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Teenage goals and self-efficacy beliefs as precursors of adult career and family outcomes

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Abstract

The present study identified and examined patterns of goal importance and self-efficacy beliefs in mid- and late adolescence as predictors of work and family outcomes in adulthood. A pattern approach was applied to appropriately identify relationships among work- and family-related goal importance and self-efficacy beliefs. Using a sample of 995 individuals, five distinct patterns of work-family goal importance and self-efficacy beliefs emerged. Individuals who assigned comparable importance to work and family goals and expressed corresponding self-efficacy beliefs in adolescence were more likely to achieve career and family outcomes in adulthood than individuals who expressed a strong preference for one domain over the other. The results supported the idea that work and family can be coordinated for mutual benefit. Furthermore, findings from the pattern approach provided an integrative view of work-family motivation and goal achievement complementing findings from traditional methods such as regression analysis.

Keywords

goals; self-efficacy beliefs; motivation; work-family; longitudinal

Most adolescents in the United States expect to become committed to a lifelong partnership as well as to be engaged in paid work. However, there is considerable variability in how they expect to integrate or balance the two domains (Gerson, 2010). Every person functions in a unique context that affects their confidence about their ability to achieve their work and family goals. Adolescence, and especially the period of transition into adulthood, is a critical time for planning related to family, education, and work (Zarrett & Eccles, 2006; Nurmi, 1993). For example, it has been found, that adolescents moving into adulthood engaged actively in goal setting and goal pursuit related to work, family, and health, yet how they proceeded depended on their experience of life events, such as marriage or completion of education (Salmela-Aro, Aunola, & Nurmi, 2007; Salmela-Aro & Nurmi, 1997).

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Adolescents adjust their goals contingent upon their perceived opportunities (Massey, Gebhardt, & Garnefski, 2008) or contextual affordances (Vondracek, Lerner, & Schulenberg, 1986). Altogether, this suggests that adolescents endorse work- and family-related goals as they develop yet differ in developmental pathways to pursue these goals.

During the last decade or so, several studies have explored the interwoven nature of work and family lives from a motivational perspective (e.g., Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2000, 2010; Wiese & Salmela-Aro, 2008). The underlying assumption of this perspective is that humans, as self-organizing living systems, are able to conceptualize their own desired outcomes (goals) and actively pursue them, thereby opening up new developmental pathways (Winnell, 1987). Although a number of studies of the development of adolescents' work and family motivations have been reported, an important gap remains. Few studies have examined how work and family goals are configured in relation to one another. For example, it is known that adolescents *in general* become increasingly engaged in pursuing age-graded developmental tasks, such as exploring work and contemplating family formation (Salmela-Aro, Aunola, & Nurmi, 2007). The relative weight placed on work versus family goals and the likelihood of achieving these goals is certain to vary widely across individuals, as well as within individuals across time.

According to Ford's (1992) Motivational Systems Theory (MST), goals, referencing the consequences one wishes to achieve or avoid, take the leading role in human motivation. Clearly defined goals are needed to direct behavior to achieve (or avoid) the consequences specified by one's goals. In addition to clearly defined goals, individuals' judgments about whether they are likely to achieve a given goal contribute to the likelihood that the goal is actually achieved. Such judgments have been referred to as *capacity beliefs* (Skinner, Wellborn, & Connell, 1990), *capability beliefs* (Ford, 1992), and *self-efficacy beliefs* (Bandura, 1989; 1997). To avoid confusion, we will encompass all of these closely related constructs when referring to self-efficacy beliefs.

Ford (1992) postulated that without a goal being actively pursued, an individual's belief about whether they have the capability to achieve the goal (i.e., self-efficacy beliefs) lacks functional meaning or significance. Thus, goals and related self-efficacy beliefs should be viewed as dynamically connected components of the individual's motivational system: Motivation to achieve a goal is determined both by one's self-efficacy beliefs and the importance one attaches to that goal (e.g., Bandura, 1997; Brehm & Self, 1989; Orbell, Johnston, Rowley, Davey, & Espley, 2001). Although the relationships between various goal dimensions and self-efficacy beliefs have been studied extensively, results have been mixed, due in part to different methodological approaches and a large variety of measures. Some studies have shown that the nature of a goal influences the self-efficacy beliefs associated with it (e.g., Bandura & Schunk, 1981; Early & Lituchy, 1991; Stock & Cervone, 1990). Other studies have documented that self-efficacy influences the features of the goals that are chosen (e.g., Early & Lituchy, 1991; Locke, Frederick, Lee, & Bobko, 1984; Schunk, 1990). Goals may thus be viewed as both causes and effects of self-efficacy, suggesting a dynamic reciprocal relationship between the two (Berry & West, 1993). When considered separately, evidence supports the importance of goals on the one hand and self-

efficacy beliefs on the other hand, in motivating people to pursue their work and family goals.

The period from mid-adolescence through early adulthood is particularly important for goal formation and change. This stage of life is characterized by multiple developmental tasks, such as finishing education, getting a job, and forming a family, each of which may be guided by previously articulated or concurrently formulated goals. For example, Salmela-Aro and colleagues' studies explore goal changes during the transition to parenthood utilizing longitudinal research designs (Salmela-Aro, Nurmi, & Halmesmäki, 2001; Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2000, 2010). They reported that some young adults reconstructed life goals to match their developmental stage of becoming parents, and those who did were better off than those who focused on goals less relevant to their immediate developmental task.

Goals and self-efficacy beliefs also relate to major adult outcomes. For example, Ashby and Schoon (2010) reported that young people for whom it was important to advance in their job ended up earning more money than their peers who assigned less importance to this goal. Similarly, self-efficacy beliefs are strong predictors of salary, status (Abele & Spurk, 2009), and work involvement (Betz & Fitzgerald, 1987). In terms of family-related goals, higher childcare self-efficacy is associated with better parenting quality (Coleman & Karraker, 1997), parenting and marital satisfaction (Elek, Hudson, & Bouffard, 2003), and psychological well-being (Ozer, 1995). However, it should be noted that high self-efficacy is not always beneficial for performance enhancement (e.g., Schmidt & DeShon, 2009).

In sum, studies supporting the link between goal importance and goal achievement are relatively well established, as are studies of self-efficacy beliefs and goal achievement. Research on the combined effects of goal importance and self-efficacy beliefs is more difficult to find (e.g., Ashby & Schoon, 2010; Ford, 1992; Orbell et al., 2001) and so are studies taking into account domains of work and family at the same time. This inattention to their co-occurrence may be attributable to the greater importance of self-efficacy beliefs, as motivational drivers, once goal commitments have been made (Ford, 1992). To address the shortcomings of extant research, the first goal of the present study was to identify patterns of change in goal importance and corresponding self-efficacy beliefs in mid- and late adolescence.

Because goal pursuit is a *process* that unfolds over time, studying change over time in the configuration of family- and work goals and self-efficacy beliefs represents a forward step in efforts to understand how they contribute to success (or failure) in achieving one's goals. Thus, the second goal of the present study was to explore the impacts of teenagers' work and family goals and self-efficacy beliefs on objective and subjective assessments of their work and family lives two decades later. Previous studies that have examined work-family orientations have neglected to fully account for the dynamic nature of changes in the importance individuals assign to their goals and by the confidence they have in their ability to achieve those goals (e.g., Hakim, 2003, 2006; Friedman & Greenhaus, 2000). Such changes are not only plausible but quite likely during the teenage years because people not only change ontogenetically but they also change how they interact with the physical and

social systems (e.g., school, family) that provide resources and constraints (Bronfenbrenner & Morris, 2006). As individuals move toward establishing their family and work roles, they create a great diversity of pathways to adulthood (Gerson, 2010; Mortimer, 2012; Mortimer, Zimmer-Gembeck, Holmes, & Shanahan, 2002).

Study Aims and Hypotheses

The present study was designed to identify and examine patterns of goal importance and self-efficacy beliefs in mid- and late adolescence (T1 and T2) as predictors of work and family outcomes in adulthood. Although specific patterns of work and family goals and corresponding self-efficacy beliefs could not be predicted, it was hypothesized that those with stronger work goal importance and higher self-efficacy beliefs would be more likely to attain work-related outcomes, whereas those with stronger family goal importance and higher self-efficacy beliefs would be more likely to have attained family-related outcomes as adults.

The study also aimed to ascertain whether changes in patterns of goal importance and self-efficacy beliefs occurring between T1 and T2 could be identified and associated with work and family outcomes representing individuals' objective and subjective assessment of their work and family lives two decades later.

Because using a pattern approach to explore work and family goals and self-efficacy beliefs is a novel approach, no specific hypotheses were formulated regarding the specific types of patterns to be found. However, drawing from previous literature (e.g., Friedman & Greenhaus, 2000; Hakim, 2003, 2006), it was expected that motivational patterns that integrate work and family goals relatively equally would be found as well as patterns that exhibit an inclination to focus more strongly on one domain over the other.

Method

Participants

The present study used data from the Youth Development Study (YDS), a continuing study started in 1988 with a random sample of 1,010 high school students in the St. Paul, Minnesota area (Mortimer, 2003). The data used in this analysis was collected when the participants were ages 14–15 years (1988; T1), ages 17–18 years (1991; T2), and ages 35–36 (2009; T3, 66.3% response rate). After removing those who were missing information on all four variables at T1 and T2, 995 individuals remained. The patterns of goals and self-efficacy beliefs were identified based on this sample. Approximately 48% ($n = 473$) of the sample were boys. In terms of race, 72% of the sample identified themselves as White, 9.6% Black, 4.5% Hispanic, and 11.5% as other race or mixed race (2.6% did not report their race).

Measures

Goals and self-efficacy beliefs were measured with identical items at T1 and T2. Outcomes were measured at T3, approximately two decades later.

Goals—A single item was used to capture the importance placed on work goals: “How important do you think each of the following things will be to you when you are an adult? ...Career or occupation.” To measure family goal importance, a question was asked about how participants would rate the importance of “marriage, relationship with my spouse or partner.” The response scale for both items was 1 (*not at all important*) to 4 (*extremely important*).

Self-efficacy beliefs—Work-related self-efficacy beliefs were measured using the item “Regarding your long-term career goal, how certain are you that you will achieve this goal?” One could respond to the item using a scale of 1 (*very certain*) to 4 (*not at all certain*). To make higher scores reflect higher beliefs, this item was reverse-coded. Family-related self-efficacy beliefs were measured by asking “Do you expect that you will get married someday?” using a response scale of 1 (*Yes, I am quite sure I will marry*) to 5 (*No, I am quite sure I won't marry*) and was reverse-coded as well. The original item included a response option of 6 (*I am already married*) but people who reported already being married at either time ($n = 9$) were removed from the analyses.

Work-related outcomes—*Job authority* was measured using two items: “Overall, how much freedom do you have to make important decisions about what you do at work and how you do it? (1: complete freedom – 5: almost none at all)” and “How much control do you have over the way you spend your time at work (regarding the order and amount of time you work on the various parts of your job)? (1: complete control – 5: almost none at all)” The items were reverse-coded and then they were averaged. *Education level* at the time of measurement was also assessed. Higher numbers reflected more education completed (1: elementary or junior high school – 9: Ph.D. or professional degree). The mean level of educational attainment was slightly above an associate degree ($M = 5.4$, $SD = 1.9$). As a *subjective measure of work success*, participants were asked “How successful do you feel in your work life? (1: not successful at all – 4: very successful)”

Family-related outcomes—*Relationship status* was measured with a single item asking whether the respondent was “currently married or cohabiting in an intimate relationship? (Yes/No)” Although cohabitation may be seen as a different form of relationship status than marriage (Waite, 1995), it is often a prelude to marriage. Moreover, in the context of the present study it is reasonable to interpret the family goal as centered around having a close relationship with a significant other. Therefore, those who responded by reporting that they were cohabiting with a partner were considered to have at least partly achieved their family goal. To capture the *subjective aspect of family-related outcomes*, we asked participants how successful they felt in their family or personal life (1: not successful at all – 4: very successful).

Plan of Analysis

Exploring multivariate patterns of work- and family-related goal importance and self-efficacy beliefs is a unique feature of the present study. To identify different patterns of work-family goals and self-efficacy beliefs and examine how the patterns change over time, latent transition analysis (LTA) – a longitudinal extension of a latent class analysis (LCA) –

was applied (Collins & Lanza, 2010). Conceptually, latent class modeling is similar to cluster analysis in the sense that both classify individuals into certain subtypes, but a distinctive characteristic of LCA is that it includes a measurement model (Collins & Lanza, 2010). LTA enables one to estimate, from a few indicators, latent classes (or groups, or profiles) within a sample, and it also permits the examination of class-to-class changes across time. Latent transition models are useful when testing pattern parsimony and complex interactions (Sterba & Bauer, 2010). That is, latent transition models allow researchers to explore a limited number of frequently observed patterns despite the infinite number of possible patterns in theory (i.e. pattern parsimony) and to understand multiple factors that may be complexly related to each other (i.e., complex interactions) in a given process.

Four indicators (i.e., family goal importance; work goal importance; family-related self-efficacy beliefs; work-related self-efficacy beliefs) were used to identify distinguishable subgroups. All four indicator variables were standardized ($M = 0$, $SD = 1$) before being entered into the model because all were on different scales. A typical procedure of latent transition analysis is to start by fitting a 2-class model to the data. Then, subsequently, $k+1$ class models are fitted and the most appropriate number of classes is selected relying on the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). In general, smaller AIC and BIC suggest a better model but in some cases the two indices do not converge on the best solution (Collins & Lanza, 2010). When this situation takes place, the researcher can select a model based on the interpretability of the classes. Thus, statistical information and conceptual meaningfulness are both used to settle upon a final model. We used Mplus to identify patterns and their changes over time (Muthén & Muthén, 1998–2010). To examine the association between work-family patterns and adulthood outcomes, Analysis of Variance (ANOVA) was conducted using SPSS 21.0.

Results

Means and standard deviations of the goal importance and self-efficacy beliefs measures at T1 and T2 are presented in Table 1, along with findings from a Repeated Measures Analysis of Variance (ANOVA), conducted to examine the time effect on the work- and family-related goal-importance ratings and self-efficacy beliefs. All variables except for work goal importance showed a significant mean-level increase from T1 to T2; work goal importance declined significantly. However, the effect sizes were modest, suggesting that time explained little variance of goal importance and self-efficacy beliefs (see partial η^2 in table 1). Thus, the variability in goal importance and self-efficacy beliefs is likely to be more attributable to differences between persons (than to differences between T1 and T2).

Motivational patterns

Turning to the latent transition analysis results, a 5-class solution appeared to be the best fit for the present data. The patterns that emerged from the data are depicted in Figure 1. As noted previously, the results described here should be understood as “trends” of patterns rather than definitive patterns that would be observed in any population. The names for the patterns were created according to the following convention: The first part of the class names indicates the domain that individuals assessed to be more important (e.g., “work-

oriented”). One group showed a z-score difference smaller than .5 between the two goal domains; this class was called “work and family-oriented”. The second part of the class label represents the relative strength of the work- and family-related self-efficacy beliefs (e.g., “moderate” vs. “strong”). In addition, we distinguished those patterns that showed comparable strength of self-efficacy beliefs in both domains from those in which the relative strength of self-efficacy beliefs corresponded to the level of goal importance (e.g., when strong self-efficacy beliefs in a domain were matched by high goal importance in the same domain).

Class 1: Family-Oriented with Moderate Comparable Self-efficacy Beliefs (in both domains)—People in this class placed much greater importance on family goals than on work goals but showed an equivalent level of self-efficacy beliefs in both domains. Compared to the other classes, people in this class attached the least importance to work goals.

Class 2: Work-Oriented with Corresponding Moderate Self-efficacy Beliefs—The motivational pattern of this class was characterized by a moderate level of importance placed on work goals, matched by moderately strong work-related self-efficacy beliefs, while family goal importance and family-related self-efficacy beliefs were relatively low.

Class 3: Strongly Work-Oriented with Corresponding Strong Self-efficacy Beliefs—This class was very similar to the second class, except that work goal importance and work-related self-efficacy beliefs were much higher. Individuals in this class placed the least importance on family goals. In both domains, the levels of self-efficacy beliefs corresponded closely to the levels of goal importance.

Class 4: Family-Oriented with Comparable Self-efficacy Beliefs (in both domains)—The importance placed on family goals was greater than that placed on work goals. Although the difference in importance assigned to family and work goals was substantial, members of this class expressed very similar levels of self-efficacy beliefs in both domains.

Class 5: Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs (in both domains)—People in this class generally showed a comparable level of goal importance pertaining to work and family, and their self-efficacy belief patterns showed that they were quite confident in their ability to achieve their goals in both domains. This class actually displayed the highest level of family-related self-efficacy beliefs compared to all other classes.

Pattern Change over Time

Looking at the change probabilities, it was evident that there were substantial chances of changing motivational patterns during late adolescence, i. e., from T1 to T2 (Table 2). Particularly, people who belonged to one of the first three motivational pattern classes were likely to change into a different pattern of work-family motivation (the first three rows of Table 2; the probabilities are varying), whereas the latter two patterns were more likely to

show relatively higher stability over time than the other patterns. Although the transition probabilities were varying, those who were placed in Class 1 (*Family-Oriented with Moderate Comparable Self-efficacy Beliefs*) and Class 3 (*Strongly Work-oriented with Corresponding Self-efficacy Beliefs*) at T1 were most likely to change to membership in Class 5 (*Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs*; .363 and .333, respectively).

Adolescents who were members of Class 2 (*Work-Oriented with Corresponding Moderate Self-efficacy Beliefs*) were likely to persist with their motivational pattern (.261) but still were almost as likely to change into Class 3 (*Strongly Work-Oriented with Corresponding Strong Self-efficacy Beliefs*; .241). Those who were members of Class 4 (*Family-Oriented with Comparable Self-efficacy Beliefs*) and Class 5 (*Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs*) were most likely to show the same pattern at time 2 (.452 and .585, respectively).

A cross-tabulation of the classification of individuals based on their most likely latent class membership at T1 and T2 is presented in Table 2. These results, combined with the transition probabilities, provide a convenient overview of the number of people who changed their work-family motivations (i.e., their class membership). At each time, more people belonged to classes representing relatively high and comparable levels of self-efficacy beliefs in both domains. A smaller proportion of adolescents showed a strong commitment on one domain over the other or showed a mixed level of self-efficacy beliefs at T2 when compared to T1. About one-third ($n = 337$, 34%) of the adolescents were Class 5 members (*Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs*), and they persisted in this pattern throughout mid- to late adolescence.

Motivational Patterns in Adolescence and Related Outcomes in Adulthood

Using the class membership at each time, we examined whether the motivational patterns during adolescence were associated with outcomes related to work and family at mid-adulthood (35–36 years old). As seen in Table 3, ANOVA results revealed that patterns at T1 were associated with level of education attained and with marital status in mid-adulthood. Post-hoc tests revealed that Class 5 members (*Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs*) attained significantly more education than Class 1 members (*Family-Oriented with Moderate Comparable Self-efficacy Beliefs*). Also, chi-square tests indicated that adults' marital status was disproportionately distributed across classes. A larger proportion of people in Classes 1 and 4 (family-oriented at age 14–15) were married or cohabiting at age 35–36 when compared to people in Classes 2 and 3 (work-oriented at age 14–15). The same was true of people who held a work *and* family orientation (Class 5) in mid-adolescence: they were more likely to be married or cohabiting with a significant partner in mid-adulthood than those who were primarily work oriented (Classes 2 and 3).

There were also differences in the level of goal attainment in adulthood based on goal and self-efficacy patterns at age 17–18 (Table 3). Post-hoc tests revealed that there were significant class differences in perceived success in work life, in educational level, and in current marital status. Individuals in Class 5 (*Work and Family-Oriented with Strong*

Comparable Self-efficacy Beliefs) rated their work life to be much more successful than members of Class 1 (*Family-Oriented with Moderate Comparable Self-efficacy Beliefs*) or Class 2 (*Work-Oriented with Corresponding Moderate Self-efficacy Beliefs*). Furthermore, members of Class 4 (*Family-Oriented with Comparable Self-efficacy Beliefs*) reported a greater level of subjective success in their work life than did members of Class 2 (*Work-Oriented with Corresponding Moderate Self-efficacy Beliefs*). With regard to educational attainment, individuals in Class 5 (*Work and Family-Oriented with Strong Comparable Self-efficacy Beliefs*) at age 17–18 attained significantly higher levels of education at age 35–36 than did those in Class 1 (*Family-Oriented with Moderate Comparable Self-efficacy Beliefs*). Finally, Class 3 members (*Strongly Work-Oriented with Corresponding Strong Self-efficacy Beliefs*) were less likely to be married or cohabiting with a partner at the age of 35–36 than members of any of the other classes.

To examine whether the change patterns were associated with mid-adulthood outcomes, we conducted a few *t*-tests comparing specific groups. For example, we were interested in comparing those who were consistently Class 5 members and those who were Class 4 members at age 14–15 but who changed to Class 5. Due to small cell sizes, we only conducted four sets of *t*-tests, only comparing those cells containing more than 90 individuals. Results revealed that there were no significant differences in work- and family-related outcomes in mid-adulthood by these change patterns (not presented in table format).

To compare findings obtained by using a pattern approach to findings obtained from traditional analytical methods, we ran multiple regression models. The four indicators and their interaction terms were entered in the model as predictors. We found that there were some significant interactions among goal importance and self-efficacy beliefs. Further, depending on the specific outcome variable, goal importance and self-efficacy beliefs uniquely explained the variance in adulthood outcomes. We will not present the regression results in detail here as the purpose of running the models was to make a comparison with the pattern approach findings. Nevertheless, a summary of the results is presented in Table 4. To understand the interplay between work and family goal importance and self-efficacy beliefs, we probed one of the interactions, the interplay between T2 family goal importance and family self-efficacy beliefs predicting educational level ($\beta = .129$). It revealed that those with a strong family goal and high family self-efficacy beliefs were likely to achieve the highest level of education. However, even when individuals exhibited high family self-efficacy beliefs, when these were paired with a low family goal importance, the educational attainment at adulthood was lowest. This finding is comparable to the difference between Class 1 and Class 5 in educational attainment (see Table 3). But the pattern approach provides additional information regarding why these individuals might have achieved less as it shows individuals in Class 1 place very low importance on work goals. Further, the regression results inform the relative difference between individuals whereas the pattern analysis results demonstrate not only the difference between people (i.e. class by class difference) but also the relative level of goal importance and self-efficacy beliefs within groups of people (i.e. within class).

Discussion

One of the underlying assumptions of the present study was that an individual's motivation to achieve a given goal depends not only on the person's perceived self-efficacy but also on the importance they assign to the corresponding goal. Moreover, it was assumed that goal importance and self-efficacy beliefs would form motivational patterns in adolescence that could be empirically identified and linked to behavioral outcomes in adulthood, approximately two decades later. An additional interest of the study was to not only determine whether motivational patterns would emerge from the data, but also how stable such patterns would be during the formative years from middle to late adolescence.

The five motivational patterns that emerged should be viewed as pattern trends rather than definitive patterns that could necessarily be reproduced in other populations or samples. Nevertheless, they serve to demonstrate that meaningful, empirically identifiable patterns can be established in domains that have been shown to be dynamically related to each other (e.g., Greenhaus & Powell, 2006; Neff, Niessen, Sonnentag, & Unger, 2013; Schulenberg, Vondracek, & Crouter, 1984; Whiston & Keller, 2004). With regards to the change and stability of the patterns, those who exhibited a relatively robust motivation were more likely to persist with it during adolescence. Further, a certain degree of pattern change was found suggesting that the development of work-family motivation is a dynamic process. Individuals develop as integrated systems where various domains interact with each other (Magnusson & Cairns, 1996). The cognitive, emotional, social and identity development that occurs during adolescence may facilitate or inhibit the strengthening of work and family goals as well as the self-efficacy beliefs. Future studies on adolescent motivation should take into account the dynamic nature of motivation development and try to incorporate a longitudinal design to adequately address this point.

Consistent with motivation theories (e.g., Bandura, 1997; Ford, 1992), in general, patterns of stronger goal importance and self-efficacy beliefs were more highly predictive of adult outcomes than were patterns that reflected less commitment to the goal and less confidence in one's ability to achieve it. Motivational patterns at T1 revealed that 14–15 year-old adolescents, who were placed in Classes 1, 4, and 5 were more likely to be married or in a committed relationship than those who were placed in Classes 2 and 3. The findings offer some evidence for the face validity of these classes, as Classes 1 and 4 were described as “family-oriented” and as having “comparable self-efficacy beliefs,” and Class 5 was seen as both “family-and work-oriented” with “comparable self-efficacy beliefs.” In contrast, Classes 2 and 3 were characterized by its members being “work-oriented” and having “corresponding self-efficacy beliefs,” that is, goal-strength and strength of self-efficacy beliefs were matched and higher in the work domain than in the family domain.

Among the more interesting findings associated with T2, when participants were 17–18 years old, was that those in Class 4 rated their subjective success at work to be much higher than did those in Class 2, even though Class 2 placed a stronger importance on work relative to family. In fact, class 4 members' family goal importance and family-related self-efficacy beliefs were much higher than the corresponding levels in Class 2. Class 5 members also considered their success at work to be much higher than was the case for Classes 1 and 2.

Class 5 members differed from Class 4 members primarily in that their level of work goal importance was a little higher than their level of family goal importance, while the opposite was true for Class 4 members. The takeaway from these findings is that individuals tend to end up being more successful in their goal attainment when they are motivated to achieve in both the work and family domains. In effect, work and family should be viewed as allies rather than as competitors (Greenhaus & Powell, 2006; Barnett & Hyde, 2001).

Furthermore, the abovementioned results point to the significance of examining *patterns* to understand the complex interaction between goals and self-efficacy beliefs and also the interrelationship of work and family. Although there have been studies examining how goal importance and self-efficacy beliefs affect goal achievement in the work and family domains (e.g., Ashby & Schoon, 2010; Abele & Spurk, 2009; Betz & Fitzgerald, 1987; Coleman & Karraker, 1997; Elek, Hudson, & Bouffard, 2003; Ozer, 1995), few studies have considered the patterns of these motivational factors. The present findings demonstrated that much more complex motivational patterns can be identified when multiple factors are taken into account.

One additional noteworthy finding is that there was little difference in the work-related self-efficacy beliefs scores among classes. From a statistical standpoint, this indicates that this variable did not clearly separate the classes, which is likely due to limited homogeneity within the classes. When a class is highly homogenous, individuals who belong to that class show a similar pattern of responses on the indicators (Collins & Lanza, 2010). But because work-related self-efficacy beliefs were not a good separator of classes, we must assume that there would be significant heterogeneity in the response pattern of that variable among individuals who belong to the same class. This may also imply that when work-related self-efficacy beliefs are examined in the context of their relatedness to other variables (i.e., looking at patterns) they tend to show a great deal of response variability, yielding more heterogeneity within a class.

Despite such limitation, it seems reasonable to conclude that latent transition analysis and regression analysis represent different statistical approaches that can complement each other. Interesting interactions were found among goal importance and self-efficacy beliefs in the regression models, providing support to the contention that motivation is a complex interaction between goal importance and self-efficacy beliefs (e.g., Bandura, 1997; Brehm & Self, 1989; Orbell et al., 2001). However, as higher-order interactions are added to the models (e.g., 3-way, 4-way interactions) the interpretation of results becomes increasingly complicated. Moreover, the findings generally show segments of a picture and often times it is challenging to see the full picture at once. A pattern-based method may yield similar results to what one may find in variable-oriented methods, but it is much more useful when complex higher-order interactions are in place (Bergman, Magnusson, & El-Khoury, 2003). It provides a much more integrative and comprehensive view. This does not necessary mean that results of a pattern-oriented method are any simpler to interpret. The point here is that a pattern approach can provide a holistic view of the system that the researcher is interested in. Therefore, we advocate the use of pattern-based methods or other person-oriented approaches (cf. Sterba & Bauer, 2010) to promote better understanding of the complexities of human behavior and development.

A few limitations should be mentioned. First, the sample was restricted to a specific region in a Midwestern state. In general, this region appeared to have lower average income than the national sample but had greater work opportunities (Mortimer, 2003). Therefore, findings cannot be generalized to other populations. Second, other factors that may play crucial roles in motivating individuals to achieve their work and family goals were not included. For example, Ford (1992) contended that context beliefs and goal-related emotions can also take important roles in motivation. Future studies should take into account these factors and examine the complex interaction among motivational factors in work and family goal achievement. Third, attrition occurred. This is a common feature in longitudinal research and it is inevitable to some extent. However, due to this fact, people who did not participate in the study in adulthood were excluded from the analyses linking the adolescent patterns with later outcomes, which may have affected the results.

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Highlights

- Adolescents show various patterns of career and family motivation
- Career and family goal importance during adolescence predicts adulthood outcomes
- Pattern approach complements variable-oriented approach

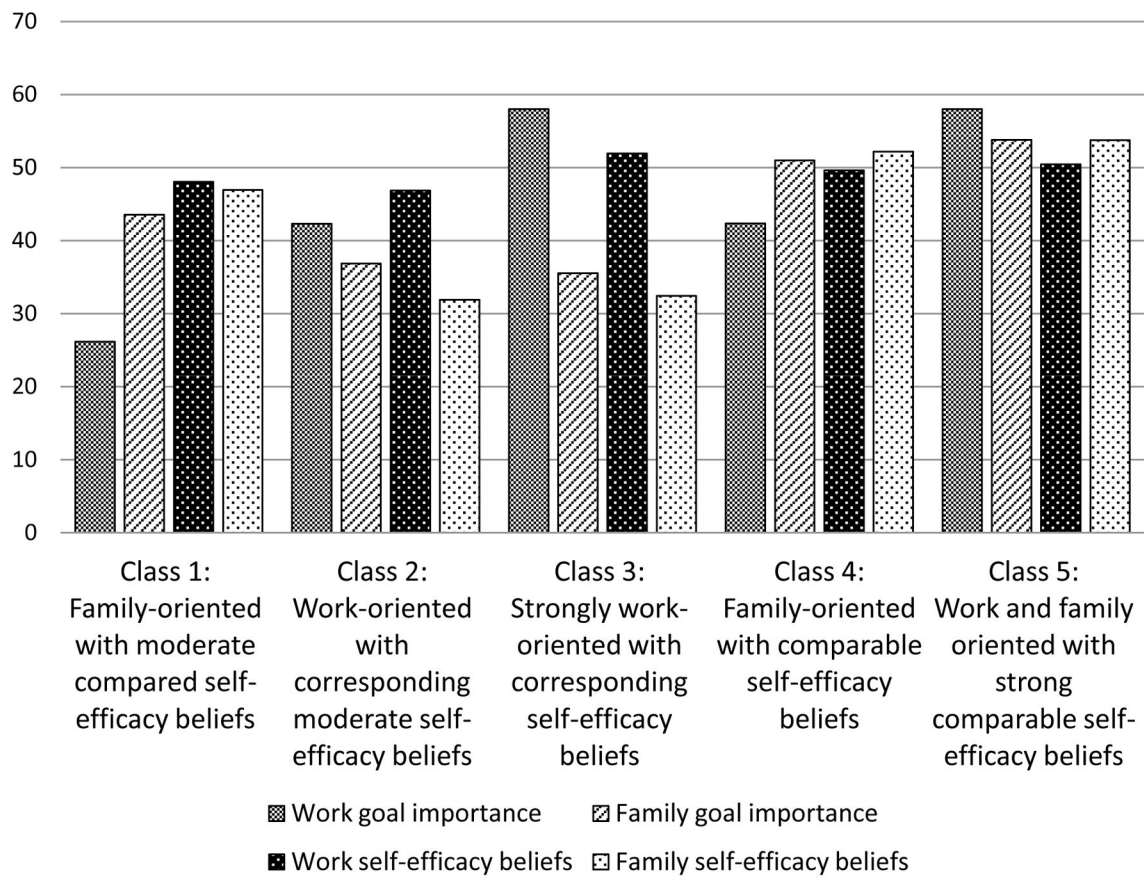


Figure 1. Five work-family motivational patterns (z-scores were re-transformed into T scores for a more intuitive representation).

Table 1

Descriptive Statistics of the Indicators

Constructs	Variables	Time 1		Time 2		Within-subject effects	
		M (SD)	N	M (SD)	N	F	(partial η^2)
Goals	Work goal importance	3.59 (.60)	989	3.48 (.64)	922	23.364***	(.025)
	Family goal importance	3.20 (.88)	987	3.40 (.82)	921	39.975***	(.042)
Self-efficacy beliefs	Work-related self-efficacy beliefs	3.18 (.81)	967	3.34 (.78)	917	28.708***	(.031)
	Family-related self-efficacy beliefs	4.06 (.97)	972	4.31 (.97)	917	45.076***	(.048)

p < .001

Table 2
Transition Probabilities and the Class Membership of the Motivational Patterns from Time 1 to Time 2

		Time 2 (T2)					Total
		Class 1: Family-oriented with moderate compared self-efficacy beliefs	Class 2: Work-oriented with corresponding moderate self-efficacy beliefs	Class 3: Strongly work-oriented with corresponding self-efficacy beliefs	Class 4: Family-oriented with comparable self-efficacy beliefs	Class 5: Work and family oriented with strong comparable self-efficacy beliefs	
Time 1 (T1)	Class 1: Family-oriented with moderate compared self-efficacy beliefs	Prob. 0.284	0.101	0.105	0.148	0.363	1
		N 10	4	4	5	22	45
	Class 2: Work-oriented with corresponding moderate self-efficacy beliefs	Prob. 0.114	0.261	0.241	0.226	0.159	1
		N 5	15	10	11	7	48
	Class 3: Strongly work-oriented with corresponding self-efficacy beliefs	Prob. 0.094	0.126	0.284	0.163	0.333	1
		N 7	9	20	13	34	83
	Class 4: Family-oriented with comparable self-efficacy beliefs	Prob. 0.092	0.039	0.041	0.452	0.376	1
		N 22	7	9	127	94	259
	Class 5: Work and family oriented with strong comparable self-efficacy beliefs	Prob. 0.047	0.023	0.046	0.298	0.585	1
		N 26	9	29	159	337	560
Total		70	44	72	315	494	995

Note. The bolded figures indicate the stability probabilities (i.e., the chance of remaining in the same group at T2 dependent upon the group membership at time 1).

Table 3
Means (SDs) of Work- and Family-related Outcomes at 35–36 years old by Motivational Patterns at T1 and T2

	Perceived success in family life	Perceived success in work life	Job authority	Educational level	Currently married/cohabiting (%yes)
Class 1	3.1 (.80)	2.7 (.93)	2.8 (.65)	4.5 ^a (1.9)	60.6
Class 2	2.9 (.98)	2.7 (.98)	2.6 (.81)	4.7 (2.0)	48.4
Class 3	3.0 (.76)	2.7 (.79)	2.6 (.94)	5.5 (1.7)	55.0
Class 4	3.1 (.80)	2.9 (.86)	2.5 (1.0)	5.4 (1.9)	72.1
Class 5	3.2 (.74)	3.0 (.81)	2.4 (.94)	5.6 ^a (1.9)	70.7
<i>F</i> -test (or chi-square)	ns	ns	ns	<i>F</i> (4, 657) = 3.67, <i>p</i> < .05	χ^2 (4) = 12.07, <i>p</i> < .05
Class 1	3.1 (.87)	2.6 ^a (1.1)	2.6 (.97)	4.5 ^a (2.3)	57.8
Class 2	3.0 (.98)	2.4 ^{b,c} (1.1)	2.9 (.88)	5.2 (2.1)	50.0
Class 3	2.9 (.81)	2.6 (0.9)	2.6 (.98)	5.4 (1.8)	43.6
Class 4	3.1 (.73)	2.9 ^b (0.8)	2.5 (.94)	5.3 (1.9)	72.9
Class 5	3.2 (.77)	3.0 ^{a,c} (0.8)	2.4 (.93)	5.7 ^a (1.8)	71.4
<i>F</i> -test (or chi-square)	ns	<i>F</i> (4, 646) = 5.02, <i>p</i> < .05	ns	<i>F</i> (4, 657) = 4.74, <i>p</i> < .05	χ^2 (4) = 20.76, <i>p</i> < .001

Note. Alphabetic superscripts indicate significant difference between groups as a result of post-hoc tests (with Bonferroni adjustment). Class 1 = Family-oriented with moderate comparable self-efficacy beliefs, Class 2 = Work-oriented with corresponding moderate self-efficacy beliefs, Class 3 = Strongly work-oriented with corresponding self-efficacy beliefs, Class 4 = Family-oriented with comparable self-efficacy beliefs, Class 5 = Work and family oriented with strong comparable self-efficacy beliefs

Table 4
Regression Models using Goal Importance and Self-efficacy Beliefs at T1 and T2 to Predict Adulthood Outcomes

	Perceived success in family life			Perceived success in work life			Job authority			Educational level			Do you have any children?		
	T1 ^a	T2 ^b	β	T1	T2	β	T1	T2	β	T1	T2	β	T1	T2	Exp (B) ^c
Work goal importance (WGI)	.035	-.053		.042	-.016		-.069	-.049		.040	.094*		.924	.940	
Family goal importance (FGI)	.080	.101		.044	-.079		-.056	.041		.136**	.218**		1.033	1.364*	
Work self-efficacy beliefs (WSB)	-.072	.091*		-.016	.043		-.031	-.016		-.047	-.039		.761*	1.120	
Family self-efficacy beliefs (FSB)	.110*	.091		-.063	.126*		.021	.165**		-.067	-.030		1.478**	1.360*	
WGI X WSB	-.037	-.015		-.027	.131**		.082	.040		-.071	.071		.898	1.154	
WGI X FSB	-.131*	.072		-.024	.030		-.018	-.076		-.073	.028		.695	1.315	
WGI X FGI	.112*	-.058		.118*	.023		-.002	.105		-.039	.025		.970	.597*	
FGI X WSB	.064	-.046		-.114*	-.123*		.049	.007		-.098†	-.025		1.184	.679*	
FGI X FSB	.036	.066		-.131**	-.031		.036	-.061		.010	.129*		1.058	1.118	
WSB X FSB	-.056	.045		.092	-.017		.010	.075		.051	-.134*		.884	1.265	

Note.

^aUsing T1 predictors.

^bUsing T2 predictors. All variables were centered before being entered into the model.

^cLogistic regression was applied due to the binary feature of the dependent variable. Only 2-way interactions were added for simplicity sake.

† $p < .06$,

* $p < .05$,

** $p < .01$