the narrowing of main task throughout adolescence and young adulthood, presumably impacting motivation development. There, adolescents attend comprehensive schools for nine years (7-years to 16-years old), where they learn a general curriculum across lower secondary education. Then they transfer into academic high school or to a school offering vocational education and training (VET) for upper secondary education. This creates a division in the types of daily tasks they are involved in. At

academic school, adolescents continue with a generalized education where they study a range of academic subjects (e.g. mathematics, languages) at increasing levels of difficulty. Academic school ends with a high stakes examination that determines adolescents' eligibility for university. In comparison, adolescents in vocational school study for a qualification in a specific industry area (e.g. agriculture, technology, performing arts). The programs involve a mixture of classroom and work based learning and end with an examination.

Although task-values have not been examined at the level of schooling as a main task across this transition in Finland, there is research on related variables including school enjoyment, educational aspirations and school burnout (feelings of exhaustion, apathy and cynicism towards school). When combining these into the notion of academic wellbeing, most adolescents have been classified into profiles of high or medium-high wellbeing at the mid-schooling transition, and more have moved from lower to higher profiles of wellbeing than the converse pattern (Virtanen, Vasalampi, Torppa, Lerkkanen & Nurmi, 2019), suggesting a trend towards increased wellbeing. Using track as a moderating variable, school burnout was found to decrease most when students transferred to vocational school, whereas an increase was observed for those transferring to academic school (Salmela-Aro, Kiuru & Nurmi, 2008). These studies suggest that motivation and amotivation develop in accordance with the type of main task that young people transfer into at the mid-schooling transition, which in Finland is academic or vocational track.

Motivation and Amotivation Development across the School-to-Work Transition in Finland

After completing academic or vocational school in Finland, young adults (age 18/19-years) can transfer to a different main task including studying for university entrance examinations (if their grade is insufficient at academic school), studying at university or polytechnic, working, military service, or taking a gap year. The qualities of those tasks are

highly varied, for example working for an employer may differ from studying for a professional degree at university. There is little research on how motivation and amotivation develops after transfer to those different tasks. Research on work values has found that valuing of work for intrinsic reasons (e.g. mastery over the task), and for extrinsic reasons (including job security and material assets), has remained relatively stable across young adulthood, with a slight increase in valuing of work as a means to autonomy (e.g. decision making and power) (Lechner, Sortheix, Göllner & Salmela-Aro, 2017). In that study, autonomy value was higher for young adults on a vocational track compared to an academic track whereas the inverse was true of intrinsic value, signaling greater desire for interpersonal independence for those on a vocational track and stronger urges for mastery from those on an academic track. These motivational orientations may have cascade effects on motivation with earlier intrinsic value for working predicting young adults' reports that their job suits them well (Sortheix, Dietrich, Chow & Salmela-Aro, 2013). Even the chance of entering different occupations after schooling is predicted by motivational indicators with higher educational goals throughout schooling impacting the likelihood of obtaining a school leaving qualification (Vasalampi, Kiuru & Salmela-Aro, 2018). This signals the importance of motivation at the school-to-work transition for career pathways and adaptive functioning in those new tasks.

The Role of Individual Differences

In Finland, higher parental social class has negatively associated with extrinsic work values in young adulthood (Sortheix et al., 2015) meaning that coming from a more socially advantaged household correlates with lower value placed on working for material assets and job stability. Also, being female has predicted placing lower value on working for intrinsic and security reasons (Sortheix et al., 2015), and greater value of daily organizational goals, whereas being male has predicted higher value of leisure goals (Salmela-Aro, Aunola & Nurmi, 2007), demonstrating that gender interplays with motivation during young adulthood in Finland.

Academic attainment also interplays with the school-to-work transition, as entering academic school and university is dependent on academic attainment. These individual differences intersect in studies of work values in young adulthood, with positive correlations between gender and attainment, and attainment and parental social class (Sortheix et al., 2015), signaling their importance in analyses of motivation and amotivation development in Finland.

Current Study

The current research examined the trajectories of motivation and amotivation across adolescence and young adulthood, as young people moved through two major age-graded transitions in Finland. The underlying assumption of the study is that motivation would increase and amotivation decrease as young people engaged in main tasks that were a closer fit to their skills and career interests in line with stage-environment fit theory and broader lifespan perspectives on motivation development. However, given the lack of comparable longitudinal research in Finland and elsewhere to support firm hypotheses, the research questions are exploratory. The first question allows insight into whether the main trajectories of motivation and amotivation changed as anticipated: *how does motivation and amotivation develop across two age-graded transitions in Finland?* (Research Question 1). The second question queries whether these trajectories were interrupted by transition, and if so which transition had the largest impact: *how is motivation and amotivation development predicted by transition type?* (Research Question 2). The third question examines the role of the main task young people transitioned into and out of by asking *how is motivation and amotivation development predicted by main task?* (Research Question 3). Here it was assumed that young people attending a vocational track would report greater decreases in the amotivation indicators of futility and inertia compared to those on an academic track, given the higher value placed by this group on material assets and the close connection between vocational education and training and

employment. However, those on an academic track were expected to have faster decline in disinterest given that this group has reported higher intrinsic work value in young adulthood.

Methods

Participants and Procedures

The Finnish Educational Transitions (FinEdu) studies are a collection of longitudinal studies of Finnish adolescents, managed by the University of Helsinki. The participants in this analysis were first surveyed in January 2004, at age 15-years in their second to last year of comprehensive school (Wave 1, N = 707), and have been studied up to age 30-years at the time of writing. To maintain a focus on the mid-schooling transition and school-to-work transition periods, the following data were used in the analysis. Wave 1 as described; Wave 2: N = 818, 16-years; Wave 3: N = 749, 17-years; Wave 4: N = 611, 19-years; Wave 5, N = 599, 22-years. The total dataset consisted of 878 cases (52.4% male). Missing data percentages and handling are reported in the analysis section.

Measures

Motivation and amotivation. Indicators of motivation and amotivation were taken from the Achievement Goal Orientations and Motivational Beliefs inventory (Niemivirta, 2002) and the School Burnout Scale (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009), as there was no explicitly designed measure of task-value focusing on study and work as main activities. Table 1 demonstrates the fit between the items used and a landmark measure of task-values designed by Eccles and Wigfield (1995). Here, readers can see that the amotivation constructs perform as the inverse of the motivation constructs, as outlined by the perspectives on task-value motivation and amotivation discussed earlier. All items were measured on a scale of 1 (low) to 6 (high).

Attainment value. This aspect of motivation was measured with four items on the importance of education/work for attaining future goals, that included “An important goal for me

is to do well in my studies/work" and "My goal is to succeed at school/work" (*M* α = .86; α range = .84 - .89).

Futility. The amotivation futility scale comprised three items including "I feel that studying and going to school/work are useless" and "I think going to school/work is a waste of time" (*M* α = .70; α range = .69 - .76).

Disinterest. This second amotivation scale was measured with two items: "studying/working is boring", and "I feel I am losing interest in studying/working" (*M* α = .67; α range = .62 - .75).

Inertia. The final amotivation scale had three items regarding a lack of energy and drive in main task, including "I try to get away with making as little effort as possible with my schoolwork/work" and "I always try to do no more schoolwork/work than I have to" (*M* α = .79; α range = .73 - .83).

Gender. Participants reported their gender as female (1) or male (0).

Parental employment. A measure of parental employment was included as an ordinal variable of 1 = low (unemployed), to 4 = high (white-collar occupation), as a control in the models and as a covariate of intercept and slope.

Self-reported grades. At the end of each school year, participants received a letter grade from their teachers which represented an achievement level of 4 (lowest) to 10 (highest). Participants reported their average score across subjects at the end of comprehensive school (Wave 1) and at the end of tracked education (Wave 3). This type of self-reported GPA has been shown to correlate at .96 with actual GPA (Holopainen & Savolainen, 2005). However, it must be interpreted with caution, as it is a measure of self-reported grades not actual achievement levels. Accordingly, it likely shares variance with other aspects of psychology including self-concept and integrity. Because of these limitations, it is used in this analysis as a control variable.

Educational track. In Wave 2 at age 16-years after the mid-schooling transition, researchers recorded the current school that participants were in at the time of interview. Participants also confirmed whether they had transferred to vocational school (0) or academic high school (1).

Main activity in young adulthood. In young adulthood at age 19-22 years, participants reported their main activity as being either vocational school, working, polytechnic or university. A minority of participants (Wave 4 = 22%, Wave 5 = 12%) were engaged in less prevalent activities including compulsory military or civic service for males which must be taken before 28-years of age, taking a gap year, and unemployment. These pathways were used as descriptive data to inform our discussion of findings.

School level variable. School that participants were in at Wave 2 (N = 20) was used to control for between school variance in the models.

The longitudinal study did not measure ethnicity, outside of asking what mother tongue was spoken by the adolescent and their parents at home. Analyses of those data revealed that under 2% of participants spoke a mother tongue at home other than Finnish creating a lack of variance in the data. Therefore, ethnicity was not included in the study.

Analysis

Missing data. Of the total 878 respondents who had given survey data, 35.7% had complete data at all waves; whereas 27.7% were missing data on one wave, 19.6% on 2 waves, 10.0% on 3 waves, and 6.9% on 4 waves. This prevalence of missing data is typical of longitudinal self-report studies of this age group, given the variability in young people's post-school pathways and systematic changes in survey administration across time (Kyndt et al., 2015). A significant result on Little's MCAR test indicated that the data were not missing completely at random (MCAR) ($\chi 2$ (7010) = 8063.130, p = .000), meaning that missingness was systematically related to variables within the dataset. Using a binary variable of missingness,

that included attrition (missing data on one or more waves) which also covered item non-response, missingness was identified as being predicted by several background factors and many of motivation and amotivation items. The strongest predictors of missingness were moving to vocational school at age 16-years (b = .028, p < .000), having lower self-reported grades at the end of tracked education (b = .025, p < .000), and comprehensive schooling (b = .027, p < .000), and being male (b = .026, p < .000). Most motivation and amotivation items predicted missingness weakly, with beta-weights of around .10 and frequent insignificance. Missing data were handled in the analyses in Mplus 8.0 using the default method of full information likelihood maximum (FIML), which estimates models using all available data.

Confirmatory factor analysis (CFA) of task-values and sensitivity analysis. After preparing the data, a CFA was computed for the four indicators of motivation and amotivation modelled simultaneously at each wave. Given the conceptual split between items measuring motivation and amotivation, CFA was preferable to exploratory factor analysis (EFA). This is because EFA of a small number of items (e.g. 12) typically loads all positively worded items onto one factor and all negatively worded items onto a second factor in the first iteration (Campbell, Walker & Farrell, 2003). Forced extraction of increasingly smaller solutions is necessary to identify more fine-grained concepts, meaning that the method is not very useful for capturing concepts across positive and negative items at the first iteration and becomes increasingly deductive. Model fit for the CFA was acceptable at each time (Table 4) with all loadings significant. The range of loadings at each wave was good (Table 5): W1 (futility: .51 - .86; attainment .59 - .80; disinterest .66 - .70; inertia .61 - .83), W2 (futility: .40 - .69; attainment .60 - .88; disinterest .72 - .65; inertia .58 - .79), W3 (futility: .53 - .67; attainment .61 - .85; disinterest .71 - .73; inertia .69 - .87), W4 (futility: .45 - .86; attainment .63 - .86; disinterest .64 - .80; inertia .71 - .90), W5 (futility: .55 - .87; attainment .66 - .93; disinterest .71 - .84; inertia .53 - .85).

Finally, a sensitivity analysis was performed to check for alternative results that might emerge due to internal unreliability. A CFA for the motivation and amotivation variables was computed using a subsample of cases with complete data on the motivation and amotivation items at Waves 1 and 5. This reduced the number of cases to 878 to 358. Removing cases with missing data had no notable impact on the factor structure, supporting subsequent use of the variables with the full sample.

Factorial invariance. The analysis proceeded to testing for differences in the factor structures across waves (Widaman, Ferrer & Conger, 2010). To do this separate CFA models were computed for each dimension, modelling factor structure simultaneously across waves. For each dimension, the unconditional model was compared to a model with strict factorial invariance, using the Satorra-Bentler Scaled $\chi 2$ comparison test to check for significant differences in the $\chi 2$s. The results were significant for futility ($\chi 2 \Delta = 290.44$, df = 20, $p = < .001$), attainment ($\chi 2 \Delta = 117.41$, df = 12, $p = < .001$), disinterest ($\chi 2 \Delta = 207.94$, df = 12, $p = < .001$) and inertia ($\chi 2 \Delta = 199.91$, df = 20, $p = < .001$), indicating variance in the factor loadings, item intercepts, factor variances or item error terms. Therefore, to ensure comparability of constructs over time and to standardize our analyses, strict factorial invariance was applied to the main models described below by constraining the factor loadings, and variances, and item intercepts and variances to be equal across waves without restraining the factor intercepts to allow growth modelling to occur.

Data modelling. To answer the research questions, piecewise growth curve models (PGCM) were computed in Mplus version 8.0. In piecewise growth curve models, researchers identify a turning point or knot in a curvilinear growth trend and use this to separate the trend into separate slopes, to compare them (Ning & Luo, 2017). This presents an ideal model to test growth across the mid-schooling transition (W1 – W3) versus across the school-to-work transition (W3 – W5). To answer Research Question 1, separate piecewise growth curve models were computed for

each indicator of motivation and amotivation. This was necessary for the models to converge given the large number of parameters created by modelling five waves of data within two piecewise models simultaneously across four variables. The statistics in the models were also used to answer Research Question 2 regarding comparison of development across the two transition types. Next, the variable of academic versus vocational track was applied to the models to answer Research Question 3 regarding the impact of the type of main task transferred into and out of. The track variable was used as a covariate of intercept and slopes, after controlling for gender, self-reported grades and SES. Because the longitudinal study collected data from participants nested in schools, the clustered structure was controlled for in all models by using the Mplus command type=complex with school id (n = 20) as the cluster variable. This controls for the overall design effect of having students nested in schools on the trustworthiness of the standard errors and the chi-square model fit statistic.

Results

Descriptive Statistics

Correlations between the motivation and amotivation variables at each wave revealed that attainment value correlated negatively with futility, disinterest and inertia, and the three amotivation variables correlated positively with each other. The correlations were typically around .2 to .4, with associations weakening across time. Table 3 displays sample correlations between the four variables at Waves 1 and 5. Across the five waves, the variables were not multicollinear (associating at .8 or above). They also displayed reasonable independence within each wave. For example at Wave 1 the correlations between the four variables ranged from R = -.29, p = <.001 (attainment value and inertia) to R = .58, p = <.001 (disinterest and futility), with the average correlation statistic being .45. This finding supports the work of other researchers who have also analyzed task-values using sub-scales for each construct, similarly finding that the

sub-scales differentiate in CFA and correlational analyses (Gaspard, Wigfield, Jiang, Nagengast, Trautwein & Marsh, 2018).

At the mid-schooling transition, 40% transferred to a vocational school, whereas 60% transferred to an academic school. Then, at age 22, 7% were still at vocational school, 28% continued to university, 23% to polytechnic, 36% were working, 42% were involved in a different activity as described in the methods section (e.g. military service, gap year, care giver, studying for university entrance examinations).

Research Questions 1 and 2

The first two questions were how does motivation and amotivation develop across two age-graded transitions in Finland?, and how is motivation and amotivation development predicted by transition type? All variables grew in the expected direction as demonstrated by the piecewise models, with all models fitting the data well (Table 6). Futility decreased gently at the mid-schooling transition (M = -.08, SE = .03, t = -2.27, p = <.023) and at the school-to-work transition (M = -.07, SE = .03, t = -2.39, p = .017) (Table 7, Figure 1). Attainment value was stable at the mid-schooling transition then increased steeply at the school-to-work transition (M = .16, SE = .05, t = 4.58, p = <.001) (Table 8, Figure 2). Disinterest decreased gently at the mid-schooling transition (M = -.11 SE = .02, t = -6.84, p = <.001) then at a greater rate at the school-to-work transition (M =-.17, SE = .02, t = -7.80, p = < .001) (Table 9, Figure 3). Inertia was stable at the mid-schooling transition (M = -.05 SE = .05, t = -0.85, p = .394) then declined steeply at the school-to-work transition (M = -.39 SE = .03, t = -11.76, p = <.001) (Table 10, Figure 4). Taken together, these trajectories demonstrate a decline in amotivation and an increase in motivation occurring across the two transitions, with the greatest change observed at the school-to-work transition.

Research Question 3

The third research question was how is motivation and amotivation development predicted by main task? After controlling for gender, grades and parental education, being on a vocational versus an academic track at the mid-schooling transition predicted steeper decreases in inertia (Table 10) and disinterest (Table 9) but had no association with growth in attainment value (Table 8) nor futility (Table 6). At the school-to-work transition, being on a vocational track predicted more gentle decreases in disinterest (Table 9), and steeper increases in attainment value (Table 8) but had no impact on growth in futility (Table 6), nor inertia (Table 10). These findings show that vocational versus academic track impacted motivation and amotivation differently depending on the type of age-graded transition.

Discussion

Motivation and amotivation are important drivers of key outcomes in young adulthood including educational participation and attainment (Symonds, Schoon & Salmela-Aro, 2016). However, empirical lifespan research on motivation and amotivation development across adolescence and young adulthood is scarce with studies typically targeting shorter time periods or examining related variables for example engagement or self-esteem (Orth et al., 2018). The current study examined the development of young people's motivation and amotivation represented by futility, attainment value, disinterest and inertia, across the ages of 15 – 22-years. The first research question queried how motivation and amotivation developed comparatively across the mid-schooling and school-to-work transitions, and the second asked whether this growth was more pronounced at one of the two transitions. The third question concerned whether motivation and amotivation growth across the transitions was influenced by whether participants were on a vocational versus an academic track. Analysis of motivation and amotivation using piecewise growth curve models computed with five waves of data collected across 15 to 24-years of age uncovered that motivation increased and amotivation decreased across the two transitions, with change in motivation being most apparent at the latter transition. Subtle

differences in motivation growth were noted at each transition relating to academic track. These core findings are discussed below.

Motivation Increases and Amotivation Decreases Across Adolescence and Young Adulthood

In a lifespan perspective on human development, motivation changes in accordance with maturation (normative biological development), gradual social change (i.e. move towards valuing financial independence in young adulthood) and transitions (salient shifts in sociocultural context that can be age-graded in societies where young people move between main tasks i.e. middle school to high school at around the same age). Research on self-perceptions and career identity suggests the value young people attach to their main task should increase across adolescence and young adulthood in Western, industrialized societies, as people become better able to differentiate themselves from others and strive towards an occupation that will support their independence from parents. Fitting with these assumptions, the current study found that amotivation decreased and motivation increased across the ages of 15 – 24-years in Finland. Specifically, young people reported increasingly lower feelings of futility and disinterest in their studies/work, higher levels of attainment value, and less desire to avoid studying/working.

This result contrasts with studies of motivation development in specific school subjects, reported by younger children and adolescents (Archambault, Eccles & Vida, 2010). Prior studies have found a decline in valuing mathematics, language arts and sports in the United States (Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002), English and science in Australia (Watt, 2004) and physical education in Finland (Yli-Piipari, Jaakkola, Liukkonen & Nurmi, 2013). This decline can be attributed to a large minority of students (around 20%) who experience a loss in motivation, as person-oriented analyses of task-values in sports (Wang, Chow & Amemiya, 2018) and physics and chemistry (Wang et al., 2017) demonstrate. Possibly, these declines are

indicative of young people becoming demotivated in subjects that have no direct career relevance, or that are taught in ways that spur disinterest and apathy. They also fit with Harter's (2006) perspective that self-perceptions become more negative temporarily during middle childhood and early adolescence as people's capacity for social comparison and ability to evaluate their actual self improves; supported by meta-analyses of self-esteem development (Orth et al., 2018). The current sample were first surveyed at age 15-years, potentially after these temporary dips in self-perceptions and associated motivation had passed.

Motivation and Amotivation Shifts Across Age-Graded Transitions

In societies that offer a staged education/employment system where young people's main task can become more personalized across each age-graded transition it is possible that each new environment matches more closely to people's skills and interests, promoting motivation (Eccles, 2004). In Finland and other nations, the timing of these age-graded transitions corresponds with the start or middle of adolescence and the beginning of young adulthood. The associated biological maturation and gradual social chances can coincide with specific types of transition, for example when young people are socialized into choosing a distinct career path when they leave school for higher education, work or unemployment.

In the current study, increases in motivation and decreases in amotivation were most notable at the school-to-work transition. There, Finnish youth had a greater variety of pathways open to them (e.g. choices of university and polytechnic courses, employment options) than at the mid-schooling transition when they mainly attended either academic or vocational school. In line with Eccles' (2004) suggestions, this greater environmental personalization may have promoted more opportunities for skill development and subsequent self-concept affirmation, helping people attach greater value to their activities and supporting the release of their energy into study/work directed effort. Potentially too the value of studying/working increased in line

with young people's enhanced focus on career building, fitting with the developmental task of moving towards independence in young adulthood (Lent & Brown, 2014).

People's Main Task Predicts Motivation and Amotivation Development

Further to these normative trends, results indicated that motivation and amotivation development was moderated by the main task people were involved in, although these differences were relatively minor. At the mid-schooling transition, participants on a vocational track reported steeper decreases in variables with an emotional (disinterest) and behavioral (inertia) component. Possibly the vocational school environment was more supportive of their interest and effort because it offered more environmental complexity than the more sedentary environment of the academic school. In the vocational track, participants might have had more opportunities to problem solve and work with materials and physical tools: activities conducive to engagement (Shernoff et al., 2016). However, they had comparable growth in variables that reflected instrumental evaluation of their main activity (attainment value, futility) to participants on an academic track. In other words, participants on both tracks had gradual increases in perceived importance of the track and decreases in finding the track meaningless, fitting with the mechanism of social role change described earlier.

This pattern altered at the school-to-work transition. Compared to those on an academic track, participants on a vocational track reported steeper increases in attainment value, evaluating their new activity as more useful for their future compared to their old activity. This could relate to those participants completing their vocational qualification and moving to employment or higher education. Most participants in the vocational track (109 out of 194) transferred to full time employment, where they may have had more immediate reward from a salary and less prolonged stress of studying for an examination in comparison to those on an academic track (Symonds et al., 2016).

Participants on a vocational track also exhibited a slower loss of disinterest, perhaps relating to their transition to work. Many of those jobs could have been entry level jobs for young school leavers, which require minimal cognitive effort to carry out, which is typical of first employment in young adulthood (Marshall, 2015). In comparison, most participants on an academic track transferred either to university (162 out of 402) or polytechnic (120 out of 402), where more tailored education programs and a new educational environment may have stimulated their interest in learning. Together these findings indicate that motivation and amotivation development were altered both normatively and in shifts through the intersection of maturation, gradual social role change and age-graded transitions.

Limitations

The study has several limitations that should be noted along with its strengths. First, the dataset was subject to 23% attrition between waves one and five, similar to other longitudinal self-report studies of young people (e.g. Kwong et al., 2019). Rather than replace missing values, missing data were handled using full maximum likelihood models in Mplus. The sensitivity analysis reported earlier demonstrated that the main variables in the study were robust to changes in the sample and to missing data.

Second, the theoretical perspective outlined three influences on motivation development: maturation, gradual social change and changes in person-environment fit occurring at age-graded transitions. The study was limited to analyzing mean level change in motivation development without examining the impact of variables relating to maturation, socialization (e.g. perceived pressure for independence) and person-environment fit (e.g. satisfaction with specific features of the main activity). Future research may wish to perform more refined analyses of the causal mechanisms of these trajectories, building on this initial exploratory work.

Conclusion

People's motivation and amotivation to study and work underpins their energy and engagement with academic and vocational tasks. This study explored the development of motivation and amotivation across adolescence and young adulthood, to provide initial information on the normative trajectories of motivation and amotivation in the second and third decades of life. Set in sociohistorical context, the study tested the impact of the timing and nature of two major age-graded transitions and participants' educational track on these normative trajectories. The main finding was that there was a general increase in motivation and decrease in amotivation across the study period that occurred across both transitions for participants on both academic and vocational tracks. This suggests that the normative development of motivation and amotivation was primarily related to the mechanisms of maturation and gradual social change happening across adolescence and young adulthood. However, the rate of change in each trajectory was impacted by educational track, with subtle variations depending on the main task of the participant. There was also a difference in rate of change between the types of transition, with motivation and amotivation changing more at the school-to-work transition in young adulthood when young people transferred into a broader range of tasks compared to the mid-schooling transition. This may signal the importance of autonomy over task choice for motivation and amotivation development, fitting with the structure of increasingly personalized environments common in many Western industrialized societies.

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Tables and Figures

Table 1. Comparison of task value items from the current study and prior research

Current study	**Eccles & Wigfield, 1995**
Disinterest (*M* α = .67)	***Intrinsic value*** (α = .76)
Studying/working is boring. I feel I am losing interest in studying/working.	In general, I find working on math assignments (very boring, very interesting). How much do you like doing math?
Attainment (*M* α = .86)	***Attainment value*** (α = .70)
An important goal for me is to do well in my studies/work. My goal is to succeed at school/work. To acquire new knowledge is an important goal for me in school/work. An important goal for me in my studies/work is to learn as much as possible.	Is the amount of effort it will take to do well in math worthwhile to you? I feel that, to me, being good at solving problems which involve math (is not at all important, very important). How important is it to you to get good grades in math?
Futility (*M* α = .70)	***Utility value*** (α = .62)
I feel that studying and going to school/work are useless. I think going to school/work is a waste of time. I constantly ask myself whether attending school/work has any meaning.	How useful is learning math for what you want to do after you graduate? How useful is what you learn in math for your daily life outside school?
Inertia (*M* α = .79)	***Required effort (cost)*** (α = .78)
I am particularly satisfied if I don't have to work much for my studies. I try to get away with making as little effort as possible with my schoolwork. I always try to do no more schoolwork than I have to.	How hard would you have to try to do well in math? How hard do you have to study for math tests to get a good grade? To do well in math I have to work (much harder in math than in other subjects, much harder than in other subjects than in math)

Table 2. Descriptive statistics

	N	Mean	SD
Futility age 15	701	2.06	1.09
Futility age 16	734	1.94	1.01
Futility age 17	622	1.85	0.91
Futility age 19	533	1.77	0.91
Futility age 22	531	1.83	1.01
Attainment value age 15	700	4.08	1.12
Attainment value age 16	733	4.28	1.09
Attainment value age 17	623	4.30	1.02
Attainment value age 19	533	4.53	1.05
Attainment value age 22	534	4.69	1.08
Disinterest age 15	702	2.99	1.37
Disinterest age 16	734	2.67	1.23
Disinterest age 17	624	2.70	1.22
Disinterest age 19	534	2.16	1.12
Disinterest age 22	534	2.22	1.22
Inertia age 15	700	3.47	1.29
Inertia age 16	733	3.41	1.24
Inertia age 17	622	3.39	1.32
Inertia age 19	533	2.73	1.29
Inertia age 22	534	2.63	1.24
Female	870	0.48	0.50
Parental employment	818	3.08	0.83
Self-reported grades age 15	642	8.02	0.81
Self-reported grades age 17	784	8.06	0.81
Academic track age 17	858	0.60	0.49
University age 22	596	0.28	0.45
Polytechnic age 22	596	0.23	0.42
Vocational school age 22	596	0.07	0.25
Working age 22	596	0.36	0.48
Other occupation age 22	596	0.42	0.49

Table 3. Correlations between amotivation and motivation variables at ages 15 and 22

		1	2	3	4	5	6	7	8
1	Attainment age 15	1							
2	Attainment age 22	.124*	1						
3	Futility age 15	-.457***	-.126***	1					
4	Futility age 22	-.039	-.449***	.093	1				
5	Disinterest age 15	-.443***	-.204***	.577***	.150***	1			
6	Disinterest age 22	-.055	-.452***	.053	.703***	.186***	1		
7	Inertia age 15	-.299***	-.179***	.351***	.126***	.555***	.201***	1	
8	Inertia age 22	-.032	-.300***	-.017	.446**	.112*	.557***	.243***	1

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

Table 4. Confirmatory factor analyses model fit indices

	Age 15	Age 16	Age 17	Age 19	Age 22
Observations	702	734	625	534	535
χ^2	368.525	292.117	252.127	253.851	278.923
df	47	45	47	47	46
p	0.000	0.000	0.000	0.000	0.000
RMSEA	0.10	0.09	0.08	0.09	0.10
CFI	0.906	0.932	0.936	0.934	0.935

Table 5. Confirmatory factor analysis factor loadings Waves 1 and 5

	Attainment	Futility	Disinterest	Inertia
Whole sample				
Age 15 item 1	0.77	0.88	0.62	0.66
Age 15 item 2	0.73	0.73	0.73	0.72
Age 15 item 3	0.81	0.63	-	0.70
Age 15 item 4	0.70	-	-	-
Age 16 item 1	0.76	0.81	0.60	0.69
Age 16 item 2	0.75	0.77	0.77	0.70
Age 16 item 3	0.81	0.60	-	0.73
Age 16 item 4	0.79	-	-	-
Age 17 item 1	0.75	0.71	0.63	0.72
Age 17 item 2	0.80	0.68	0.81	0.82
Age 17 item 3	0.77	0.52	-	0.80
Age 17 item 4	0.81	-	-	-
Age 19 item 1	0.73	0.89	0.66	0.75
Age 19 item 2	0.82	0.80	0.84	0.88
Age 19 item 3	0.81	0.55	-	0.82
Age 19 item 4	0.80	-	-	-
Age 22 item 1	0.72	0.92	0.66	0.75
Age 22 item 2	0.88	0.82	0.89	0.90
Age 22 item 3	0.76	0.50	-	0.84
Age 22 item 4	0.92	-	-	-
Sensitivity subsample				
Age 15 item 1	0.66	0.81	0.64	0.63
Age 15 item 2	0.81	0.78	0.68	0.77
Age 15 item 3	0.71	0.52	-	0.67
Age 15 item 4	0.79	-	-	-
Age 22 item 1	0.69	0.84	0.69	0.66
Age 22 item 2	0.87	0.88	0.85	0.89
Age 22 item 3	0.73	0.55	-	0.80
Age 22 item 4	0.92	-	-	-

Notes: the number of loadings in each column aligns to the number of items in that variable. All loadings were significant at $p = <.001$.

Table 6. Piecewise growth curve model fit indices

	Futility	Attainment	Disinterest	Inertia
Observations	876	876	876	876
χ^2	469.470	664.291	250.838	494.543
df	159	257	73	159
p	0.000	0.000	0.000	0.000
RMSEA	0.049	0.044	0.055	0.056
CFI	0.900	0.947	0.901	0.917

Table 7. Piecewise growth curve models of futility

		M	SE	t	p
	Intercept	-3.72	0.51	-7.36	0.000
	Mid-schooling transition	-0.08	0.03	-2.27	0.023
	School-to-work transition	-0.07	0.03	-2.39	0.017
		b	SE	t	p
Intercept	Female	-0.26	0.05	-5.56	0.000
	Parental employment	0.07	0.05	1.43	0.153
	Grades	-0.47	0.08	-5.95	0.000
	Vocational	-0.09	0.07	-1.37	0.170
Mid-schooling transition	Female	0.04	0.25	0.17	0.865
	Socioeconomic status	-0.08	0.34	-0.24	0.807
	Grades	0.77	0.34	2.24	0.025
	Vocational	0.32	0.34	0.94	0.346
School-to-work transition	Female	0.16	0.09	1.72	0.086
	Socioeconomic status	0.01	0.11	0.10	0.922
	Grades	0.12	0.12	1.01	0.313
	Vocational	-0.07	0.07	-0.91	0.363

Table 8. Piecewise growth curve models of attainment

		M	SE	t	p
	Intercept	4.09	0.85	4.82	0.000
	Mid-schooling transition	0.03	0.05	0.55	0.583
	School-to-work transition	0.16	0.04	4.58	0.000
		b	SE	t	p
Intercept	Female	-0.01	0.04	-0.32	0.747
	Parental employment	-0.14	0.04	-3.20	0.001
	Grades	0.57	0.08	7.22	0.000
	Vocational	0.09	0.06	1.45	0.146
Mid-schooling transition	Female	0.38	0.18	2.12	0.034
	Socioeconomic status	0.27	0.10	2.60	0.009
	Grades	-0.07	0.16	-0.41	0.680
	Vocational	-0.53	0.31	-1.74	0.083
School-to-work transition	Female	-0.01	0.10	-0.06	0.950
	Socioeconomic status	0.05	0.08	0.61	0.539
	Grades	-0.30	0.10	-3.14	0.002
	Vocational	0.14	0.07	2.04	0.041

Table 9. Piecewise growth curve models of disinterest

		M	SE	t	p
	Intercept	-2.36	0.29	-8.02	0.000
	Mid-schooling transition	-0.11	0.04	-2.91	0.004
	School-to-work transition	-0.17	0.03	-5.44	0.000
		b	SE	t	p
Intercept	Female	-0.06	0.02	-2.64	0.008
	Parental employment	0.14	0.03	4.43	0.000
	Grades	-0.54	0.08	-7.21	0.000
	Vocational	-0.02	0.06	-0.32	0.751
Mid-schooling transition	Female	-0.15	0.06	-2.52	0.012
	Socioeconomic status	-0.22	0.08	-2.85	0.004
	Grades	0.41	0.16	2.58	0.010
	Vocational	0.37	0.13	2.91	0.004
School-to-work transition	Female	0.23	0.08	2.86	0.004
	Socioeconomic status	0.13	0.10	1.36	0.174
	Grades	0.03	0.14	0.23	0.822
	Vocational	-0.21	0.08	-2.78	0.006

Table 10. Piecewise growth curve models of inertia

		M	SE	t	p
	Intercept	-1.88	0.38	-4.99	0.000
	Mid-schooling transition	-0.05	0.05	-0.85	0.394
	School-to-work transition	-0.39	0.03	-11.76	0.000
		b	SE	t	p
Intercept	Female	-0.14	0.04	-4.09	0.000
	Parental employment	0.09	0.04	2.21	0.027
	Grades	-0.23	0.07	-3.50	0.000
	Vocational	-0.07	0.07	-1.05	0.295
Mid-schooling transition	Female	-0.18	0.13	-1.37	0.169
	Socioeconomic status	0.05	0.15	0.32	0.749
	Grades	-0.24	0.11	-2.15	0.031
	Vocational	0.67	0.09	7.06	0.000
School-to-work transition	Female	0.60	0.36	1.69	0.090
	Socioeconomic status	0.22	0.63	0.35	0.727
	Grades	0.82	0.51	1.62	0.105
	Vocational	-0.47	0.60	-0.79	0.431

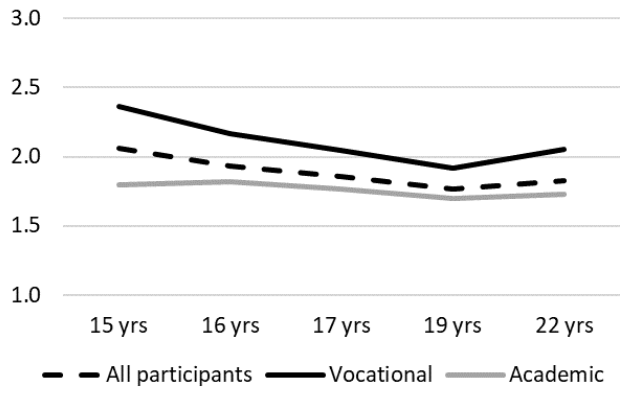

Figure 1. Futility

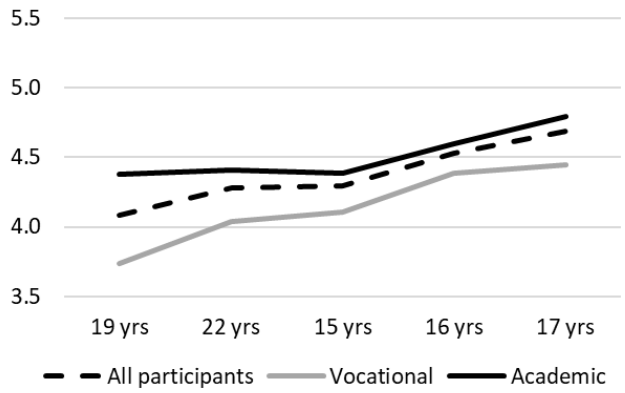

Figure 2. Attainment

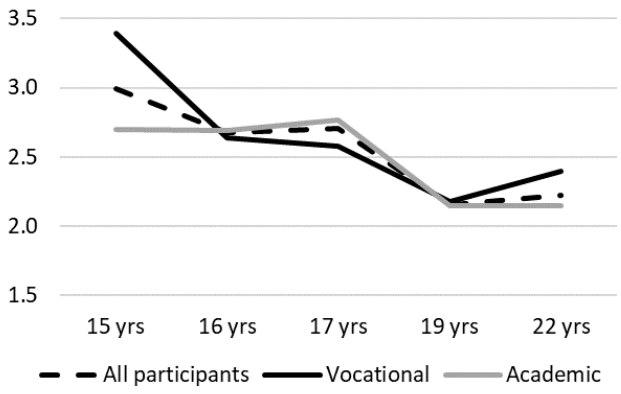

Figure 3. Disinterest

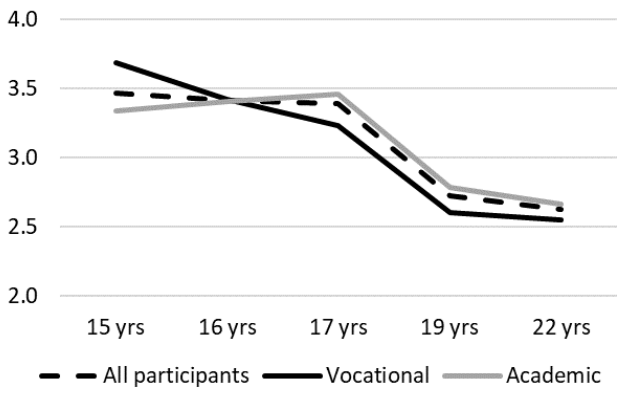

Figure 4. Inertia