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**MOTIVATIONAL PATTERNS RELATED TO WORK AND FAMILY LIVES
AND THEIR ASSOCIATED OUTCOMES**

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by

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ABSTRACT

Contemporary career development is no longer linear, as more adults nowadays combine work and family, which makes it more challenging to devote one's energy predominantly to work. Although the structural factors that constrain or facilitate the continuity and discontinuity of people's work involvement are well documented, relatively less is known about the underlying processes involved in thriving work and family lives. Some work-family researchers have recently started to acknowledge the importance of understanding the processes of work-family experiences (Bianchi & Milkie, 2010; Poelmans, 2005; Powell & Greenhaus, 2010; Powell & Greenhaus, 2012).

The present study used the Motivational Systems Theory (M. E. Ford, 1992) as a framework for understanding people's work and family pursuits. M. E. Ford (1992, p. 78) conceptualized motivation as "the organized patterning of an individual's personal goals, emotions, and personal agency beliefs." Consistent with the theoretical framework, the study's data analytic methods also employed a pattern approach.

Using data from the Youth Development Study ($n = 451$), the present study investigated the motivational patterns associated with work and family lives and their changes during the time from adolescence to early adulthood. Further, it tested whether stronger motivation patterns were actually associated with the achievement of work and family goals. Findings suggest that motivation is better understood as a pattern of related components than as a sole indicator. Also, a stronger motivational pattern was more likely to be associated with the achievement of desired outcomes than was a weaker motivational pattern.

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Chapter 1: INTRODUCTION

Combining work and family has become a common experience among adults in contemporary society. This has brought great complexity into one's career development because managing life in two different domains can be challenging at times. For example, when non-work life demands increase some may strategically choose to scale back from work (e.g., Becker & Moen, 1999). The concept of protean career, as opposed to traditional career, reflects that career development is no longer linear or typical (Hall, 2004; Valcour & Ladge, 2008). With the notion of non-linearity and complexity of career development, the present study tries to examine the motivational processes involved in combining work and family goals from adolescence to early adulthood and how they are associated with long-term consequences.

Intertwined Relationship between Work and Family Life: How Family Life Influences

Work Life

It has been acknowledged that development in the work domain interacts with that in the family domain and with other contextual factors (Vondracek, Lerner, & Schulenberg, 1986). A body of research that investigated the impact of family on work life has helped us to understand what factors constrain or facilitate the continuity and discontinuity of people's work involvement. For example, parenthood has differential effects on women's and men's work commitment (Kaufman & Uhlenberg, 2000; Sanchez & Thompson, 1997; Astone, Dariotis, Sonenstein, Pleck, & Hynes, 2010; Glauber & Gozjolko, 2011), work trajectories (Hynes & Clarkeberg, 2005), and work-related goals (Salmela-Aro, Nurmi, Saisto, Halmesmäki, 2000). Having a non-employed spouse encourages men's and women's work involvement and values (Kirchmeyer, 2002; Landau & Arther, 1992; Meisenbach, 2010) and, for women, having a spouse who is highly work-committed increases the chance of disengaging from work (Stone, 2007; Shafer, 2011;

Blau, Ferber, Winkler, 2005). These effects could differ depending on the person's role salience (Powell & Greenhaus, 2010; Kossek & Misra, 2008) or life role priorities (Friedman & Greehaus, 2000).

However, we know relatively less about the processes involved in pursuing work and family lives (Bianchi & Milkie, 2010). Fortunately, some work-family researchers have begun to acknowledge that within-person processes of work-family experiences, such as how people decide to distribute their resources across domains or the strategies that people use to better manage work and family, are important (Bianchi & Milkie, 2010; Poelmans, 2005; Powell & Greenhaus, 2010). The present study builds upon their work and tries to add knowledge on how motivational factors may contribute to the relative success or failure of one's work and family arrangements.

While it is important to study the processes involved in pursuing work and family lives, whether or not the motivational processes are actually driving the person to achieve what he or she wants is another question. Although parenthood is likely to have a negative impact on women's work involvement (e.g., reducing work hours; Kaufman & Uhlenberg, 2000; Sanchez & Thompson, 1997), as a counterbalance they are achieving an important part of their family goal: becoming a parent. Further, the variations in work-family goals are likely to be reflected in subjective evaluations regarding the actions people make. For example, Carr (2002) reported that the oldest women among three different cohorts were the happiest when they quit work due to family reasons. This suggests that women in different cohorts place differential weight on work and family goals, and that even the same behavior (i.e., removing oneself from work due to family responsibilities) has different impacts on the overall level of well-being. Therefore, in order to understand people's work and family behaviors, it is also critical to examine whether

particular motivational processes have stronger associations with the attainment of work- and family-related outcomes and whether or not such processes are related to a more satisfying life in general.

Motivational Systems Theory (MST)

Traditionally, motivation is known to have an important role in human behavior. Work and family behaviors are no exception, as they involve goal-directed and future-oriented cognitive, emotional, and behavioral level functioning. Several recent 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 and actively pursue them, thereby opening up new developmental pathways (Winnell, 1987).

A number of motivation theories have been useful in explaining human behavior in various contexts, such as in school (e.g., Pintrich, 2002; Wigfield & Eccles, 2000) or at work (e.g., Vroom, 1967). However, Motivational Systems Theory (MST; M. E. Ford, 1992) is particularly helpful in understanding the success and failure of adults' pursuit of work and family goals because it conceives of human functioning in whole person-in-context units. MST starts from a comprehensive understanding of human systems, based on the Living Systems Framework (LSF; D. H. Ford, 1987), and then focuses on subsets of processes of human motivation. This approach enables the identification of functioning motivational patterns of a person-in-context. Work and family experiences are idiosyncratic in a way that every person has different orientations and uniquely functions in different contexts. Therefore, it is important to have a theory that permits accounting for personal variability while also identifying common

motivational patterns to promote the understanding of how the person-in-context can optimally function in the pursuit of work and family goals.

M. E. Ford (1992) defines motivation as “the organized patterning of an individual’s personal goals, emotions, and personal agency beliefs (p. 78)”. Personal goals take the leading role in human motivation and refer to one’s desired state. Personal agency beliefs refer to one’s appraisal of the ability to achieve one’s goals and consist of capability beliefs (i.e., the degree to which one believes that one’s personal resources are adequate to achieve specific goals) and context beliefs (i.e., the degree to which one believes that a supportive context exists for pursuing and achieving those goals). Emotions work as energizers and regulators of the motivational system, which moderates goal pursuit behavior. Motivation is amplified when the three inter-related components combine to yield optimal patterns.

Work- and Family-Related Goals. From a Motivational Systems Theory framework, work and family experience can also be described in terms of goals, personal agency beliefs, and emotions. Because goals take a pivotal role in directing behaviors (M. E. Ford & Smith, 2009), it is important to start with some elaboration of what work- and family-related goals are.

Goals are organized in a hierarchical fashion across multiple life domains, such as career, family, leisure, and community (Winell, 1987). For example, within the family domain, one can have an ultimate goal of harmony, affection, and belongingness. Intermediate family sub-goals may include finding a partner (for those remaining single) or maintaining harmonious relationships with family members. More immediate sub-goals may include daily tasks like having meals with the family or helping children with their homework. Within the work domain, one may have long-term, sustained goals of self-fulfillment, social recognition, and financial security. These goals may be appreciably advanced by mid-level goals like finding a job or being

promoted and immediate sub-goals such as writing a resume or completing daily work tasks. The complexity of goal-hierarchies adds difficulty in comparing goals among people. However, even with the great challenge of substantial between-person variability and within-person complexity in goal systems, people tend to prioritize the importance of higher-level goals. The relative importance becomes a reference in organizing behavior (Winell, 1987), especially when goals across domains conflict. Thus, despite the complexity of goal systems, for simplicity's sake, it is possible to allocate people into one of the three groups that represent the relative priorities of work and family goals: work-oriented, family-oriented, and work-family-oriented (e.g., Cinamon & Rich, 2002a, 2002b; S. R. Friedman & Weissbrod, 2005; Fournier, Lachance, & Bujold, 2009; S. D. Friedman & Greenhaus, 2000; Hakim, 2003, 2006).

Indicators of Goal Progress and Attainment. Goal progress and goal attainment are complicated by the structure of a goal system and how goal progress and attainment are defined. A strong motivational pattern is likely to account for greater engagement in goal-pursuit behavior, thereby increasing the chance of goal attainment. But, as elaborated above, goal systems are complex and, therefore, indicators of goal progress and attainment can also be quite complicated. For instance, taking from the family-related goal hierarchy example above, at the immediate level, goal attainment can be measured by the number of times one is having meals at home with the family; whether one found a partner or not can be an indicator of a mid-level goal attainment. For work-related goals, measures could range from assessments of daily work performance to the prestige level of the job. The present study will focus on higher-level goals because those tend to be more stable and generalizable across people than is the case for lower-level goals.

As the present study will focus on higher-level goals, goal progress can be reflected on several measurable work and family indicators, such as income level (Valcour & Ladge, 2008; Abele & Spurk, 2009; Kirchmeyer, 2006), job status (Abele & Spurk, 2009; Kirchmeyer, 2006), number of family members, and marital status (e.g., S.D. Friedman & Greenhaus, 2000; Hakim, 2003; Willoughby, 2012). However, the desired level of outcomes that are objectively measurable differs between individuals. For example, living with a partner without children may be one's ultimate family goal while another pursues a bigger family. Thus, a greater number of children (or higher value on any other objectively measurable variable) does not necessarily translate into goal progress or attainment. Subjective appraisals regarding work and family life, such as work satisfaction (as in Sears & Galambos, 1993; Parasuraman, Purohit, Godshalk, & Beutell, 1996; Valcour & Ladge, 2008; Martinengo, Jacob, & Hill, 2010) and family/marital satisfaction (as in Parasuraman, Purohit, Godshalk, & Beutell, 1996; Hostetler, Desrochers, Kopko, & Moen, 2012; S. D. Friedman & Greenhaus, 2000), may complement objectively measurable outcomes. In a similar vein, Porfeli and Mortimer (2010) reported that intrinsic value-reward discrepancy (i.e., the gap between what one perceives to be important in a job and the extent to which one sees those values to be fulfilled) mattered for people's work satisfaction. In other words, the relative balance between what one wishes to achieve and what is actually achieved is reflected in the level of work satisfaction. Therefore, the present study will consider both objective and subjective outcomes as indicators of goal progress and attainment. Some examples of family-related objective outcomes include relationship status (married or cohabiting) and the number of children, and subjective outcomes include relationship satisfaction with spouse and the overall satisfaction with one's family life. For work-related goal progress and attainment, self-direction (a proxy for job status; Kohn & Schooler, 1969) and the number of

hours spent at work were chosen as objective work outcomes. Previous research showed associations between work hours and work commitment (Greenhaus, Peng, & Allen, 2012; Pixley, 2009). Job satisfaction and the degree to which one feels successful in his or her work life were taken as subjective work outcomes.

Taking a Pattern Approach to Understanding Work-Family Motivations

According to MST, motivation is defined by *patterns* of goals, personal agency beliefs, and emotions. A clear goal directs behavior in an effective and efficient manner. A strong personal agency belief pattern, characterized as a vigorous level of goal-related capability and context beliefs, coupled with strongly committed goals should predict greater goal pursuit behaviors (M. E. Ford, 1992; Lent & Brown, 2008). Emotions function as energizers within the motivational system that “augment [or forestall] ongoing behavior[s]” (p.144, M. E. Ford, 1992). Clear goals and strong agency beliefs embolden goal pursuit, and favorable emotions provide the energy. In contrast, a lack of (clear) goals, weak agency beliefs, and unfavorable emotions likely disorient, discourage, and deflate goal pursuit, thereby depressing goal attainment.

Scholarship on work and family provides evidence that motivational factors are associated with goal attainment and other favorable consequences. Studies conducted in the work context found that capability beliefs (often labeled as “self-efficacy” in the literature) are a strong predictor of higher salary and status (Abele & Spurk, 2009), fewer days to return to work after illness (Brouwer, Reneman, Bültmann, van der Klink, & Groothoff, 2010), and work involvement among women in science and technology (Larose, Rateelt, Senécal, Harvey, & Drouin, 2008; Betz & Fitzgerald, 1987). Vuolo, Staff, and Mortimer (2012) explored how “agentic striving” changed during the transition from adolescence to adulthood and examined whether different pathways of agentic striving are associated with long-term educational/career

attainment. They found that favorable agency patterns were associated with higher wage and lower chance of unemployment. In terms of family-related goals, higher childcare self-efficacy is associated with improved parenting quality (Coleman & Karraker, 1997), parenting satisfaction (Elek, Hudson, & Bouffard, 2003), and psychological well-being (Ozer, 1995).

There are also studies that demonstrate the significant role of context beliefs on goal attainment. For example, family-friendly organizational cultures (Mennino, Rubin, & Brayfield, 2005; Friedman & Greenhaus, 2000; O'Neill, Harrison, Cleveland, Almeida, Stawski, & Crouter, 2009), flexibility provided at the workplace (Crouter & Booth, 2009), and informal support from one's supervisor (Behson, 2005; McKay & Doucet, 2010) allow workers to pursue their goal of maintaining a successful family life as well as remaining engaged with work.

Not much work-family research has examined the role of emotions attached to the goal, but a few qualitative studies have found that individuals report strong emotional experiences tied to work (or family) when a strong orientation was exhibited in that domain (Stone, 2007; Blair-Loy, 2003; Meisenach, 2010; Pixley, 2009). However, emotion does not appear to be a sole predictor for goal attainment. For example, Nurmi, Salmela-Aro, and Koivisto (2002) reported that goal-related emotion was not a significant predictor of successful transition from school to work above and beyond other goal-related appraisals (e.g., goal importance, goal achievement). Emotions may be useful in triggering immediate action such as investing energy in a desirable event or inhibit action to escape from an unfavorable event (M. E. Ford, 1992) and, thus, have minimal direct impact on goal attainment. Porfeli, Lee, and Weigold's (2012) findings support this contention. They found adolescents' positive and negative work affectivity to be associated with intention to work but the effect was weaker than that of the cognitive appraisals (i.e., work experience expectation) adolescents made toward working.

Studies supporting the role of personal agency beliefs on goal achievement are relatively well established, but less is known about the role of goal-related emotions; studies looking into the combined effects of these two motivational components are even rarer. The only exceptions are studies conducted by Pomaki and colleagues (Pomaki, Karoly, & Maes, 2009; Pomaki, Maes, & ter Doest, 2004). However, their studies included only work-related goals. Moreover, they primarily used regression analyses to explore relationships between variables. The present study takes into account all motivational factors (i.e. personal goals, personal agency beliefs, and emotions) and explores different motivational “patterns” that relate to work and family lives. Identifying motivational patterns would be particularly interesting as some research has shown that high self-efficacy is not always beneficial in performance enhancement (e.g., A. M. Schimdt & DeShon, 2009). Exploring motivational patterns, instead of looking at how multiple variables predict outcomes independently, may provide a different lens with which to understand goal progress and goal attainment.

Aligning Theory and Methods. It is important that the methodological approach of a research question aligns with the theoretical approach of the problem (Bergman, Magnusson, & El-Khoury, 2003). Because the motivational systems theory describes motivation as a patterned functioning of inter-related components (i.e., goals, agency beliefs, and emotions), it is necessary that the research method allows for the examination of patterns of motivational components. In addition, it is useful to explore “patterns of patterns”. Theoretically speaking, every single person is different, so there should be an infinite number of variations in developmental processes that can be identified (von Eye & Bergman, 2003; von Eye & Bogat, 2006). In the context of the present study, there could be as many motivational patterns as the number of individuals in the

sample found. However, it is possible to group people with others who are more similar to them, yielding a smaller number of patterns (Sterba & Bauer, 2010).

Latent Class Analysis (LCA) or Latent Profile Analysis (LPA) can be a useful analytical method when one is exploring specific typologies of human behavior. Conceptually, LCA/LPA 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). Model selection typically is based on relative fit (e.g., information criteria) under the consideration of parsimony and model interpretability (Collins & Lanza, 2010). That is, we want a model that is simple enough that it does not reduce the practicality of typologies, but we also want to have a comprehensive model that tries to explain the largest possible number of human behavioral types. According to von Eye and Bergman (2003), LCA/LPA is a method that combines person-oriented and variable-centered features. It is person-oriented because it systematically creates groups of individuals who exhibit similarities, but it is variable-centered because it uses aggregate-level parameters estimated at the population (or subgroups) level. Thus, LCA/LPA may not be a strictly person-specific method, but it can be applied to occasions when one is trying to describe behaviors that are shown typically in a few subgroups.

Although LCA/LPA can be useful in reducing the number of patterns that are observed among people, this does not necessarily mean that the interpretation of these patterns becomes any simpler. Understanding the organized functioning of a motivational system can be challenging. This is due primarily to the dynamic nature of human functioning. Major contemporary developmental theories tend to agree that the totality of the organism, multiple levels of contexts, and dynamic interactions between the person and the environment are important in understanding human development (Bronfenbrenner, 1986; Magnusson & Cairns,

1996; Gottlieb, 1996; Lerner, 2006). In addition, humans, as well as their contexts, change or differ. Given the complexity of human development, it can be quite challenging to understand human functioning over time. For example, a well-functioning behavioral pattern at one time point or within a certain context may not be effective at another time or context. In a similar vein, a behavioral pattern that is effective for one person may not be the most effective pattern for another person (M. E. Ford, 1992). Therefore, identifying “patterns” of human functioning (rather than looking at causal relationships between two variables) is a step closer to how behavior unfolds in real life. Interpreting the patterns, however, can be complex and may be less straightforward than exploring causal relationships among a limited number of variables.

Changing Motivational Patterns: Late Adolescence to Young Adulthood

Goal pursuit is a *process* and, thus, motivation can change over time. Previous studies looking at work-family orientations (i.e., relative importance placed on work and family) have neglected the dynamic nature of motivational changes (e.g., Hakim, 2003, 2006; S. D. Friedman & Greenhaus, 2000). However, the change in work-family orientations is expected because people not only change ontogenetically but also change how they interact with the physical and social systems (e.g., workplace, family) that provide resources and constraints (Bronfenbrenner & Morris, 2006). As people age, their physical capability of managing work and family may change, and thus, they may decide to focus on one domain rather than to focus on both. Indeed, the person interacts with the context. For example, if one is promoted to a higher position in the organization while the children are at preschool age, the contextual demands may increase. To manage this situation, one may possibly develop different strategies. Depending on the kinds of resources that help manage the demands, one may need to strategically focus on one domain over the other if one was previously putting equal emphasis on work and family (e.g., the couples

shown in Becker and Moen's [1999] or the young adults transitioning from education to work in Dietrich, Jokissari, and Nurmi's [2012] study). This dynamic feature of human development permits the possibility of changes in motivational patterns associated with work and family life domains across the lifespan. Particularly, the period from late adolescence through early adulthood is characterized by multiple developmental tasks, such as finishing education, getting a job, and forming a family. The diverse pathways to adulthood (Gerson, 2010; Mortimer, 2012; Mortimer, Zimmer-Gembeck, Holmes, & Shanahan, 2002) may yield inter-individual differences in intra-individual change in terms of work-family motivational patterns.

Changes in work-family motivations have been documented in some recent studies. Salmela-Aro, Nurmi, and colleagues conducted a number of studies exploring goal changes during the transition to parenthood utilizing longitudinal research designs (Salmela-Aro, Nurmi, & Halmesmäki, 2001; Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2000, 2010). They found that some adults reconstructed life goals to match their developmental stages of becoming a parent, and those who did were better off than those who focused on goals less relevant to their immediate developmental task.

The examples presented above describe goal changes in work-family motivations, but because personal goals, personal agency beliefs, and emotions are interrelated, goal change does not occur independently from changes in other motivational factors. For example, goal adjustment may occur as a result of a weak motivational pattern. Research findings with adolescents suggest that girls aspire to equivalent or even higher status careers than boys but are more likely than boys to perceive career-related barriers (Luzzo & McWhirter, 2001; Cardoso & Marques, 2008; Rojewski, 2007), which may explain why girls are less likely than boys to attain what they aspire to (Schoon, Martin, & Ross, 2007). During the course of development, girls

may adjust their career goals to those that seem more reachable even if their performance level does not differ from that of boys. Similarly, men who spend more time on work during the transition to parenthood (e.g., Astone et al., 2010) may do so because they hold weaker childcare self-efficacy beliefs than mothers (Elek et al., 2003), thus resulting in greater emphasis on work goals than on family goals.

It is plausible, therefore, that motivational patterns during late adolescence change as individuals enter into adulthood. If individuals develop in a lawful way (von Eye & Bergman, 2003; von Eye & Bogat, 2006), there should be particular patterns of change and continuity found in work-family motivations from late adolescence to early adulthood. Gustafson and Magnusson (1991) conducted a study using a pattern approach to explore lawful developmental processes of female career development. They identified patterns of teenage girls' academic achievement, school adaptation, career aspirations, and intelligence at age 13 and followed up with them at age 16. Different pathways of career development were found by configuring these patterns identified at two different time points. For example, girls who exhibited high ability, high adaptation, and high achievement at age 13 were very likely to show a pattern of gifted, high adapted, and high achievement group at age 16. It is expected that work-family motivations also show some more common changing patterns than others. The term "pattern change" or "changing patterns" used in the present study refers to moving from one pattern to another between time points and does not mean the patterns per se are changing. The assumption of estimating pattern change over time is that the patterns found at different time points are equivalent. Bergman and colleagues (2003) called this "structural stability" meaning that the number and profiles of patterns are the same across times. Thus, the term "pattern change" should be differentiated from "structural change" (Bergman et al., 2003), which refers to a case

when patterns identified at one time point are different from those at another time point, either by quantity or quality.

As previously noted, stronger motivational patterns are expected to be associated with positive signals of goal progress and attainment. Whether the change and stability of these patterns are associated with favorable outcomes or not is another question to be answered. What is generally considered to be an adaptive behavioral pattern might not be associated with favorable outcomes. For example, tenaciousness is typically considered to be an adaptive strategy for goal pursuit, but disengaging from goals can be more beneficial than persisting with an unattainable goal (Wrosch, Scheier, Carver, & Schulz, 2003). A study by Salmela-Aro and Suikkari (2008) found that adults who failed their infertility treatment and disengaged from their child-related goal were much better-off than those who maintained their original goal. Further, understanding the associations between changing patterns of motivational patterns and consequences would help us understand what we could do to help those who experience difficulties in pursuing their work-family goals. For example, if we find a group of people who report continuously high context beliefs but low capability beliefs in the work domain and experience moderately low contentment in life, then those people may require further help in enhancing their self-confidence level. Therefore, the present study tries to explore differential outcomes of various developmental changes in motivational patterns.

Sex Differences in Work-Family Motivational Patterns

In light of the gendered nature of work and family roles, sex differences in work-family motivations will also be explored. In general, women's work lives are interwoven with family life in a different fashion compared to men (S. D. Friedman & Greenhaus, 2000). For example, studies have shown that marriage or parenthood influence men and women differently in terms

of paid work hours (Maume, 2006; Sanchez & Thompson, 1997), changes in work-family role salience (Katz-Wise, Priess, & Hyde, 2010; Schroots & Assink, 2005), housework (Bianchi, Milkie, Sayer, & Robinson, 2000), wage changes (Glauber, 2008; Budig & England, 2001), and work-family trade-offs (Carr, 2002). Also, previous studies reported sex differences in terms of relative preferences in work and family lives (Cinamon & Rich, 2002a, 2002b; Fournier, Lachance, & Bujold, 2009). Accordingly, there are likely to be sex differences in terms of work-family motivational patterns.

The Present Study

The purpose of the present study was to explore varying motivational patterns associated with work and family goals and their associations with outcomes that represent individuals' objective and subjective status of their work and family lives. The present study aims to make two major contributions to the existing literature. First, it explores work-family motivations using a pattern approach. Patterns or profiles of motivational factors will be identified using a person-oriented method (Bergman, Magnusson, & El-Khoury, 2003), namely Latent Transition Analysis. This methodological approach permits the exploration of multivariate patterns of personal goals, personal agency beliefs, and emotions, which are believed to reflect the motivational system. It is also expected that taking a person-oriented methodological approach will complement previous studies that primarily used regression-based models. Second, it explores changes in work-family motivations over time. Changes of work-family motivational patterns were identified and tested as to whether particular patterns are more likely to be associated with goal-related outcomes than others.

Three main research questions were examined in the present study. First, motivational patterns related to work and family goals and the pattern changes during the transition to

adulthood were explored. Corresponding to the MST framework, goals, agency beliefs, and emotions related to work and family were used to identify motivational patterns. Because this was an exploratory study of work and family motivational patterns among a certain group of individuals, there were no a priori hypotheses in terms of the types of patterns to be found. However, drawing from previous literature, it was hypothesized that motivational patterns that integrate work and family goals equally would be found as well as those patterns that exhibit an inclination to focus on one domain over the other. Second, sex differences in the identified patterns were explored. Noted by the literature, work-family issues tend to factor in differently for women and men. However, rather than exploring different motivational patterns across sex, it was assumed that the motivational patterns were structurally the same between men and women but that the distribution of certain patterns would differ within each sex. It was hypothesized that women were as likely as men to hold work-related goals but that they would exhibit more favorable agency beliefs and emotions toward family-related goals. Third, how the motivational patterns are associated with goal attainment in young adulthood was explored. At a broader level, it was expected that those with a stronger work-related motivation would be more likely to have attained work-related outcomes, whereas those with a stronger family-related motivation would be more likely to have attained work-related outcomes by the time of young adulthood.

Chapter 2: METHODS

Participants of the Study

The present study used a longitudinal dataset that was initiated by Jeylan T. Mortimer, Professor of Sociology at the University of Minnesota. The Youth Development Study (YDS) started in 1988 with a random sample of 1,010 high school students in the St. Paul, Minnesota area (see Mortimer, 2003, or visit <http://www.soc.umn.edu/research/yds/> for a more comprehensive description of the original study). The participants were age 14-15 years in the first year of the study and they have been followed up almost yearly up to 2009. The present study uses data from 1988, 1991, 2000, and 2009 (namely, waves 1, 4, 12, and 18 of the original study; for convenience sake, these will be referred to as T1, T2, T3, and T4 hereafter). Sixty-seven percent of the initial 1,010 respondents were retained in the study 21 years beyond the first data collection. The second time point was meaningful in terms of normative development. In 1991 (Time 2, age 17-18), the participants were in twelfth grade, a point when people's pathways to adulthood start to diverge. That is, participants were ready to get out of high school and were planning to further their education or start working. Time 3 (2000, age 26-27) was nine years after Time 2, so it is a good duration of time for adolescents to have transitioned into adulthood. Participants were expected to have at least started a job and a subgroup of them was expected to have formed a family of their own. To explore long-term consequences of motivational patterns identified at T1, T2, and T3, data collected in 2000 (Time 3, age 26-27) and 2009 (Time 4, age 35-36) were chosen.

Of the total sample of 1,010 individuals, the present study used a sample of 451 persons. The screening process took the following steps. First, individuals who did not work during at least one of the first two time points (i.e. during adolescence) were selected out. This was

because those who did not work at the point of data collection were not able to provide information regarding work-related motivational factors (see the Measures section for specific items). Second, those who were not working at the third time point of measurement (T3) were also selected out for the same reason.

Approximately 39% of the sample was men. Compared to the original sample, this was a smaller proportion (47% male at T1 of the original sample). In terms of race, 81.2% of the sample identified themselves as White, 6.2% Black, 2.9% Hispanic, and 7.5% identified themselves as other race or mixed race. A small fraction (2.2%) did not provide their race information (see Table 2 for further details on demographic information). Because the 451 was almost half the size of the original sample, comparisons regarding the motivational indicators were conducted. Those who were included in the present study differed from those who were excluded from the study with regard to work capability beliefs at T1, $F(1,975) = 5.91, p < .05$, Family Goal at T1, $F(1,997) = 15.40, p < .001$, Family Goal at T2, $F(1,928) = 23.186, p < .001$, and Work Goal at T2, $F(1,928) = 7.87, p < .05$. Those who were included in the study reported greater importance of Family and Work Goals, whereas those who were not included in the study reported greater level of work capability beliefs.

Measures

Motivational factors. A detailed description of the analyses will be presented later in this section but one thing to note regarding the measures is that all of the motivational factors measures at the three time points had to be identical, due to the need for measurement equivalence in longitudinal analysis. Because of this reason, several motivational factors could not be included in the present study (e.g., family-related capability and context beliefs).

Goals. To capture personal importance placed on work goals, a single item was used: “How important do you think each of the following things will be to you when you are an adult? ...Career or occupation.” To capture personal importance placed on family goal, an average score of two items were used. The stem question was identical to that of work goal and the following cues were “marriage, relationship with my spouse or partner” and “parenthood, relationship with my children”. Respondents used a scale of 1 (*not at all important*) to 4 (*extremely important*). A different study using the YDS data has reported using the same method to capture family orientation (Johnson & Mortimer, 2000). The alpha coefficient for the two family goal items ranged from .638 to .816 at each wave.

Capability beliefs. Work-related capability 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 capability beliefs, this item was reverse-coded.

Context beliefs. Work-related context beliefs were measured with an item asking “How often is your manager or supervisor willing to listen to your problems and help find solutions?” with options to respond between 1 (*almost always*) to 5 (*never*). Conceptually, work-related context beliefs may include a wide array of things, but this item was expected to capture the degree to which one believes there is someone to reach for support and assistance whenever one faces some work-related problems. To make higher scores reflect higher capability beliefs, this item was reverse-coded.

Goal-related emotions. Work-related emotions were measured with an item asking “How often do you feel bored at work, or that time is dragging?” Participants used a scale of 1 (*almost never*) to 5 (*always*) to respond to the item. Family-related emotions were captured with an

average score of two items: “How close do you feel to [your mother, stepmother, or female guardian who lives with you]?” and “How close do you feel to [your father, stepfather, or male guardian who lives with you]?” It was expected that children’s subjective closeness to their parent(s) could serve as a proxy for their family goal-related emotions. Berry and Hansen (1996) found that positive affect was positively related to evaluations of how close children felt to the person they interacted with. Further, Fredrickson (2001) argued that “positive affect prompts individuals to engage with their environments” (p. 219) and explained that positive emotions facilitate building up social resources. In the present study, it was assumed that if individuals felt positively about their family, it would be reflected in their subjective evaluation of the closeness with their parents. Also, one may argue that closeness to parents during early adulthood may not be a meaningful measure compared to closeness to partner or children, but research has shown that a positive relationship experienced within the family of origin is associated with positive relationships with partners or significant others during young adulthood (Conger, Cui, Bryant, & Elder, 2000). Responses could range from 1 (*extremely close*) to 4 (*not close at all*). The scores were reverse-coded before being averaged so that higher scores mean better relationships.

Outcomes (measured at Time 3 and Time 4).

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. The degree of *work involvement* was measured in how many hours respondents worked during the past week. As subjective measures of work success,

participants were asked two questions. “All things considered, how satisfied are you with your job as a whole? (1: *extremely dissatisfied* – 6: *extremely satisfied*)” and “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 is “currently married or cohabiting in an intimate relationship? (*Yes/No*)” Although cohabitation may be seen as a different form of a relationship status than marriage (Waite, 1995), in the context of the present study, family goals tend to imply the goals of having close relationships with significant others. Therefore, those who responded by reporting that they were cohabiting with a partner were considered to have at least partly achieved or made progress toward their family goal. Two items were pertinent to participants’ subjective measure of family success. “All things considered, how satisfied are you with your relationship with your spouse or partner? (1: *very dissatisfied* – 5: *very satisfied*)” and “How successful do you feel in your family or personal life? (1: *not successful at all* – 4: *very successful*)” Family structure was examined in two different ways. First, participants were asked whether they had any children. This was a dichotomous variable (i.e., yes or no). Second, the number of children was computed using the information regarding the children’s birth date. This included biological children, adopted children, and stepchildren.

Analyses

Identifying motivational patterns and their changes over time. To identify different motivational patterns and examine transitions of the motivational patterns over time, latent transition analysis (LTA) was applied. LTA can be seen as testing an extended model of Latent Class Analysis (LCA) or Latent Profile Analysis (LPA). LCA or LPA enables one to estimate latent classes (or groups, or profiles) within a sample that is represented by a few indicators. For

example, if a researcher is interested in understanding different subgroups of people with regards to their drinking behavior, one could use a few indicators, such as the frequency or intensity of drinking, and identify subgroups that show similar behavioral patterns. For this reason, LCA/LPA/LTA is seen as a person-oriented method (Bergman et al., 2003; Collins & Lanza, 2010). In LCA and LPA, the latent factors are categorical because they indicate different “subgroups”. When the indicators are dichotomous (or trichotomous) variables, LCA is applied, and the results yield different item-response probabilities for each class. When indicators are continuous variables, LPA is applied, and the results yield different profiles (i.e., mean plots) for each class. LTA is a longitudinally extended model of either LCA or LPA. LTA allows the researcher to not only identify different classes (or profiles) within each time point but also class-to-class changes across time. A pictorial description of an LTA model is presented in Figure 2. The model shown in the figure represents a model using two waves of data with the latent variable represented by four indicators. The arrow from $c(T1)$ to $c(T2)$ denotes multinomial regression of $c(T2)$ on $c(T1)$. The transition probabilities are computed from these regression coefficients (Muthén & Asparouhov, 2011). The transition probabilities yielded from the analyses are *conditional* probabilities. This means that they indicate the probability of belonging to a certain class at T2 conditional upon the class membership at T1. Therefore, if there were three classes at each time point identified, the transition probabilities from $c1(T1)$ to $c1(T2)$, $c2(T2)$, and $c3(T3)$ would have to sum up to 1. The present study uses six indicator variables measured at three time points.

According to Sterba and Bauer’s (2010) description and explanation of various person-oriented methods, Latent Transition models are considered to be classification methods, which allow the researcher to test the “pattern parsimony” and the “complex interactions” principle (see

Sterba & Bauer, 2010, for full descriptions of the six principles). 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 involved in a certain process that may be complexly related to each other (i.e., complex interactions). However, strictly speaking, classification methods do not permit researchers to look at individual specificity (the unique functioning or development at the person level), interindividual differences in intraindividual change (the lawfulness of within-person change and the between-person differences in such change), or pattern summary (the lawful developmental process that is described in terms of a pattern of multiple factors involved) (Sterba & Bauer, 2010). One important assumption in the present study in the use of LTA (although this can be relaxed by the researcher) is that the profiles shown at each time point are the same and that the transition probabilities are also the same across individuals within the same profile. This is an extreme restriction of the model and, thus, relates to the interpretation of the results. Because of these restrictions, it is not possible to identify any person-specificity or intraindividual change patterns. The results should be viewed as motivational patterns and trends of change at the *global* level.

A typical procedure of LTA 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. When this situation takes place, the researcher can select a model based on the interpretability of the classes. Thus, statistical information and the conceptual meaningfulness are both used to settle upon a final model.

All variables were standardized ($M = 0$; $SD = 1$) before being entered into the models because all variables had different scales. *Mplus* 6.1 (Muthén & Muthén, 1998-2010) was used to conduct LTA.

Latent Structure Models Compared To Traditional Clustering Methods. Latent Class Analysis (or other Latent Structure Modeling techniques) can be seen as a special type of cluster analysis. Different methods exist within the class of clustering techniques, but the basic logic of cluster analysis is to group individuals who show similar patterns of response with each other. However, latent structure models differ in a few ways from more traditional methods.

First, latent structure models take into account the measurement model whereas traditional clustering methods do not. Second, in latent structure models, an individual is assigned to a class according to a set of *probabilities* of belonging to a certain class. Traditional classification methods, such as k-means clustering, use the distances between pairs of cases to identify classes (Burns & Burns, 2008). Therefore, in traditional methods of clustering the results are relatively apt to change according to an inclusion or an exclusion of a case. For this reason, often times in traditional clustering methods, it is extremely important to remove any multivariate outliers (Bergman et al., 2003). However, outliers may have their own meanings. For example, outliers may occur due to an unintended extreme response to a certain item, but if it were not a mere mistake it could be that the particular person is actually a “unique” person. If this was the case, it would be arbitrary to remove the outlier from the analysis because the outlier itself could be a unique group. Latent variable models, however, may be able to classify outliers as a separate group.

For these reasons, the present study adopts the latent variable modeling technique. The present study used the full information maximum likelihood (FIML) procedure to handle missing

data. The MIXTURE analysis in *Mplus* enables to take care of the FIML procedure (Muthén & Muthén, 1998-2010).

Exploring sex differences in motivational patterns. Although a strict test of sex differences in LTA should be conducted by using sex as a grouping variable in the model (Collins & Lanza, 2010), this method yields a problem specifically for the present study because it was highly likely that the model ran into non-identification problem. Therefore, to simplify the analyses and to explore how these patterns are differently represented in men and women, a chi-square analysis was conducted separately at T1, T2, and T3. Individuals were classified into classes based on their class membership probabilities and then cross-tabulated with a dichotomous sex variable. The underlying assumption of this approach is that the motivational patterns shown among women and men are structurally the same.

Outcomes associated with motivational patterns and change patterns. As a result of LTA, individuals can be classified into certain classes according to the highest probability of class membership. Further, using the class membership at each time, a pattern of change can also be identified (e.g., class 1 → class 2 → class 1). These group classifications were used as a categorical variable in searching for differences in outcome variables. To explore whether motivational patterns at one time point are associated with outcomes, an omnibus Analysis of Variance (ANOVA) was conducted and if any significant differences were found, post hoc comparisons were conducted with Tukey adjustment (Tabachnik & Fidell, 2007). These analyses were carried out using SPSS 13.0.

Chapter 3: RESULTS

Findings from the Latent Transition Analysis

As stated earlier, one of the advantages of using Latent Transition Analysis is that it integrates a measurement model and a transition model. The results are, therefore, described in terms of the measurement model and the transition model.

Latent motivational patterns (the measurement model). The Akaike information criterion (AIC) and the Bayesian information criterion (BIC) pointed to a 5-class solution (see Table 4). It is possible that there were more than five classes of motivational patterns, but with the current sample, a six-class model was not well identified. This issue is further discussed later as one of the limitations of classification methods. The findings are described based on the five-class model.

The graphical representations of each motivational pattern are shown in Figures 3 and 4. When evaluating the measurement model, it is important to see if the indicators were well representative of the latent patterns. The measurement model of LTA is, in fact, very similar to factor analysis (Collins & Lanza, 2010). In factor analysis, the researcher makes judgments about whether or not certain items are good indicators of the factors. A “good” indicator in factor analysis is typically characterized with high factor loadings and when the high factor loading of a given item is only observed on one of the latent factors, this is called simple structure (Tabachnik & Fidell, 2007). In LCA, a good indicator of the latent pattern is characterized by very high or low item response probabilities across patterns, which in turn, means that the response on the particular item depends on which latent class it belongs to. Item-response probabilities are obtained when the indicators are dichotomous. When continuous variables are used as indicators, the mean values can be used to judge the adequateness of the indicator.

The results from the present study suggested that some of the indicators did not perform well in differentiating the classes. Looking at the mean values of the variables in each profile, work-related emotion and context beliefs had mean values not different from zero (i.e., $p > .05$) across all patterns, although the variances were much larger among two of the patterns (i.e., Hopeless Work & Negative Family and Negative Family & Self-defeating Work pattern; see detailed description of each pattern below). This indicates that work-related emotions and context beliefs were independent from the latent categorical variable. In other words, the response on the two variables had less to do with which pattern one actually belonged to (Collins & Lanza, 2010).

The invariability in the mean values across patterns also has to do with concepts of homogeneity and separation of patterns. Because two of the variables' (work-related emotion and work-related context beliefs) mean values were not different from zero for all of the patterns, it can be said that the particular variables were not doing a good job in distinguishing one pattern from another (i.e., less clear separation). Weak separation has to do with less homogeneity within a pattern. When a class (or pattern) is highly homogenous, individuals who belong to the certain class show a similar pattern of responses on the indicators. But because the two variables were not good separators of different patterns, it is not guaranteed that the response for the particular variables would be similar among individuals who belong to the same class. However, the other variables were fairly good at differentiating the patterns. Particularly, the two "goal" variables were extremely good indicators of the motivational patterns. The mean values varied substantially across patterns, thereby separating the groups very well. To an extent, the five motivational patterns identified from the analyses were dependent on the "work goal" and "family goal" variables.

Although work-related emotions and work-related context beliefs were not as good indicators as expected, because the research question was to identify unique work- and family-related motivational patterns, further attempts to understand the patterns were made. Specifically, the patterns were examined in terms of *relative* difference between patterns. Also, they were labeled to align with M. E. Ford's (1992) taxonomy (see Table 1). With regard to family motivation, only three patterns could be named: positive, negative, and neutral. This is because no information regarding family-related capability and context beliefs was included in the latent transition models. Thus, motivational patterns related to the family domain had to be named according to the nature of the associated emotions. As stated above, because some of the indicators were statistically not different across patterns, the results described here should be understood as "trends" of patterns rather than definite patterns.

The first group was named *Robust Work & Positive Family Motivation*. This profile was characterized by a similar level of work and family goal importance. In terms of work motivation, the profile showed a high level of capability beliefs and context beliefs and also presented a low level of negative work emotions. Moreover, people reported positive emotions regarding their family. The second group was named *Hopeless Work & Negative Family Motivation*. The importance of their work goal was much greater than that of their family goal. Despite the great importance they assigned to work goals, they expressed a low level of capability and context beliefs (i.e. a hopeless pattern). But, they expressed a low level of negative work emotions. Also, their family-related emotion was very low, indicating a negative family-related motivational pattern. The third pattern was named *Neutral Family & Self-defeating Work Motivation*. This pattern was characterized by much higher importance being assigned to family goals than to work goals. Individuals' family-related emotion was somewhat neutral, while their work-related

capability beliefs were negative and context beliefs were neutral, thus yielding a self-defeating pattern. The fourth pattern was labeled *Negative Family & Self-defeating Work Motivation*. Individuals showing this pattern reported very low levels of capability beliefs and context beliefs. Also, they reported relatively higher negative work emotions and a lower level of family emotions. This pattern was similar to the second pattern described above (i.e., Hopeless Work & Negative Family motivational pattern), but the major difference was the degree of work and family goal importance. The Negative Family & Hopeless Work Motivation pattern was characterized by greater importance assigned to family goals than to work goals, while the pattern of Hopeless Work Motivation & Negative Family Motivation placed greater importance on work than on family goals.

The fifth pattern identified was named *Variable Work & Negative Family Motivation*. This pattern was characterized by a similar degree of importance placed on work and family goals. However, compared to the first group (Robust Work & Positive Family), those who presented a Variable Work & Negative Family motivational pattern generally assigned lower importance on work and family goals than the first group (see Table 5). The absolute level of goal importance on work and family could be interpreted as the level of goal certainty or goal commitment. It could be that those who show a Variable Work & Negative Family motivational pattern are, in general, less committed or less certain about their work and family goals than the people who show a Robust Work & Positive Family pattern (further discussion of this issue continues later in this paper). This motivational pattern was also characterized by mid-level work-related capability and context beliefs. Family-related emotions were not positive.

Motivational changes over time (the transition model). Latent transition probabilities are presented in Table 6. Due to small variability in the Negative Family & Self-defeating Work

pattern at Time 3, five of the multinomial regression coefficients (i.e., which are used to obtain transition probabilities) were fixed at zero.

Late adolescence (T1 to T2). In general, during late adolescence, people's motivational patterns were most likely to remain unchanged. The highest stability probability was shown for the Robust Work & Positive Family motivational pattern (.664). Similarly, the Hopeless Work & Negative Family (.403), Negative Family & Self-defeating Work (.400), and Variable Work & Negative Family (.493) motivational patterns were most likely to show the same pattern at T2. However, those who held a Neutral Family & Self-defeating Work motivation at T1 were most likely to change into a Robust Work & Positive Family pattern (.460). This can be seen as an encouraging change because work-related capability beliefs became more positive and negative work emotions decreased, resulting in a more robust work motivation. Moreover, family-related emotions became more positive.

From adolescence to young adulthood (T2 to T3). The changes in motivational patterns from late adolescence to young adulthood showed a slightly different trend from those in adolescence.

Individuals with a Robust Work & Positive Family (.639), Neutral Family & Self-defeating Work (.594), or a Variable Work & Negative Family pattern (.493) were most likely to hold the same pattern in young adulthood. However, people showing a Hopeless Work & Negative Family motivational pattern were most likely to change into a Variable Work & Negative Family pattern (.461). Also, those who presented a Negative Family & Self-defeating Work motivation at late adolescence were most likely to change into a Neutral Family & Self-defeating Work pattern (.282). In the former case of change, it was mostly the work-related

motivation that changed, whereas in the latter case of change, it was the family-related motivation that was mainly changed.

It is also important to note that the spacing between the measurement points was relatively sparse (Collins & Lanza, 2010). It is possible that the transitions from one time to the subsequent time are not direct transitions. For example, although those showing a Robust Work & Positive Family motivational pattern at T1 were most likely to show the same pattern at T2, they could have temporarily shown a different pattern during the four-years span. Because the time elapsed between T2-T3 was longer than that between T1-T2 (8 years versus 4 years), interpretation of the transition probabilities requires caution. Further elaboration on this matter follows in the Discussion.

Prevalence of motivational patterns and Sex differences prevalence (Table 7). At the overall sample level, the Robust Work & Positive Family pattern was held by the largest group of people, followed by the Neutral Family & Self-defeating Work pattern. However, the prevalence of the Robust Work & Positive Family pattern slightly decreased over time (56.6% → 51.9% → 47.5%), whereas the prevalence of the Neutral Family & Self-defeating Work increased over time (20.6% → 24.8% → 25.9%). The Variable Work & Negative Family pattern composed the third biggest group of all five motivational patterns and showed a slight increase especially during the second time lag (11.1% → 11.3% → 18.8%). Each of the rest two patterns was represented in less than 10% of the sample. Hopeless Work & Negative Family pattern showed a slight decrease followed by a minimal increase from adolescence to young adulthood (8.4% → 6.7% → 7.8%). The Negative Family & Self-defeating Work pattern occurred only among 3.3% of the sample at Time 1 with a slight increase of prevalence at Time 2, but it rarely appeared at Time 3, young adulthood (3.3% → 5.3% → n/a).

Prevalence rates were also explored separately by sex. The ranking of the proportion of each group was in accordance with that of the overall sample – Robust Work & Positive Family pattern being the largest group and Negative Family & Self-defeating Work pattern being the smallest. Moreover, the group prevalence change trend over time was also similar to that of the overall sample. Some difference between men and women was found in the actual prevalence rate of each motivational pattern. A larger proportion of women than men showed a Neutral Family & Self-defeating Work pattern than men (average 26.8% versus 19.1% for women and men, respectively). In contrast, a smaller proportion of women than men showed Hopeless Work & Negative Family (average 5.7% versus 10.7% for women and men, respectively) and Variable Work & Negative Family patterns (average 11.5% versus 17.3% for women and men, respectively). The difference between the Neutral Family & Self-defeating Work pattern and the latter two patterns is that the former pattern is characterized by a stronger importance placed on family goals than on work goals; it is also characterized by slightly more positive emotions around the family domain. This trend suggested that women may be more likely to be motivated by a family-anchored life than is the case for men.

Associations between motivational patterns and work- and family-related outcomes at young adulthood (Tables 8 & 9). The group membership at each time point was used as a group variable to explore mean differences in several work- and family-related outcomes by groups. To compare short- and long-term consequences, outcomes at young adulthood (T3) as well as at a later time (T4) were both explored (see Figure 1 for a graphical depiction of time point intervals). One general trend that was found in these analyses was that Time 3 motivational patterns were more likely to be associated with work- and family-related outcomes than were Time 1 or Time 2 motivational patterns. This is plausible because (1) motivational patterns

change over the course of time from adolescence to adulthood, and (2) the interval between Time 3 and the measurement of the various outcomes is much shorter than that between the outcomes and previous time points. Another observation was that the associations between motivational patterns and *family-related* outcomes were found to be relatively prominent from young adulthood (26-27 years old) and mostly persisted through up to six years (34-35 years old). However, the associations between motivational patterns and *work-related* outcomes were not prominent at age 26-27 years old but emerged six years later. Detailed findings are described in the following sections.

Associations between motivational patterns and Time 3 outcomes. Those who showed a Hopeless Work & Negative Family pattern at T1 reported a greater level of job authority at T3 than those who held a Robust Work & Positive Family pattern or a Neutral Family & Self-defeating Work pattern at T1, $F(4, 443) = 3.72, p < .01$. However, this association did not persist later on.

People with a Neutral Family & Self-defeating Work motivation at late adolescence (T2) were likely to have attained a higher educational level after 8 years (T3) than those who showed a Variable Work & Negative Family motivation at T2, $F(4, 444) = 3.49, p < .01$. This is interesting because people holding the former pattern had placed more importance on family goals than on work goals. However, compared to the Variable Work & Negative Family pattern, the Neutral Family & Self-defeating Work pattern was characterized by slightly higher positive family emotion. It could be that positive emotions (or at least non-negative emotions) around family life worked as a facilitator for those people who placed less importance on work goals to attain greater resources that are more relevant to work, such as education. Group differences

were also found in educational attainment at the concurrent level (T3), $F(3, 445) = 3.81, p < .05$, but the post-hoc test revealed no significant paired differences.

Those who held either a Robust Work & Positive Family pattern or a Neutral Family & Self-defeating pattern were more likely to be satisfied with their relationship with spouse/partner than those with a Variable Work & Negative Family pattern, $F(3, 445) = 6.15, p < .001$. This finding aligns with the idea that a more favorable family-related motivation is associated with the attainment of family-related outcomes. Group differences were also found in whether one has any children, $\chi^2(3) = 8.41, p < .05$, whether one has been married before, $\chi^2(3) = 28.72, p < .001$, and whether one is in current relationship status, $\chi^2(3) = 29.39, p < .001$. A greater proportion of those with Hopeless Work & Negative Family motivation at T3 (83.3%) reported to have no children at the same time point, whereas a smaller proportion of those with a Robust Work & Positive Family (56.2%) and Neutral Family & Self-defeating Work (56.9%) reported to have no children at T3. When respondents were asked whether they had ever been married before, 59.0% of the Neutral Family & Self-defeating Work motivational pattern at T3 said “yes,” while only 17.1% of the Hopeless Work & Negative Family motivational pattern said “yes.” In terms of relationship status, a large group of those with Neutral Family & Self-defeating Work motivation at T3 (76.9%) were married or cohabiting with someone at the same time point, while only 28.6% of the Hopeless Work & Negative Family motivation were married or cohabiting. In sum, it seemed that the Neutral Family & Self-defeating Work motivational pattern was most likely to be associated with family-related goal attainment. However, those with a Hopeless Work & Negative Family pattern were less likely to have achieved their family-related goals at the age of 26-27 years old.

Associations between motivational patterns and Time 4 outcomes. Motivational patterns at the age of 14-15 years old (T1) were associated with the level of job authority and partner relationship satisfaction 18 years later (T4; but no post-hoc test significance), $F(4, 259) = 3.04, p < .05$. Also, whether one had any children differed by motivational patterns, $\chi^2(4) = 9.59, p < .05$. A higher proportion of those showing a Robust Work & Positive Family (79.9%) or a Neutral Family & Self-defeating Work pattern (78.1%) at T1 were likely to have children, while a smaller proportion of those holding a Hopeless Work & Negative Family (56.7%) and Negative Family & Self-defeating Work pattern (61.5%) were likely to have children. This finding also confirms that a more favorable family motivational pattern was more likely to be associated with attainment of participants' family-related goals than was the case for those with unfavorable family motivations.

Motivational patterns at 18-19 years old (T2) were associated with different levels of educational attainment, $F(4, 353) = 2.96, p < .05$. The post-hoc test revealed that the participants holding Robust Work & Positive Family motivations were more likely to be educated than those with Variable Work & Negative Family patterns. Higher educational attainment could be a result of a combination of a stronger work motivation and a more positive family motivation. That is, the configuration of stronger work-related agency beliefs, fewer negative work emotions, and more positive family emotions functions somewhat in a dynamic way that enables people to earn higher level of education. There were also group differences in whether one had any children, $\chi^2(4) = 13.53, p < .001$, the number of children, $F(4, 353) = 4.64, p < .001$, and whether one had been married, $\chi^2(4) = 21.75, p < .001$. Similar to what was found in the T1 - T4 associations, a higher proportion of those showing a Robust Work & Positive Family (79.6%) or a Neutral Family & Self-defeating Work pattern (81.1%) reported to have children, while a smaller

proportion of those holding a Hopeless Work & Negative Family (50.0%) and Variable Work & Negative Family pattern (64.9%) reported to have children. In terms of number of children, the Hopeless Work and Negative Family motivated participants reported having significantly fewer children than three other groups: Robust Work & Positive Family, Neutral Family & Self-defeating, and Negative Family & Self-defeating. Whether one has ever been married was also different by motivational pattern. A higher proportion of those showing a Robust Work & Positive Family (76.9%) or a Neutral Family & Self-defeating Work pattern (84.2%) reported that they had been married at least once during their lifetime. In contrast, a smaller proportion of those holding a Hopeless Work & Negative Family (50.0%) and Variable Work & Negative Family pattern (54.1%) reported that they had ever been married. Again, the differences in the proportion of participants who reported being married at least once suggest that a more favorable family motivation is associated with the attainment of marriage.

Motivational patterns at young adulthood (T3) were more closely associated with work and family outcomes measured 6 years later (T4). With regard to work-related outcomes, there were differences in job authority, $F(3, 310) = 2.82, p < .05$, subjective work success, $F(3, 351) = 3.79, p < .05$, subjective work-family balance success, $F(3, 350) = 3.16, p < .05$, and educational level, $F(3, 354) = 2.95, p < .05$. In terms of family-related outcomes, differences were found in subjective family/personal life success, $F(3, 351) = 4.45, p < .01$, whether or not to have children, $\chi^2(3) = 21.42, p < .001$, the number of children, $F(3, 354) = 7.67, p < .001$, and whether one had been married before, $\chi^2(3) = 32.43, p < .001$. Those who held a Hopeless Work & Negative Family motivation at T1 were likely to report a greater degree of job authority after 12 years than did those with a Robust Work & Positive Family or Neutral Family & Self-defeating Work pattern. Giving greater importance to work goals may have leveraged the attainment of a job that

allows more freedom to make decisions on one's own, despite an unfavorable agency beliefs pattern. Participants with a Hopeless Work & Negative Family pattern felt less successful about their work life compared to those holding other motivational patterns. The same thing was observed in how participants subjectively evaluated their family/personal life success: Participants with the Hopeless Work & Negative Family pattern reported the lowest degree of family/personal life success. Not surprisingly, the Robust Work & Positive Family pattern was more likely to be associated with feeling better about balancing work and family than the Hopeless Work & Negative Family pattern. Although the omnibus test revealed significant group differences in educational attainment, post-hoc tests did not signify any specific differences at the local level.

A larger percentage of participants with the Robust Work & Positive Family pattern (79.9%) reported having children than did those with a Hopeless Work & Negative Family pattern (56.7%). With regard to the number of children, individuals with Hopeless Work & Negative Family motivation ($M = .73$) at T2 reported significantly fewer children at T4 than those with Robust Work & Positive Family ($M = 1.69$), Neutral Family & Self-defeating Work ($M = 1.76$), and Negative Family & Self-defeating Work ($M = 1.76$) motivation at T2. Similarly, those who had a Hopeless Work & Negative Family motivation at T3 ($M = .80$) reported significantly fewer children at T4 than those with a Robust Work & Positive Family ($M = 1.17$) and Neutral Family & Self-defeating Work pattern ($M = 1.18$). Furthermore, a good proportion of participants who held a Neutral Family & Self-defeating Work motivation at T2 (84.2%) reported that they had ever been married before at T4. Motivational patterns at T3 were also associated with having been married before at T4. A majority of those holding a Neutral Family & Self-defeating Work motivation (89.4%) at T3 responded that they had been married before at

T4, while a smaller proportion of those with Hopeless Work & Negative Family (40.0%) responded so. In general, the Hopeless Work & Negative Family motivation was least likely to be associated with the attainment of family-related goals, and the Neutral Family & Self-defeating Work motivational pattern was most closely linked to establishing a family and having children. Again, these findings support that a stronger importance placed on family goals and not holding negative family-related emotions are likely to be associated with achieving family-related outcomes.

Chapter 4: DISCUSSION

A good number of individuals living in contemporary industrialized societies embrace two life domains: work and family. The distribution of one's energy on work and family, however, may differ between persons as well as within a person. In particular, the time from adolescence to young adulthood is a period when various social, occupational, and educational changes occur, leading to changes in individuals' motivations toward work and family. The present study investigated three major research questions in an effort contribute to our understanding of the development of work and family motivations. First, the present study explored different types of work and family motivational patterns as well as the changes in those patterns over time. Lives in work and family domains can be understood from a motivational perspective because people tend to express their own desired states (i.e., goals) associated with the two domains. Motivational Systems Theory (M. E. Ford, 1992) provided a great lens with which to examine the motivational patterns around work and family. Also, given the dynamic nature of motivations, particularly during the time from adolescence to young adulthood, we explored how the motivational patterns changed over time. Second, sex differences in motivational patterns were explored. Work and family issues are often highlighted by sex differences (Bianchi & Milkie, 2010; Friedman & Greenhaus, 2000). Most research acknowledges that women are more likely to be family-driven than are for men, and it was expected that a similar trend would be found in the present study. Third, the associations between motivational patterns and their consequences were examined to test the impact of motivational patterns on the likelihood of goal achievement. Further discussion regarding the general findings is presented in the following sections.

Motivational Patterns and Change in Patterns over Time

The Measurement Model of the Motivational Patterns. The first part of the study was to identify work- and family- motivational patterns. Six indicators were used to identify these patterns and the transitions among these patterns over time.

In general, a higher goal importance was likely to be associated with stronger motivation. One interesting finding regarding personal goals was that family goal and work goal showed significant differences in mean scores *across* profiles. Statistically speaking, this means that the two variables are good at “separating” the latent profiles, which implies a high degree of homogeneity *within* profiles (Collins & Lanza, 2010). High homogeneity means that individuals who are classified into certain latent groups are likely to show similar response patterns on the indicators. Conceptually, this may suggest that the relative importance assigned to goals is the most crucial component that defines motivations. This notion aligns with M. E. Ford’s (1992) description of personal goals that “direct the other components of the person” (p. 83). Goals reflect the desired state of the person, and, therefore, people likely invest their energy and effort to achieve their goal(s). The relatively “good” and “bad” separating variables may suggest that *goal importance* is better at differentiating motivational patterns than other motivational components, such as agency beliefs or goal-related emotions.

Furthermore, looking closely at the motivational patterns, it is noticeable that the patterns with higher scores of family goal or work goal tended to be associated with a stronger motivation. For example, comparing the Robust Work & Positive Family pattern to the Variable Work, & Negative Family pattern, the *within*-pattern z-score differences between family goal and work goal were both less than 0.3. However, in comparing *between* patterns, the Robust Work & Positive Family pattern yielded a much higher z-score of the two variables than the Variable

Work & Negative Family Pattern. Thus, it can be seen that participants with the Robust Work & Positive Family pattern placed much more importance on both work and family lives than did participants with the Variable Work & Negative Family pattern. This could be discussed in the context of goal commitment (Locke & Latham, 2002). Locke and Latham (2002) summarized past research on goal theories and found that goal commitment works as a moderator of the relationship between goal and performance (i.e., goal achievement). Many other scholars have emphasized the role of personal goals as *directing* human behaviors (e.g., Brandstädter, 1999; Baltes, 1996; Heckhausen, Wrosch, & Schulz, 2010; Salmela-Aro, 2009; Winnell, 1987). But the degree to which individuals identify with their personal goals may drive them to devote more personal resources in the process of goal pursuit.

In contrast, negative work emotions and work-related context beliefs did not do a good job in separating the patterns. The mean values of the two variables were statistically not different from zero for all of the motivational patterns. It is not clear why these results were obtained. One speculation is that the way the two indicators were measured played a major role. It is possible that the questions that were selected to capture the constructs of negative work emotions and work-related context beliefs were not as good as they were expected to be on the basis of face validity. Collins and Lanza (2010) explained that the “concept of latent class separation is analogous to simple structure (p. 56)” in factor analysis. Thus, it is likely that these items were ambiguous in differentiating work and family motivational patterns. Alternative items may work better in distinguishing motivations. However, even when these items were found to be non-ideal in terms of differentiating motivational patterns, they were still included in the analyses. This was because the purpose of the present study was to explore work-family

motivational patterns that align with the MST framework, and these items were closest to capturing the theoretical constructs among those items that were measured at every time point.

Five motivational patterns were found. Taking all the motivational components (i.e., goals, emotions, agency beliefs) into account, the five patterns were labeled: Robust Work & Positive Family, Variable Work & Negative Family, Neutral Family & Self-defeating Work, Negative Family & Self-defeating Work, and Hopeless Work & Negative Family motivations (see Figures 3 and 4 and Table 5). The configuration of work and family motivation patterns was not as straightforward as it would be in other studies based on linear relationships between variables. For example, individuals with a Hopeless Work & Negative Family motivation placed importance on their work goals as much as those with a Robust Work & Positive Family motivation. However, their agency beliefs were not as strong as the Robust Work & Positive Family pattern and was even more “hopeless” than other people with different levels of goal importance on work. A similar trend was observed with participants who placed greater importance on family goals than on work goals. Placing more importance on family goals over work goals did not equate to more positive emotions around the goals. Therefore, assigning great importance on a domain does not necessarily mean having a strong motivation for a subgroup of people – it is only part of the picture.

Transitions over Time. The transition probabilities yielded from LTA provided information regarding how individuals’ motivations change over time. As noted previously, the “pattern change” or “changing patterns” used in the present study refers to moving from one pattern to another between time points assuming that the motivational patterns found at all measurement points were held equivalent. It does not refer to the patterns (i.e., configuration of the indicators) themselves as changing. In general, work-family motivations were slightly more

stable during late adolescence (4 years span) than during the transition from adolescence to adulthood (8 years span). The stability probabilities (i.e., transition probabilities on the diagonal in Table 6) become smaller in T2-T3 than in T1-T2 except for the Neutral Family & Self-defeating Work pattern. There can be two interrelated reasons for this finding. First, this observation may reflect age-graded changes during late adolescence (T1-T2) and from adolescence to young adulthood (T2-T3). Adolescents likely set rather ambitious goals and persist with them or even heighten them as their personal resources become enhanced during adolescence (Pinquart, Silbereisen, & Wiesner, 2005). In addition, individuals transitioning into adulthood experience various social, vocational, and educational changes that facilitate goal change (Salmela-Aro, Aunola, & Nurmi, 2007). Such contextual changes that become salient especially after high school may have contributed to a greater likelihood of changing motivations during the later time periods than during the earlier ones.

Second, the difference in time intervals (between times of measurement) could have contributed to weaker stability probabilities during the second time lag (8 years), which was two times longer than the first time lag (4 years). It is plausible that the longer time interval would somehow reflect a greater degree of change than the shorter interval. However, this would be true only if the degree of change during a year is assumed to be always the same (i.e., a linear relationship between time and change). If a change were found to be curvilinear, a longer time interval would not always equate to greater change. Thus, in such case, it is hard to say if the longer time lag contributed to a weaker stability of motivational patterns.

The two reasons elaborated above, however, are not independent from each other. Developmental research is challenging because oftentimes age, cohort, and time are confounded (Baltes, Reese, & Nesselroade, 1988; K. R. T. Schmidt & Teti, 2005). The changing motivational

patterns found in the present study may be due to age-related changes, such that the work-family motivations during adolescence are different from what is experienced during young adulthood. However, it could also be just a matter of the passage of time that results in changes in motivational patterns. More research on work-family motivations and their changes over time is warranted to tease apart the effects of age, time, and cohort.

Another interesting finding was that the results suggested possible structural changes in motivational patterns. Because of the non-variance issue, the transition probabilities from all motivational patterns at T2 to the Negative Family & Self-defeating Work pattern at T3 were fixed to zero. This suggests that the Negative Family & Self-defeating Work pattern is not observed among young adults, at least with the current sample. Note that the Negative Family & Self-defeating Work pattern was characterized by stronger family than work goal importance, negative emotions around family life, and rather discouraging work-related agency beliefs. This finding permits a few points of discussion. First, the “disappearance” of this pattern during young adulthood could be temporary. Although in the present study participants did not exhibit a Negative Family & Self-defeating Work motivational pattern at young adulthood (T3; 26-27 years old), this pattern could very well show up again at a later time in life. Second, if this was not a temporary change in the structure of motivational patterns, it may suggest that a stronger family than work goal importance without a strong impetus for the family goal is unlikely to persist over time.

The transition probabilities suggest that motivations are likely to continue in the shape of the same pattern over time (see probabilities on the diagonal of Table 6). Among all of the patterns, though, the Robust Work & Positive Family pattern was the most stable (transition probabilities of .664 and .639 for T1~T2 and T2~T3, respectively) and this was also shown in the

actual changing patterns presented in Table 8. This suggests that a strong motivation is likely to move the person forward, which may re-fuel the person's motivation.

The highest transition probabilities conditional upon the motivational pattern at the previous time point that were *off*-diagonal also provide some noteworthy discussion points. There were three of them: (a) Neutral Family & Self-defeating Work motivation at T1 was most likely to change into a Robust Work & Positive Family motivation at T2 (.460); (b) Hopeless Work & Negative Family motivation at T2 was most likely to change into a Variable Work & Negative Family motivation at T3 (.461); (c) Negative Family & Self-defeating Work motivation at T2 was most likely to change into Neutral Family & Self-defeating Work motivation at T3. In general, all of these transitions can be seen as changing into a more favorable direction. The case of (a) described above is where individuals reported slightly more positive work-related agency beliefs and more positive emotions around family experience over time. Individuals who changed motivations in this direction may have been going through vocational identity exploration during late adolescence. Past literature on identity development found that a good number of adolescents are actively searching for their identities, including vocational identities (Kroger, Martinussen, & Marcia, 2010; Porfeli, Lee, Vondracek, & Weigold, 2011). It could have been that these individuals were able to find a specific work-related goal (e.g., occupation) that was associated with higher level of agency beliefs during the time from middle- (T1; 14-15 years old) to late adolescence (T2; 17-18 years old). Also, individuals who changed like (a) were those who slightly increased their positive emotions regarding their family experience. This could be a reflection of increasing positivity in parent-child relationship by late adolescence and beyond. De Goede, Branje, and Meeus (2009) reported that, at the mean level, adolescents' perceptions of parental support declined from early to mid-adolescence but increased again by

late adolescence, especially for girls (for boys, the pattern showed a decrease from early to mid-adolescence and a plateau thereafter). Also, they found that adolescents' perceived conflict with parents increased from early to mid-adolescence and declined from middle to late adolescence. Thus, it may be that a subgroup of participants who experienced negative emotions around their families during middle adolescence was able to anticipate more positive emotions regarding family goals by the time of late adolescence. This explanation can be used for (c) as well.

The chief change in the case of (b) is that the work motivation transitioned into a slightly more favorable pattern (Hopeless Work → Variable Work). This change, however, should be interpreted in relation to the change in goal importance, because the Variable Work & Negative Family motivation was characterized by a goal pattern that placed equal importance on work and family, whereas the Hopeless Work & Negative Family pattern was represented by a strong goal importance placed on work over family. One possible explanation for this change is goal adjustment (Salmela-Aro, 2009; Wrosch, Scheier, Carver, & Schulz, 2003). Those who held a Hopeless Work motivation pattern at T2 may have felt that it is almost impossible to achieve their goal and thus adjusted their goal. Goal disengagement or goal adjustment may not necessarily be bad. As previously mentioned, Salmela-Aro and Suikkari (2008) found that adults who did not succeed in their infertility treatment and withdrew their child-related goal were actually doing better than those who continuously pursued their original goal of bearing a child. Further discussion regarding the changing patterns and their associations with work- and family-related consequences will continue later in the paper.

To sum up, the two general findings regarding the transitions were: (1) motivations seem to change more during the transition from adolescence to young adulthood than during mid- to

late adolescence; (2) stronger motivational patterns were more likely to persist than were relatively weaker motivational patterns.

Prevalence of Motivational Patterns and Sex Differences in Prevalence Rates

Looking at the motivational patterns, three of them showed a stronger importance on either work or family goal but two of them depicted a rather similar level of work and family goal importance (i.e., the z-score difference between family goal and work goal was less than 0.3). If the five patterns were re-grouped into three categories based on work and family goal importance, the prevalence rate is, in fact, consistent with a few previous studies on work and family orientations. To relate the findings from the present study with the literature, motivational patterns that were characterized by higher importance on family goals than on work goals *within* the pattern were said to be equivalent to “family-oriented” groups in previous literature, higher importance on work goals than on family goals as “work-oriented,” and patterns with equivalent degree of importance placed on work and family goals as “work-family-oriented.” In the present study, more than 60% of the sample indicated that they put equivalent importance on both work and family lives (combining Robust Work & Positive Family and Variable Work & Negative Family patterns). The second largest group was family-oriented, which comprised 25-30% of the sample (combining Neutral Family & Self-defeating Work and Negative Family & Self-defeating Work patterns), and the work-oriented group was the smallest (less than 10%; Hopeless Work & Negative Family pattern).

Previous studies concerned with work and family life patterns have generally reported three types of life orientations (i.e., work-oriented, family-oriented, and work-and-family-oriented lives). Studies by Fournier, Lachance, and Bujold (2009) and S. R. Friedman and Weissbrod (2005) reported that the proportion of men and women who belong to the work-and-

family-oriented group was the largest, followed by the work-oriented group. However, other studies have reported slightly different distribution. For example, S. D. Friedman and Greenhaus (2000) and Cinamon and Rich (2002a, 2002b) reported that most of the adults were family-oriented, followed by the work-family-oriented group. These differences across studies seem to be due to the differences between samples and the way of measuring work and family orientations.

The prevalence rate of each motivational pattern also suggested that a larger group of individuals was holding positive outlooks for their work and family goals. Almost half of the sample showed a Robust Work & Positive Family pattern. They placed importance on both work and family lives, reported high agency beliefs, and also reported positive emotions around both domains. Only a small proportion of individuals showed a rather discouraging motivation (Hopeless Work & Negative Family). However, this weakly motivated group may be the ones who need assistance in pursuing their goals. Participants in this subgroup place high importance on work goals as do those who hold rather strong motivations. Therefore, it could be said they have a desire to achieve something, but they report the lowest level of agency beliefs, highest level of negative work emotions, and relatively low family emotions. Because these components are highly interdependent, it is hard to know what comes first and what comes later. For example, these participants may have had no hope of achieving their family goals to begin with, and thus they focused on work goals. Or it could have been that they had strong work goals from early on but never experienced confidence regarding goal achievement. Regardless of the reasons for a weak motivation, these individuals might benefit from some kind of intervention that facilitates their motivation and helps them achieve their goals.

In terms of sex differences in prevalence rates of motivational patterns, a larger proportion of women than men placed more importance on family than work goals (i.e., mean z-score difference between work goal and family goal *within* pattern being more than 1 standard deviation; family-oriented). Approximately 30% of women were family-oriented (i.e., Neutral Family & Self-defeating Work and Negative Family & Self-defeating Work pattern combined) while only about 20% of men were family-oriented. Moreover, results showed that women were more likely than men to show positive emotions around family goals. As seen in Table 7, a larger proportion of women than men held a Neutral Family & Self-defeating (26.8% versus 19.1%) and Robust Work & Positive Family motivation (53.3% versus 49.9%). In contrast, a larger proportion of men were found to show Hopeless Work & Negative Family (10.7% and 5.7% for men and women, respectively) and Variable Work & Negative Family motivation (17.5% and 11.5% for men and women, respectively) than women. Similar trends are found in previous studies. For example, Salmela-Aro and colleagues (2000) reported that when they asked women and men about their personal goals during the time transitioning into parenthood, women were more likely to mention parent-related goals and less likely to name achievement-related goals. Using data from the Youth Development Study, but with different indicators, Dennehy and Mortimer (1993) also found that girls had more positive outlooks regarding their future family life. For instance, girls were more likely than boys to believe that their children would have a better life than what they had. The authors argued that “this may indicate that boys feel less efficacious than girls in the family realm (p. 99).” These findings suggest that women are more likely than men to place more importance of family goals than on work goals. Moreover, women are more likely than men to exhibit rather favorable motivation toward their family goals. The

positive (or at least moderate level of) family emotions may facilitate women to persist with their family goals even when they place equal importance on work goals.

Motivational Patterns and Their Associated Outcomes

To explore whether stronger motivations were associated with greater likelihood of achieving goals, group membership of each motivational pattern was used as a categorical variable and mean differences were tested across patterns. To see if there were longer-term consequences, outcomes at T3 as well as T4 were explored. Work-related outcomes included the degree of job authority and whether one supervises others (as proxies for job status), highest education level attained, work hours, job satisfaction, subjectively assessed work success and subjectively assessed work-family balance (the last two variables only measured at T4). Family-related outcomes included whether one has children, the number of children, current relationship status, whether one has been married before, partner relationship satisfaction, and subjectively assessed family/personal life success.

In general, T3 motivational patterns were more likely to be associated with work- and family-related outcomes than T1 or T2 motivational patterns. This is plausible because motivations can change from adolescence to adulthood, so the motivational pattern shown at middle adolescence (14-15 years old) may not necessary have associations with the kinds of outcomes considered in the present study. Another trend that emerged was that the motivational patterns were associated with family-related outcomes from young adulthood (26-27 years old), and mostly persisted through up to six years (34-35 years old). However, the associations between motivational patterns and work-related outcomes were not prominent at age 26-27 years old but emerged six years later. One reason for this may be that it takes more time to achieve work-related goals than family-related goals. Work-related outcomes measured in the present

study, such as job authority, educational attainment, or job satisfaction, require certain amount of investment to the work domain, and thus they are not something that automatically accompanies a single event. In particular, outcomes such as job authority or job satisfaction are positively associated with higher educational level, and obtaining a higher education requires time. However, family-related outcomes considered in the present study are more likely to be single events (e.g., getting married, having a child) that do not depend on “structured investment” like education.

One interesting trend was found regarding the specific motivational patterns that were the least likely to be associated with outcomes at young adulthood. When motivational patterns were associated with T3 outcomes, the Variable Work & Negative Family pattern fared worse than other patterns, with these individuals reporting lower partner relationship satisfaction. However, when motivational patterns were associated with T4 outcomes, the Hopeless Work & Negative Family pattern fared the worst among all patterns; these individuals reported the worst work-family balance, the worst subjective work success, the worst subjective family success, and fewer children than did other profiles. Both patterns were characterized by generally unfavorable motivations, so the results are not surprising, but it is interesting that such different associations were found. The biggest difference between the two motivational patterns is the level of importance placed on work and family goals. Participants with a Hopeless Work & Negative Family pattern placed much *greater importance on work goal* than those with a Variable Work & Negative Family pattern did, but at the same time placed much *less importance on family goal* than those with a Variable Work & Negative Family pattern did.

The finding of more negative associations between a Hopeless Work & Negative Family pattern and T4 outcomes compared to T3 outcomes suggests a few things. First of all, devoting

oneself entirely to the work domain may not be an adaptive lifestyle. Individuals holding a Hopeless Work & Negative Family pattern did achieve greater job authority at T3 than others but they failed to achieve subjective work success at T4 while not even differing in other objective success outcomes at T4. They also did not think that they were balancing their work and family/personal life successfully. It is possible that individuals with such a motivational pattern placed so much importance only on work that if goal progress was not experienced, they may have considered themselves to be failures in life. Furthermore, note that the agency beliefs pattern around the work goal was not even positive, which could have contributed to a smaller likelihood of achieving work goals.

Secondly, as individuals start to see discrepancies between actual and desired states, subjective well-being may decrease. However, this type of negative association was not so prominent with participants who placed more importance on family than on work. The Neutral Family & Self-defeating Work and Negative Family & Self-defeating Work pattern also placed more importance on only one domain but did not fare as badly as the Hopeless Work & Negative Family pattern in terms of subjective success outcomes. A study by Masuda and Sortheiz (2011) may be related to this finding. They found that those who prioritize family goals over work goals were likely to report higher levels of life satisfaction. A similar finding was reported by S. D. Friedman & Greenhaus (2000). In their study with business professionals, those who placed priority on family life over work life reported greater family satisfaction than those who placed priority on work life over family life. Likewise, the family-prioritized group reported slightly higher rates of satisfaction with personal growth than did the work-prioritized group. These findings altogether suggest that a solely work-motivated life may not be as adaptive as a solely family-motivated life. In the present study, those with a stronger family goal importance at least

do achieve their family-related goals (have more children than others) and sometimes even achieve their relatively less important work-related goals (attained higher educational level).

It is possible that the motivational patterns were influenced by family of origin to begin with. Some research has suggested that social background, such as social class or parents' educational level, is associated with work values (Kohn, 1979; Kohn & Schooler, 1969), career aspirations, and career preferences (Brown, Fukunaga, Umemoto, & Wicker, 1996). Therefore, if it were the social background that produced the motivational patterns to start with, the associations between the motivational patterns and the work- and family-related outcomes would be biased by this varying starting point. To see if this was the case, discriminant analysis was conducted using family income reported by mother and father at 1988 and the parents' educational attainment levels as predictors and the motivational pattern membership at each time as the dependent variable (mother's educational level was log-transformed before running the analyses as it was skewed). Results revealed that the motivational patterns did not differ as a function of the household income or parents' educational level. These findings are in line with past research that found evidence *against* hypothesized linkages between social class and educational achievement of children (Gustafson & Magnusson, 1991; Entwistle, 1968).

Limitations

One of the limitations of the present study is that it did not fully take account of family-related agency beliefs. The primary purpose of the present study was to explore how work and family motivations are intertwined and how they change over time. Because family-related agency beliefs were not included in the analyses, it was challenging to understand how they would be related to family goals and work motivation. Similar to what was found with work motivations, having a strong family goal may not be necessarily aligned with stronger agency

beliefs (e.g., one places greater importance on family than on work but believes that one cannot have a family).

Another limitation was that the participants of the present study were from a specific region in the Midwest of the United States (St. Paul in Minnesota). In general, this region appeared to have lower average income than the national sample (that compared in 1989) but had greater work opportunities (Mortimer, 2003). Also, Mortimer (2003) noted that people who initially settled in this region were Scandinavians and Germans, who are often seen to have strong work ethics. Furthermore, the sample used in the present study was a subsample, limited to those who had information regarding their work. Taking a subsample was necessary because a large subgroup of the original sample did not have data regarding work-related items, essentially because they were not working at the time of measurement. Although Staff and Mortimer (2008) reported that only 6 percent of the total panel of the Youth Development Study had no work experience during their high school years, for the particular purpose of the present study, those who did not have work-related data at any of the selected waves were excluded. Therefore, the particular sample of this study may differ from samples from other areas characterized with different features, and, therefore, findings from the present study should only be treated as suggestions rather than hard conclusions.

Using the same indicators over time was necessary but also can also be a restriction. To obtain conceptually equivalent classes across time, it is important that the measurement models of the classes are invariant across time. Although some researchers have suggested that partial equivalence is acceptable in some cases (Horn & McArdle, 1992; Schmitt & Kuljanin, 2008), in the context of investigating transitions during adolescence to adulthood the interpretation becomes challenging. For example, if transition probabilities from T1 to T2 differed significantly

from those found from T2 to T3, it would be hard to know whether it is because of true differences in the transitions or because of non-equivalent indicators. Because of this challenge, the indicators used in the present study may not have been the optimal measures for the work and family motivational components. For example, a question asking about the relationship with parents may be a good indicator of family relationships among adolescents, but the meaning of this response might change as these adolescents move into adulthood. In short, this raises the question of what the nature of family is for adolescents and for adults (e.g., whether the meaning of family becomes different as people age).

Finally, Sterba and Bauer (2010) pointed out two caveats of classification methods including latent Markov models with multiple indicators. One of the limitations is that classification methods tend to yield only a small number of classes or groups (e.g., three to seven), which leaves it questionable if the number of classes found in such analyses matches the number of patterns found in reality. Another caveat that Sterba and Bauer mentioned was the lacking capability of testing complex interactions. Although one of the advantages of classification methods is testing complex interactions among multiple indicators, they point out that often times “only lower order interactions are included (p. 247)”.

Future Directions

The present study was an exploratory study in the sense that it examined the work-family motivational patterns according to M. E. Ford's (1992) framework. Thus, there are still some open questions that need to be answered.

The present study used Latent Transition Analyses, which is a useful methodological approach in exploring parsimony in patterns (Sterba & Bauer, 2010). However, it was quite challenging to understand why some people held certain motivations and why some people

changed from one pattern to another. Probably the best way to understand motivation and motivational changes over time would be taking into account personal experiences or closely examining the person-in-context unit of analysis. Alternative methodological approaches, such as person-specific models (Molenaar & Campbell, 2009) or measurement-burst design (Nesselroede; e.g. Sliwinski, Almeida, Smyth, & Stawski, 2009), may further facilitate understanding motivations and their changing patterns.

Developing measures that are more finely tuned to capture the constructs of the Motivational Systems Theory, especially in the context of work and family motivations, is desirable. As seen in the present study, a few items were not as good as other items in terms of differentiating work and family motivational patterns, which could be due, in part, to the measures only addressing one aspect of the construct. For example, work-related context beliefs can include items such as “How much do you believe that your parents will be supportive of your career goal?” or “How much do you believe you will have easy access to financial resources that help you earn the education required for your career goal?” Future studies should develop measures that more closely reflect the theoretical constructs of Motivational Systems Theory. Further, it is necessary to examine whether these constructs hold the same meaning among adolescents and adults. The conceptions about work, family, and the interwoven relationship between the two domains may become more sophisticated and nuanced as adolescents enter into adulthood.

Conclusion

Despite some limitations, the present study contributes to the existing literature in a few ways. To start with, the present study took an innovative approach to understanding individuals’ work and family motivation. The findings provided evidence of the importance of exploring

work and family motivational *patterns* and their associated outcomes instead of looking into goals or self-efficacy beliefs in isolation. As seen in the present study, a strong goal was not necessarily associated with the achievement of the goal, especially when other motivational components were not in the direction of facilitating the goal achievement. It is important to look at the organized patterns of the components of the motivational system in order to understand the person-in-context functioning. Also, the present study took a pattern approach, not only theoretically, but also methodologically. Often times, researchers fail to use a methodology that matches the theory. Their findings could be misleading, because what is found from empirical research may be challenging to interpret in the context of the theory. Fortunately, thanks to recent advances in methodology, a sophisticated way of identifying patterns has been developed, namely latent class analysis (LCA) and latent transition analysis (LTA). The present study took advantage of such innovative methods to explore the complex theoretical constructs proposed by Motivational Systems Theory. A pattern approach (both in theory and methods) can be sometimes complex to understand and interpret, but it is actually getting one step closer to reality because the reality of human behavior is often complex. Therefore, the present study may be viewed as a small step forward in efforts to understand the complex patterns of variables that influence work and family development and functioning.

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Table 1
Personal Agency Beliefs Patterns

Context beliefs	Capability beliefs		
	Strong	Moderate/Variable	Weak
Positive	Robust	Modest	Fragile
Neutral/Variable	Tenacious	Vulnerable / Variable	Self-defeating
Negative	Accepting/ Antagonistic	Discouraged	Hopeless

Note: Adapted from M.E. Ford (1992).

Table 2
Sample Characteristics of Each Measurement Occasion (N = 451)

	Time 1	Time 2	Time 3	Time 4
Year	1988	1991	2000	2009
Age	14-15	17-18	26-27	35-36
% male		38.8%		
Race		White 81.2%		
		Black 6.2%		
		Hispanic 2.9%		
		Other 7.5%		
		N/A 2.2%		

Table 3
Descriptive Statistics of the Indicators (N = 451)

Constructs	Variables	Time 1	Time 2	Time 3
		M (SD)	M (SD)	M (SD)
Goals	Work goals	3.61 (.56)	3.53 (.60)	3.21 (.75)
	Family goals	3.32 (.82)	3.53 (.68)	3.56 (.70)
Capability beliefs	Work capability beliefs	3.11 (.84)	3.33 (.76)	2.82 (.86)
Context beliefs	Work context beliefs	3.92 (.99)	4.03 (1.05)	4.29 (.91)
Emotions	Work-related emotions (negative)	2.97 (.95)	3.17 (.95)	2.49 (.99)
	Family-related emotions (positive)	2.84 (.82)	2.87 (.83)	2.97 (.81)

Table 4
Fit Indices of k-class Models Using Six Motivation Indicators

	AIC	BIC	LogLikelihood
2-class	20365.46	20509.44	-10147.7
3-class	19915.32	20121.00	-9907.66
4-class	18308.97	18592.81	-9085.49
5-class	18026.78	18405.24	-8921.39
6-class		Not well identified	

Table 5
Mean Z-scores of the Indicators of Each Motivational Pattern

	Robust Work, Positive Family	Hopeless Work, Negative Family	Neutral Family, Self- defeating Work	Negative Family, Self- defeating Work	Variable Work, Negative Family
Negative work emotion	-0.040 ^{ns} (0.048)	-0.056 ^{ns} (0.112)	0.050 ^{ns} (0.072)	0.068 ^{ns} (0.221)	0.071 ^{ns} (0.084)
Positive family emotion	0.114 (0.048)	-0.282 (0.128)	0.029 ^{ns} (0.082)	-0.651 (0.154)	-0.183 (0.085)
Work capability beliefs	0.070 ^{ns} (0.042)	-0.086 ^{ns} (0.112)	-0.082 ^{ns} (0.072)	-0.303 (0.167)	-0.016 ^{ns} (0.090)
Work context beliefs	0.040 ^{ns} (0.050)	-0.190 ^{ns} (0.129)	0.007 ^{ns} (0.076)	-0.031 ^{ns} (0.207)	-0.041 ^{ns} (0.097)
Family goal	0.489 (0.017)	-2.389 (0.103)	0.497 (0.026)	-0.629 (0.214)	-1.065 (0.040)
Work goal	0.744 (0.014)	0.734 (0.017)	-0.951 (0.035)	-2.711 (0.125)	-0.936 (0.033)

Note: Superscript “ns” denotes that the value is not different from zero (i.e., $p > .05$). Values in parentheses are standard errors. Bolded text indicates the relative goal importance within a pattern.

Table 6
Transition Probabilities of Class Changes Over Time

		T2 [T3]				
		Robust Work, Positive Family	Hopeless Work, Negative Family	Neutral Family, Self-defeating Work	Negative Family, Self-defeating Work	Variable Work, Negative Family
	Robust Work, Positive Family	0.664 [0.639]	0.019 [0.056]	0.237 [0.171]	0.026 [0.000]	0.053 [0.135]
	Hopeless Work, Negative Family	0.225 [0.312]	0.403 [0.190]	0.042 [0.037]	0.063 [0.000]	0.266 [0.461]
T1 [T2]	Neutral Family, Self-defeating Work	0.460 [0.253]	0.031 [0.030]	0.356 [0.594]	0.049 [0.000]	0.105 [0.122]
	Negative Family, Self-defeating Work	0.333 [0.260]	0.067 [0.207]	0.042 [0.282]	0.400 [0.000]	0.158 [0.251]
	Variable Work, Negative Family	0.154 [0.297]	0.120 [0.151]	0.143 [0.197]	0.090 [0.000]	0.493 [0.355]

Note. Values are the transition probabilities of class membership at T2 conditional on class membership at T1 (values in brackets are transition probabilities from T2 to T3). Shaded cells indicate stability probabilities. Bold face values are the **highest** probability of class membership at subsequent time point conditional on class membership at the previous time point. Transition probabilities from T2 classes to class 4 at T3 were fixed to zero due to non-variance in class 4.

Table 7
Motivational Pattern Prevalence and Sex differences in Prevalence

		Robust Work, Positive Family	Hopeless Work, Negative Family	Neutral Family, Self- defeating work	Negative Family, Self- defeating Work	Variable Work, Negative Family
Overall	Time 1	56.5%	8.4%	20.6%	3.3%	11.1%
	Time 2	51.9%	6.7%	24.8%	5.3%	11.3%
	Time 3	47.5%	7.8%	25.9%	--	18.8%
	Average	52.0%	7.6%	23.8%	2.9%	13.7%
Female	Time 1	57.2%	7.2%	23.2%	4.0%	8.3%
	Time 2	55.1%	4.7%	27.5%	4.3%	8.3%
	Time 3	47.5%	5.1%	29.7%	--	17.8%
	Average	53.3%	5.7%	26.8%	2.8%	11.5%
Male	Time 1	55.4%	10.3%	16.6%	2.3%	15.4%
	Time 2	46.9%	9.7%	20.6%	6.9%	16.0%
	Time 3	47.4%	12.0%	20.0%	--	20.6%
	Average	49.9%	10.7%	19.1%	3.1%	17.3%

Note. Time 1: $\chi^2(4) = 9.30, p = .054$; Time 2: $\chi^2(4) = 14.35, p < .05$; Time 3: $\chi^2(3) = 10.97, p < .05$.

Table 8
Change in Motivational Patterns Over Time

T1	T2	T3	Frequency	Valid Percent
RW&PF	RW&PF	RW&PF	124	27.5
RW&PF	RW&PF	HW&NegF	8	1.8
RW&PF	RW&PF	NeuF&SW	14	3.1
RW&PF	RW&PF	VW&NegF	23	5.1
RW&PF	HW&NegF	RW&PF	1	0.2
RW&PF	HW&NegF	HW&NegF	--	--
RW&PF	HW&NegF	NeuF&SW	1	0.2
RW&PF	HW&NegF	VW&NegF	2	0.4
RW&PF	NeuF&SW	RW&PF	12	2.7
RW&PF	NeuF&SW	HW&NegF	1	0.2
RW&PF	NeuF&SW	NeuF&SW	48	10.6
RW&PF	NeuF&SW	VW&NegF	5	1.1
RW&PF	NegF&SW	RW&PF	--	--
RW&PF	NegF&SW	HW&NegF	--	--
RW&PF	NegF&SW	NeuF&SW	4	0.9
RW&PF	NegF&SW	VW&NegF	3	0.7
RW&PF	VW&NegF	RW&PF	4	0.9
RW&PF	VW&NegF	HW&NegF	--	--
RW&PF	VW&NegF	NeuF&SW	--	--
RW&PF	VW&NegF	VW&NegF	5	1.1
HW&NegF	RW&PF	RW&PF	6	1.3
HW&NegF	RW&PF	HW&NegF	--	--
HW&NegF	RW&PF	NeuF&SW	1	0.2
HW&NegF	RW&PF	VW&NegF	2	0.4
HW&NegF	HW&NegF	RW&PF	4	0.9
HW&NegF	HW&NegF	HW&NegF	3	0.7
HW&NegF	HW&NegF	NeuF&SW	--	--
HW&NegF	HW&NegF	VW&NegF	9	2.0
HW&NegF	NeuF&SW	RW&PF	--	--
HW&NegF	NeuF&SW	HW&NegF	1	0.2
HW&NegF	NeuF&SW	NeuF&SW	2	0.4
HW&NegF	NeuF&SW	VW&NegF	--	--
HW&NegF	NegF&SW	RW&PF	--	--
HW&NegF	NegF&SW	HW&NegF	1	0.2
HW&NegF	NegF&SW	NeuF&SW	--	--
HW&NegF	NegF&SW	VW&NegF	1	0.2
HW&NegF	VW&NegF	RW&PF	2	0.4
HW&NegF	VW&NegF	HW&NegF	--	--
HW&NegF	VW&NegF	NeuF&SW	3	0.7

HW&NegF	VW&NegF	VW&NegF	3	0.7
NeuF&SW	RW&PF	RW&PF	31	6.9
NeuF&SW	RW&PF	HW&NegF	5	1.1
NeuF&SW	RW&PF	NeuF&SW	4	0.9
NeuF&SW	RW&PF	VW&NegF	4	0.9
NeuF&SW	HW&NegF	RW&PF	1	0.2
NeuF&SW	HW&NegF	HW&NegF	1	0.2
NeuF&SW	HW&NegF	NeuF&SW	--	--
NeuF&SW	HW&NegF	VW&NegF	1	0.2
NeuF&SW	NeuF&SW	RW&PF	3	0.7
NeuF&SW	NeuF&SW	HW&NegF	1	0.2
NeuF&SW	NeuF&SW	NeuF&SW	24	5.3
NeuF&SW	NeuF&SW	VW&NegF	8	1.8
NeuF&SW	NegF&SW	RW&PF	1	0.2
NeuF&SW	NegF&SW	HW&NegF	2	0.4
NeuF&SW	NegF&SW	NeuF&SW	2	0.4
NeuF&SW	NegF&SW	VW&NegF	--	--
NeuF&SW	VW&NegF	RW&PF	2	0.4
NeuF&SW	VW&NegF	HW&NegF	--	--
NeuF&SW	VW&NegF	NeuF&SW	--	--
NeuF&SW	VW&NegF	VW&NegF	3	0.7
NegF&SW	RW&PF	RW&PF	2	0.4
NegF&SW	RW&PF	HW&NegF	--	--
NegF&SW	RW&PF	NeuF&SW	3	0.7
NegF&SW	RW&PF	VW&NegF	--	--
NegF&SW	HW&NegF	RW&PF	--	--
NegF&SW	HW&NegF	HW&NegF	--	--
NegF&SW	HW&NegF	NeuF&SW	--	--
NegF&SW	HW&NegF	VW&NegF	1	0.2
NegF&SW	NeuF&SW	RW&PF	--	--
NegF&SW	NeuF&SW	HW&NegF	--	--
NegF&SW	NeuF&SW	NeuF&SW	1	0.2
NegF&SW	NeuF&SW	VW&NegF	--	--
NegF&SW	NegF&SW	RW&PF	1	0.2
NegF&SW	NegF&SW	HW&NegF	1	0.2
NegF&SW	NegF&SW	NeuF&SW	3	0.7
NegF&SW	NegF&SW	VW&NegF	1	0.2
NegF&SW	VW&NegF	RW&PF	--	--
NegF&SW	VW&NegF	HW&NegF	--	--
NegF&SW	VW&NegF	NeuF&SW	--	--
NegF&SW	VW&NegF	VW&NegF	2	0.4
VW&NegF	RW&PF	RW&PF	4	0.9

VW&NegF	RW&PF	HW&NegF	--	--
VW&NegF	RW&PF	NeuF&SW	1	0.2
VW&NegF	RW&PF	VW&NegF	2	0.4
VW&NegF	HW&NegF	RW&PF	3	0.7
VW&NegF	HW&NegF	HW&NegF	1	0.2
VW&NegF	HW&NegF	NeuF&SW	--	--
VW&NegF	HW&NegF	VW&NegF	2	0.4
VW&NegF	NeuF&SW	RW&PF	2	0.4
VW&NegF	NeuF&SW	HW&NegF	1	0.2
VW&NegF	NeuF&SW	NeuF&SW	3	0.7
VW&NegF	NeuF&SW	VW&NegF	--	--
VW&NegF	NegF&SW	RW&PF	2	0.4
VW&NegF	NegF&SW	HW&NegF	1	0.2
VW&NegF	NegF&SW	NeuF&SW	--	--
VW&NegF	NegF&SW	VW&NegF	1	0.2
VW&NegF	VW&NegF	RW&PF	9	2.0
VW&NegF	VW&NegF	HW&NegF	8	1.8
VW&NegF	VW&NegF	NeuF&SW	3	0.7
VW&NegF	VW&NegF	VW&NegF	7	1.6

Note. Empty cells mean that there were no counts (i.e. zero). Shaded rows indicate those who show stable motivational patterns over time. When the patterning of change consisted more than 5% of the sample, it was bolded. HW&NegF: Hopeless Work & Negative Family; RW&PF: Robust Work & Positive Family; NeuF&SW: Neutral Family & Self-defeating Work; VW&NegF: Variable Work & Negative Family

Table 9
Associations Between Motivational Patterns and Outcomes at Time 3

	Time 1	Time 2	Time 3
Time lag between motivation and outcome	12 years	8 years	concurrent
Work-related	Job satisfaction		
	Job authority	$F(4, 443) = 3.72^{**}$; HW&NegF > RW&PF, NeuF&SW	
	Supervise others		
	Education level	$F(4,444) = 3.49^{**}$ NeuF&SW > VW&NegF	$F(3,445) = 3.81^{*}$; post-hoc ns.
	Work hours		
Family-related	Partner relationship satisfaction		$F(3,275) = 6.15^{***}$ VW&NegF < RW&PF VW&NegF < NeuF&SW
	Have children		$\chi^2(3) = 8.41^{*}$
	Number of children		
	Married before		$\chi^2(3) = 28.72^{***}$
	Relationship status		$\chi^2(3) = 29.39^{***}$

Note. Only significant results are tabled here. HW&NegF: Hopeless Work & Negative Family; RW&PF: Robust Work & Positive Family; NeuF&SW: Neutral Family & Self-defeating Work; VW&NegF: Variable Work & Negative Family

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

Table 10
Associations Between Motivational Patterns and Outcomes at Time 4

	Time 1	Time 2	Time 3	
Time lag between motivation and outcome	18 years	14 years	6 years	
Work-related	Job satisfaction			
	Job authority	$F(4, 309) = 2.55^*$ post-hoc ns.		$F(3, 310) = 2.82^*$ VW&NegF > RW&PF
	Subjective work success			$F(3, 351) = 3.79^*$ HW&NegF < RW&PF, HW&NegF < VW&NegF, HW&NegF < NeuF&SW
	Subjective work-family balance success			$F(3, 350) = 3.16^*$ RW&PF > HW&NegF
	Supervise others			
	Education level		$F(4, 353) = 2.96^*$ RW&PF > VW&NegF	$F(3, 354) = 2.95^*$ post-hoc ns.
Family-related	Work hours			
	Partner relationship satisfaction	$F(4, 259) = 3.04^*$ post-hoc ns.		
	Subjective family/personal life success			$F(3, 351) = 4.45^{**}$ HW&NegF < RW&PF, HW&NegF < SW&NegF, HW&NegF < VW&NegF
	Have children	$\chi^2(4) = 9.59^*$	$\chi^2(4) = 13.53^{**}$	$\chi^2(3) = 21.42^{***}$
	Married before		$\chi^2(4) = 21.75^{***}$	$\chi^2(3) = 32.43^{***}$
	Number of children		$F(4, 353) = 4.64^{**}$ HW&NegF < RW&PF, HW&NegF < NeuF&SW, HW&NegF < NegF&SW	$F(3, 354) = 7.67^{***}$ RW&PF SW > HW&NegF, NeuF&SW > HW&NegF; NeuF&SW > VW&NegF
Relationship status				

Note. Only significant results are tabled here. HW&NegF: Hopeless Work & Negative Family; RW&PF: Robust Work & Positive Family; NeuF&SW: Neutral Family & Self-defeating Work; VW&NegF: Variable Work & Negative Family; SW&NegF: Self-defeating Work & Negative Family.

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

Table 11
Post-hoc Mean Differences in Work- and Family-related Outcomes by Motivational Patterns at T1 (N = 451)

	Robust Work & Positive Family T1	Hopeless Work & Negative Family T1	Neutral Family & Self- defeating Work T1	Negative Family & Self- defeating Work T1	Variable Work & Negative Family T1
Job authority @ T3	2.38 ^a (.81)	2.92 ^{a, b} (.98)	2.43 ^b (.82)	2.57 (.90)	2.59 (.94)
n	254	38	92	15	49
Job authority @ T4	2.29 (.78)	2.71 (.96)	2.34 (.96)	2.75 (.81)	2.58 (.95)
n	175	26	64	12	37
Partner relationship satisfaction @ T4	4.01 (1.36)	4.28 (1.18)	4.42 (.937)	3.22 (1.30)	3.62 (1.52)
n	153	18	55	9	29
Have children @ T4 (yes % within pattern)	79.9%	56.7%	78.1%	61.5%	74.4%
n	199	30	73	13	43

Note. Alphabetic superscripts indicate significant difference between groups.

Table 12
Post-hoc Mean Differences in Work- and Family-related Outcomes by Motivational Patterns at T2 (N = 451)

	Robust Work & Positive Family T2	Hopeless Work & Negative Family T2	Neutral Family & Self- defeating Work T2	Negative Family & Self- defeating Work T2	Variable Work & Negative Family T2
Educational level @ T3	4.45 (1.59)	4.07 (1.66)	4.64 ^a (1.65)	3.79 (1.80)	4.36 ^a (1.66)
n	233	30	111	24	51
Educational level @ T4	6.00 ^a (1.69)	5.36 (1.62)	5.76 (1.86)	5.33 (2.03)	5.03 ^a (1.95)
n	186	22	95	18	37
Have children @ T4 (yes % within pattern)	79.6%	50.0%	81.1%	72.2%	64.9%
n	186	22	95	18	37
Married before @ T4 (yes % within pattern)	40.2%	30.0%	49.1%	33.3%	37.3%
n	234	30	112	24	51
Number of children @ T4	1.69 ^a (1.21)	.72 ^{a,b,c} (.83)	1.76 ^b (1.16)	1.83 ^c (1.47)	1.16 (.19)
n	186	22	95	18	37

Note. Alphabetic superscripts indicate significant difference between groups.

Table 13
Post-hoc Mean Differences in Work- and Family-related Outcomes by Motivational Patterns at T3 (N = 451)

	Robust Work & Positive Family T3	Hopeless Work & Negative Family T3	Neutral Family & Self-defeating Work T3	Variable Work & Negative Family T3
Education level T3	4.50 (1.60)	3.80 (1.57)	4.55 (1.63)	3.99 (1.82)
n	213	35	116	85
Education level T4	5.98 (1.73)	5.24 (1.86)	5.81 (1.74)	5.31 (1.95)
n	175	25	94	64
Subjective work success T4	3.05 (.79)	2.48 (.96)	3.00 (.76)	3.00 (.74)
n	173	25	94	63
Subjective work- family balance success T4	3.08 ^a (.68)	2.68 ^a (.69)	2.96 (.62)	2.94 (.64)
n	172	25	94	63
Subjective family success T4	3.21 ^a (.76)	2.64 ^{a,b,c} (.86)	3.13 ^b (.68)	3.13 ^c (.66)
n	173	25	94	63
Partner relationship satisfaction T3	4.67 ^a (.81)	4.00 (1.16)	4.70 ^b (.55)	4.19 ^{a, b} (1.19)
n	133	10	89	47
Relationship status T3 (% yes)	62.6%	28.6%	76.9%	55.3%
n	214	35	117	85
Have children T3 (% yes)	43.8%	16.7%	43.1%	38.8%
n	210	30	116	80
Have children T4 (% yes)	80.6%	44.0%	83.0%	67.2%
n	175	25	94	64
Married before T3 (% yes)	39.7%	17.1%	59.0%	29.4%
n	214	35	117	85
Married before T4 (% yes)	75.4%	40.0%	89.4%	60.9%
n	175	25	94	64
Number of children T4	1.69 ^{a,c} (1.17)	.80 ^{a,b} (1.35)	1.89 ^b (1.18)	1.28 ^c (1.13)
n	175	25	94	64

Note. Alphabetic superscripts indicate significant difference between groups.

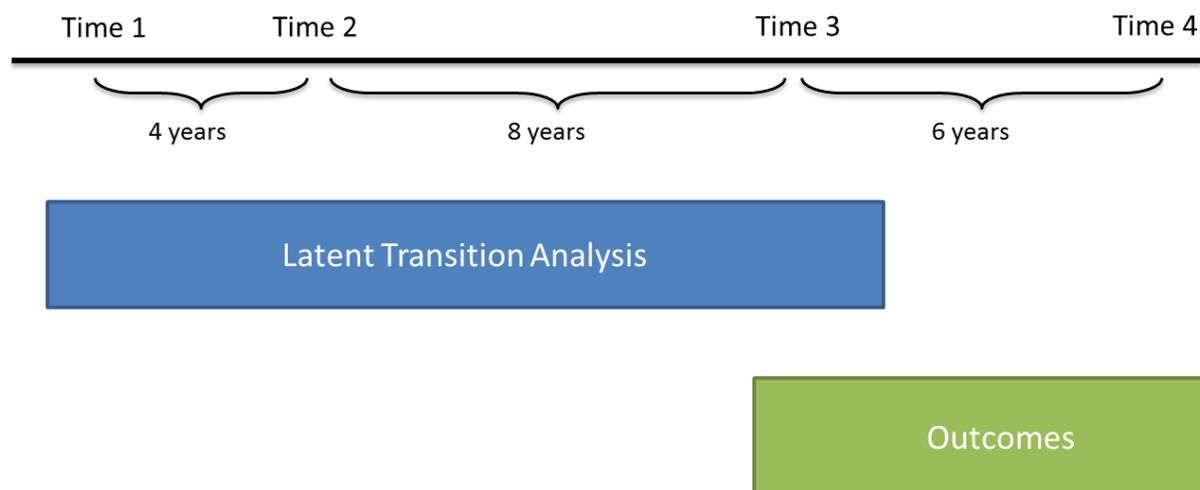


Figure 1. Data points used in analyses.

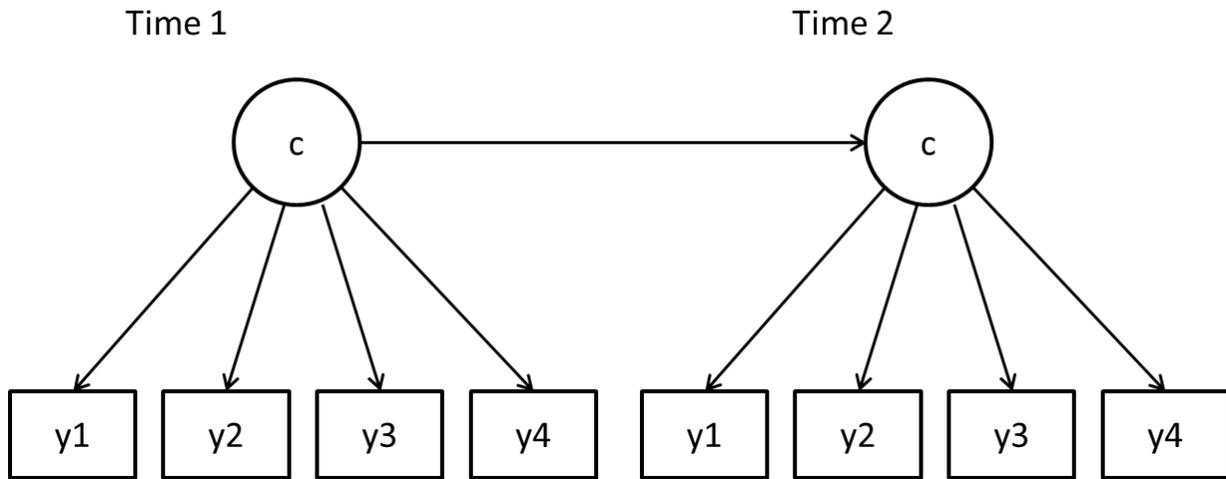


Figure 2. A latent transition model with two-wave longitudinal data.

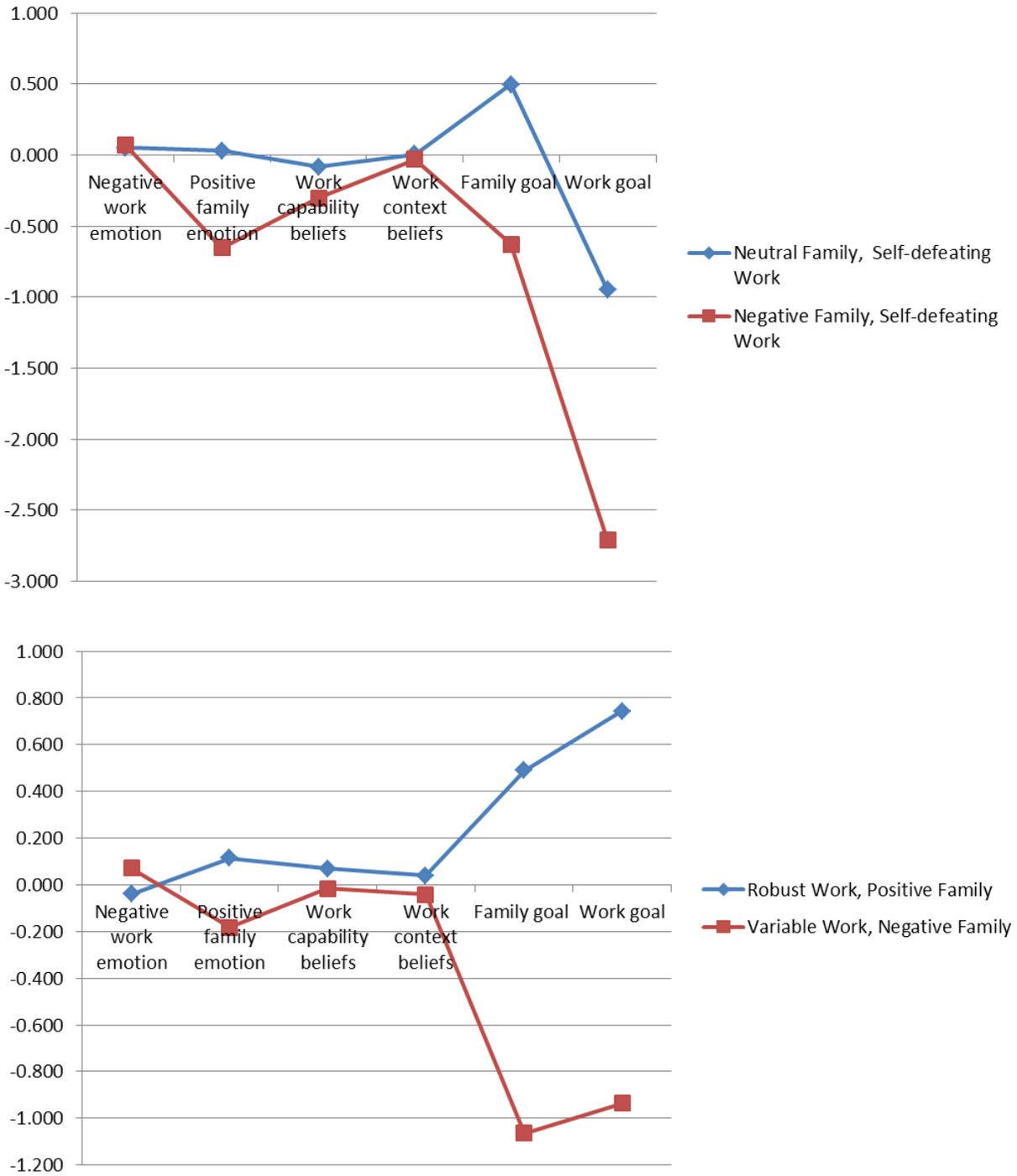


Figure 3. (Top) The two motivational patterns that are characterized by relatively more importance placed on family goals than on work goals. (Bottom) The two motivational patterns that are characterized by relatively similar importance placed on work and family goals.

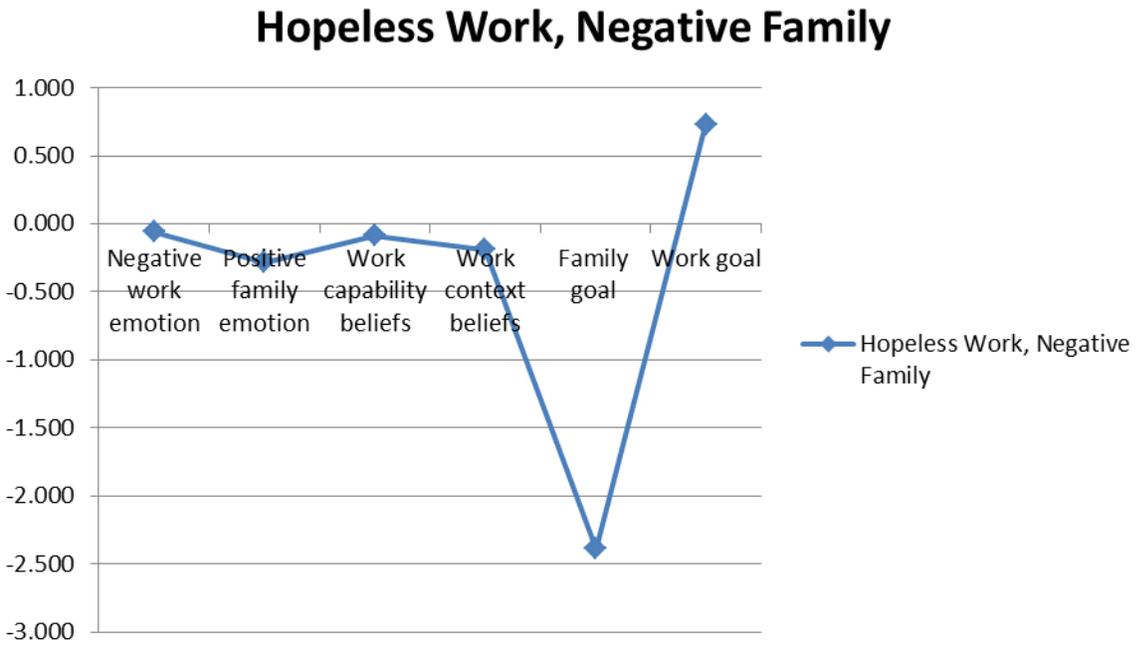


Figure 4. The motivational pattern that is characterized by relatively more importance placed on work goals than on family goals.

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EDUCATION

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SELECTED PUBLICATIONS

- Greene, K., **Lee, B.**, Constance, N., & Hynes, K. (2012). Examining youth and program predictors of engagement in out-of-school time programs. *Journal of Youth and Adolescence*. Advance online publication. DOI: 10.1007/s10964-012-9814-3
- Porfeli, E. J. & **Lee, B.** (2012). Career development during childhood and adolescence. *New Directions for Youth Development*, 134, 11-22. DOI: 10.1002/yd.20011
- Porfeli, E. J., **Lee, B.**, & Weigold, I. (2012). A Multidimensional measure of work valences. *Journal of Vocational Behavior*, 80(2), 340-350.
- Porfeli, E. J., **Lee, B.**, Vondracek, F. W., & Weigold, I. (2011). A multi-dimensional measure of vocational identity status. *Journal of Adolescence*. 34, 853-871.
DOI:10.1016/j.adolescence.2011.02.001

SELECTED PRESENTATIONS

- Lee, B.**, & Porfeli, E. J. (2012, October). Adolescents' work-related motivational patterns and change in career explorations over time. Poster presented at the SRCD Themed Meeting: Transitions from Adolescence to Adulthood, Tampa, FL.
- Lee, B.** & Schröder, E. (2010, August). The roles of entrepreneurial personality and job conditions on business start-up motivation. Poster presented at the APA Convention, San Diego, CA. (**received "Best Student Poster Award"**)
- Lee, B.** & Porfeli, E. J. (2010, April). The role of emotion and cognitive evaluation on adolescents' motivation to work. Paper presented at the Biennial meeting of Society for Research on Adolescence, Philadelphia, PA.