

Economic pressure, positivity, and positive child development

by

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ABSTRACT

The purpose of this dissertation is to identify the role of positivity as a resiliency factor for individual adaptive functioning and a protective factor for young children's positive development. The dissertation includes two studies: the first study examined the association between individuals' economic pressure and positivity throughout adulthood and the second study examined the impact of parental positivity and positive parenting on child positive emotionality despite experiencing family economic pressure. The first study found that individuals' economic pressure was negatively associated with their positivity from emerging adulthood to adulthood. The final optimized model suggests that individuals who generally showed higher positivity were less likely to feel economic pressure across time. The second study found that, in spite of economic pressure, parental positivity and positive parenting were associated with their young children's positive emotionality at ages 3 to 5. The results of the two studies suggest that positivity, defined as an individual's positive perspectives of self, others, and future can be a resiliency factor in times of adversity as well as a protective factor for young children's positive development in spite of economic pressure.

CHAPTER 1. GENERAL INTRODUCTION

According to the Family Stress Model (FSM), perceived economic pressure caused by economic hardship increases emotional distress such as anxiety and depression which, in turn, negatively affects family interactions (Conger & Conger, 2002; Conger, Conger, & Martin, 2010). The FSM has been shown to apply to a wide variety of populations including rural white Americans (Conger, Rueter, & Conger, 2000; Neppl, Senia, & Donnellan, 2016), African-Americans (Conger, Wallace, Sun, Simons, McLoyd, & Brody, 2002), Mexican-Americans (Parke et al., 2004), and Europeans (Solantaus, Leinonen, & Punamaki, 2004). In general, family economic problems have been demonstrated to be a major risk factor in disrupting individual psychological well-being and adaptive family functioning.

Prior studies using the same longitudinal dataset as in the current study have found that economic pressure influences parental emotional distress and parenting behaviors which then influence adolescent externalizing behaviors and school performance (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992; Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1993). Recently, Neppl and colleagues found that family economic problems were associated with young children's developmental outcomes through parental distress and parenting behaviors (Neppl et al, 2016). Thus, research has found that economic pressure negatively impacts parenting which influences child psychological and behavioral outcomes in both early childhood and adolescence.

Other longitudinal studies have shown similar connections between family economic problems and child development. For example, a study using data from the Infant Health and Development Program (IHDP) showed that low income negatively influences maternal mental health and parenting behavior, which in turn affects child behavior problems (Linver, Brooks-

Gunn, & Kohen, 2002). Similarly, research using data from the Panel Study of Income Dynamics (PSID) found that low family income was associated with economic pressure, which was related to maternal depressive symptoms. These emotional problems lead to punitive parenting which increases child externalizing behaviors and decreases child cognitive ability (Yeung, Linver, & Brooks-Gunn, 2002). In sum, studies using a variety of longitudinal data have shown the negative impact of economic problems on family functioning and child developmental outcomes.

Even though much research has demonstrated that economic pressure leads to emotional and behavioral problems, some studies have also shown that certain individuals have the ability to cope in the face of economic adversity. For example, positive individual characteristics such as self-esteem, self-efficacy, and positive emotionality may buffer the harmful effect of economic pressure on individual and family adaptation (Conger & Conger, 2002; Neppl, Jeon, Schofield, & Donnellan 2015; Walsh, 2012; Masten, Cutuli, Herbers, & Reed, 2009). The resilience framework supports the notion that individuals who maintain positive personal characteristics are more likely to be resilient to adverse life events (Masten et al., 2009; Walsh, 2012). In particular, positivity, which has been defined as positive perspectives on life and the future (Caprara et al, 2009), has been found to be an important factor for optimal functioning (Caprara, Alessandri, & Barbaranelli, 2010; Caprara, Eisenberg, & Alessandri, 2016; Million, Alessandri, Eisenberg, & Caprara, 2016). Using a family resilience framework, positivity measured as the cluster of self-mastery, self-esteem, positive affect and life satisfaction (Neppl et al, 2015; Jeon & Neppl, 2016) has been demonstrated to be a resiliency factor for parents. That is, parents who maintain positivity in spite of economic hardship are more likely to demonstrate positive parenting, which leads to positive developmental outcomes for their children. Indeed, economists have begun to use personality inventories to investigate associations between

individual personality traits and economic outcomes across the life span (Borghans, Duckworth, Heckman, & Ter Weel, 2008). These studies have found that personality and motivation have significant effects on later socioeconomic achievements during middle adulthood (Schweighart, Montie, Xiang, Barnett, Belfield, & Nores, 2005). Thus, research suggests that personality traits not only affect psychological well-being and adaptation but also may lead to better economic outcomes across the life span.

Despite the fact that studies have shown the importance of individual personal characteristics on economic outcomes, little research has examined how long-term change patterns of economic pressure can alter positivity or vice versa across time. Thus, the aim of this dissertation was to examine the association between economic pressure and individual positivity across time, as well as the impact of economic pressure and positive parental traits on child positive emotionality.

Dissertation Organization

This dissertation follows the alternative dissertation format and includes two comprehensive manuscripts. In Chapter Two, the first study “Change in Economic Pressure and Positivity from Emerging Adulthood to Adulthood”, addresses long term associations between economic pressure and positivity. This manuscript is prepared for submission to the *Journal of Personality and Social Psychology*. Using an Autoregressive Cross-lagged model (AC), the first study examined lagged associations of economic pressure and positivity respectively and cross-lagged associations between the two variables over a 12 year period. Through Latent Growth Curve (LGC) modeling, this study also examined intra-individual changes (i.e., intercept and slope) in economic pressure and positivity and associations in those changes. Finally, this study examined Autoregressive Latent Trajectory (ALT) models to help clarify whether the intra-

individual change of economic pressure and positivity and/or cross-lagged associations between economic pressure and positivity better account for the associations between economic pressure and positivity during critical developmental time periods.

In Chapter 3, the second study, “Economic Pressure, Parent Positivity, Positive Parenting, and Child Positive Emotionality” is prepared for submission to the *Journal of Child and Family Studies*. The purpose of the second study was to examine how parental positivity and positive parenting behaviors, even in times of economic pressure, influence child positive emotionality as protective factors. In the second study, the Actor-Partner Interdependence Model (APIM) was used to examine mothers’ and fathers’ paths to child positive emotionality. In particular, the second study used three different informants (i.e., mothers, fathers, and observers) to help identify the effects of both parental positivity and positive parenting on positive child emotionality.

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CHAPTER 2. CHANGE IN ECONOMIC PRESSURE AND POSITIVITY FROM EMERGING ADULTHOOD TO ADULTHOOD

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Abstract

The present study examined intra-individual variability in the stability (change) of positivity and economic pressure and the interplay between developmental processes over a twelve-year period from emerging adulthood to adulthood (i.e., ages 19 to 31). This investigation includes targets' reports collected from emerging adulthood to adulthood ($n=546$) during seven developmental time points at two year intervals. Three different modeling approaches [Autoregressive Cross-lagged models (AC), Latent Growth Curve (LGC) models, and Autoregressive Latent Trajectory (ALT) models] were used to address the research questions of this study. Through the final model (Random intercept ALT model), the present study showed the negative correlations between general trait-like economic pressure and positivity and state-like stability of economic pressure and positivity over time. However, no evidence was found of causality between economic pressure and positivity through the final ALT model approach. The negative correlation between them may imply maladaptive processes of economic pressure and individual positive characteristics across time. Thus, prevention efforts could strive to reduce economic pressure and promote positivity at the same time. Further implication was discussed. Key words: Economic pressure, Positivity, intra-individual changes, inter-individual difference, longitudinal study

Introduction

Positive personal characteristics are considered resiliency factors that help individuals maintain their positive behavior and positive perspectives on life in spite of disruptive life challenges (Masten, Cutuli, Herbers, & Reed, 2009; Milioni, Alessandri, Eisenberg, & Caprara, 2016). People who have a positive belief system and positive outlook tend to view their problems as manageable and are more likely to focus on setting goals to solve their problems (Masten et al., 2009; Walsh, 2012). Moreover, there is accumulating evidence that positive personal characteristics help buffer the negative effects of adversity on developmental outcomes through a variety of mediating and moderating pathways (Conger & Conger, 2002; Masten, 2001; Jeon & Neppl, 2016; Neppl, Jeon, Schofield, & Donnellan, 2015; Taylor, Larsen-Rife, Conger, Widaman, & Cutrona, 2010; Taylor, Widaman, Robins, Jochem, Early, & Conger, 2012). For example, Masten (2001) suggests that individual characteristics such as self-regulation, motivation, and cognitive abilities moderate life adversities and positive developmental outcomes. Taylor et al. (2010, 2012) found that in spite of experiencing high economic pressure, mothers who displayed higher levels of optimism were less likely to have maternal internalizing problems such as depression and anxiety. Maternal optimism directly influenced their effective child management skills, which in turn increased the child's social competence.

As a positive psychological construct, Caprara and colleagues developed a positivity scale which includes characteristics related to self-esteem, optimism, and life satisfaction (Caprara et al, 2012), and have shown positivity to be a positive orientation and dispositional trait that leads to positive affect regardless of gender, age, and socio economic status (SES) (Caprara, Eisenberg, & Alessandri, 2016). In line with Caprara's research on positivity, Neppl and colleagues have demonstrated that positivity, which has been defined as a positive

perspective on life and the future, fosters nurturant parenting, even in times of economic strain. Such parenting positively influences adolescent development into emerging adulthood (Neppl et al., 2015). Using the same longitudinal data, Jeon and Neppl (2016) extended this study and found continuity of economic hardship, positivity, and positive parenting across generations, which were associated with the positive behavior of the third generation child. It was concluded that in spite of economic hardship, generation one parents can transmit positive personal characteristics to their generation two children. This, in turn, impacts their (i.e., generation two) own positive parenting into adulthood and can influence positive developmental outcomes for the generation three child. Even though previous research has demonstrated that positivity can help facilitate resilience in spite of economic problems (Neppl et al, 2015; Jeon & Neppl, 2016), few studies have examined how economic pressure can influence positivity and conversely how positivity can influence economic pressure across time.

Earlier research has shown that economic pressure is negatively associated with positive traits such as self-mastery, self-esteem and positive affect, life satisfaction, and coping skills (Conger, Conger, Matthews, & Elder, 1999; Neppl et al, 2015, Jeon & Neppl, 2016). However, the Conger et al. (1999) study examined the association between economic pressure in the family of origin and adolescent mastery within a cross-sectional framework, and Neppl et al. (2015) assessed how parental economic pressure, parental positivity and positive parenting affect their children's positivity from adolescence to emerging adulthood. In other words, these studies did not examine the association between individuals' own economic pressure and positive personality traits across time. In addition, even though Jeon and Neppl (2016) examined the intergenerational continuity of economic adversity and positive individual traits at two

developmental time points, the study did not account for chronic change of individual levels in economic problems and personal characteristics and those associations across time.

Moreover, even though others have shown that chronic economic hardship during adolescence is associated with anxiety and depression (Lee, Wickrama, & Simons, 2013), there is a lack of research examining the impact of economic pressure on positive individual characteristics across developmental periods. Since positivity has been identified as a resiliency characteristic (Neppel et al, 2015; Jeon & Neppel, 2016), there is a need to elucidate the effect of positivity on economic pressure as a resiliency factor across time. The present study aims to extend prior findings by examining how economic pressure can change an individual's positivity, and how an individual's positivity can change their sense of felt economic pressure from emerging adulthood to adulthood.

Literature Review

The Family Stress Model and Positive Psychology Framework

The current study employs the Family Stress Model (FSM; Conger & Conger, 2002) to help explain the association between economic pressure and positive personal characteristics across the life span. According to the FSM, economic pressure caused by economic hardship leads to parental emotional distress, which can result in marital conflict and impaired parenting (Conger, Conger, & Martin, 2010; Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992; Conger, Wallace, Sun, Simons, McLoyd & Brody, 2002; Elder, Conger, Foster, & Ardel, 1992). Economic hardship which may include low income, negative financial events, or high debts relative to assets leads to economic pressure. This felt pressure consists of the perceived inability to pay for basic needs, the inability to make ends meet, and having to cut back on necessary expenses. Economic pressure leads to emotional problems such as anxiety and depression for

both parents and children (Conger, Ge, Elder, Lorenz, & Simons, 1994; Conger & Conger, 2002). These emotional problems are then expected to increase conflict between parents which, in turn, disrupts supportive parenting which is a key predictor of the social and emotional well-being of children (Conger & Donnellan, 2007; Neppl, Senia, & Donnellan, 2016). That is, emotional distress and disrupted interpersonal processes help to connect economic problems to child developmental outcomes.

Despite the association between economic adversity and emotional distress, few studies have investigated how economic pressure relates to an individual's positive personal characteristics across the life span. Personal characteristics might serve as a protective factor that helps to foster resilience to economic stress (Conger et al., 1999; Neppl et al., 2015). For example, earlier findings have demonstrated that resilience to economic disparity was promoted by a sense of mastery (Conger & Conger, 2002) and maternal optimism, which leads to positive parenting in spite of family economic pressure (Ellingsen, Baker, Blacher, & Crnic, 2014; Taylor et al, 2010; Taylor et al, 2012). Moreover, Castro-Schilo and colleagues found that both mothers and fathers who were more optimistic had higher levels of nurturant parenting and positive changes in their child's social development (Castro-Schilo, Taylor, Ferrer, Robins, Conger, & Widaman, 2013). Taken together, positive individual characteristics may play an important role in resilience to family economic adversity.

The concept of positivity stems from the positive psychology framework (Seligman & Csikszentmihalyi, 2000) which emphasizes that these positive individual qualities help foster adaptation and resilience to stressful situations. Positive psychology has shifted the paradigm of psychology from assessing and treating mental illness to strengthening individual positive traits for optimal functioning. Indeed, the concept of positive orientation which compasses three latent

dimensions, self-esteem, optimism, and life satisfaction (Caprara et al., 2009), has found to be associated with dispositional positive mental status and well-being (Alessandri, Caprara, & Tisak, 2012a; Alessandri, Caprara, & Tisak, 2012b), job performance (Alessandri, Vecchione, Tisak, Deiana, Caria, & Caprara, 2012; Alessandri, Borgogni, Schaufeli, Caprara, & Consiglio, 2015), and academic performance (Caprara, Alessandri, Colaiaco, & Zuffianò, 2013).

Recently, using the same longitudinal data as the current study, positivity was defined as self-mastery, positive affect, and life satisfaction (Neppl et al, 2015; Jeon & Neppl, 2016). Self-mastery refers to one's belief and ability to deal with problems in life. Positive affect is having positive feelings about one's self, life, and the future, and life satisfaction is a propensity to positively evaluate one's life. It was found that parental positivity was related to positive parenting, which then impacted the positivity of their youth for those families experiencing economic stress (Neppl et al., 2015). All in all, earlier findings suggest that positive individual characteristics may play an important role in helping to overcome economic adversities in life.

Intra-individual Variability in the Stability of Economic Pressure across Time

Economic pressure may vary across an individual's life span. During adolescence, parental economic pressure is more closely associated with an adolescent's perception of the economic condition of the household, which then impacts adolescent development (Conger et al., 1999; Lee et al, 2013). Again, earlier findings have shown that when adolescents become adults, their own economic hardship is significantly associated with economic hardship as experienced in the family of origin (Conger et al., 2012; Jeon & Neppl, 2016). However while the continuity of economic hardship across generations has been established, the changing patterns of economic pressure over the life span have not been investigated. For example, even though the mean level of income within a population tends to increase from emerging adulthood to adulthood (Easterlin,

2001), no research has focused on intra-individual variability in economic pressure across several critical developmental time periods. Since economic pressure is associated with education level, job stability, family structure, and the number of children in a household (Conger et al, 2012; White & Rogers, 2000), intra-individual change in economic pressure may occur from emerging adulthood to adulthood.

In addition, Conger and Donnellan (2007) suggested that individual differences in personal traits can influence one's SES. Moreover, Donnellan, Conger, McAdams, and Neppel (2009) reported that conscientiousness as an adolescent positive personality trait was associated with less economic pressure in young adulthood. That is, positive personality traits such as positive views on the future may affect an individual's change in economic pressure. Therefore, in the present study it is assumed that positive personality traits (i.e., positivity) serves as a resiliency factor which may decrease economic pressure from emerging adulthood to adulthood.

Intra-individual Variability in the Stability of Positivity across Time

There is evidence that individual positive characteristics may also be stable across time (Ferguson, 2010; Fraley & Roberts, 2005; Caspi et al., 2005). For example, Neppel et al. (2015) found that positivity in late adolescence was significantly related to positivity in emerging adulthood. Similarly, Caprara, et al. (2016) found continuity of positivity from adolescence to adulthood within four time points ranging from 15 to 23 years old. In addition, Caprara et al. (2016) found that gender and SES did not influence patterns of positivity and subjective well-being over time. Thus, positivity may be a stable characteristic even when gender and SES are taken into account.

In contrast, others have found that positive personality traits change across time. For example, Roberts and DelVecchio (2000) conducted a meta-analysis of 152 longitudinal studies

and compiled 3,217 test-retest correlation coefficients to examine whether such traits are stable or change over time. They found that the average correlation for consistency was less than .5 during the college years and slightly higher at age 30. This implies that individual traits are not fixed or stable during young adulthood. An earlier study by Caspi and Roberts (1990) also found that even though traits in early childhood are modestly related to those in later life, individual traits may never be fully developed at any age. Indeed, several other studies support that traits are not fixed and therefore can change across one's life span (Helson, Kwan, John, & Jones, 2002; Lucas & Donnellan 2011; Terracciano, Costa & McCrae 2006; Roberts, Walton, & Viechtbauer, 2006). For example, a study examining life satisfaction found that people who graduated from high school displayed quadratic patterns of life satisfaction from ages 18-43, while people who graduated college showed linear patterns of life satisfaction from ages 23-37 (Galambos, Fang, Krahn, Johnson, & Lachman, 2015). Fujita and Diener (2005) found that life satisfaction showed linear change patterns across time, and Abraham (2007) found that average levels of optimism increased during middle adulthood.

In addition to potential developmental changes in positive individual traits across time, Eckenrode (1984) demonstrated that both daily and chronic stressors such as economic problems negatively affect positive emotion and life-satisfaction over time. Furthermore, Abraham (2007) found that experiencing negative financial events such as eviction and moving to a worse neighborhood are associated with a significant decrease in optimism, whereas positive financial experiences are associated with a significant increase in optimism. Therefore, it may be that an individual's change in positivity can be associated with an individual's change in economic pressure.

The Present Investigation

The present study examined intra-individual variability in the stability (change) of positivity and economic pressure and the interplay between developmental processes over a twelve-year period from emerging adulthood to adulthood (i.e., ages 19 to 31). For decades, various methodological approaches have been developed and used to investigate research questions regarding inter- and intra- individual variability over time. In particular, autoregressive cross-lagged (AC) models and latent growth models (LGC) have been widely used, but the two models compete due to the different perspectives on the analysis of repeated measures across time (Bollen & Curran, 2004). While AC (Joreskog, 1979; Marsh & Grayson, 1994) accounts for the covariance stability of two or more variables and their cross-lagged associations, these models cannot take into account the individual trajectories (within-person) of traits or behaviors across time. On the other hand, LGC (McArdle, 1986; Meredith & Tisak, 1990; Curran & Muthen, 1999; Curran & Hussong, 2002) is perfectly suited to investigate intra-individual changes in long-term developmental trajectories; however, these models do not take into account autoregressive associations and lagged effects of two variables within the developmental time specific framework.

To overcome these limitations, Bollen and Curran (2004, 2006) introduced an alternative approach, autoregressive latent trajectory (ALT) models. The ALT models simultaneously investigate overall trajectories of the constructs and their inter-relationships by combining the advantages of the AC and LGC models. The present study evaluated the following research questions and employed AC, LGC and ALT models to address each question.

RQ1-1. Are economic pressure and positivity stable (autoregressive effects) over time?

- RQ1-2. What is the direction of the associations (cross-lagged effects) between economic pressure and positivity over time?
- RQ2-1. Are there intra-individual (within-person) changes (linear slope) in economic pressure and positivity over time?
- RQ2-2. Is the initial level of economic pressure associated with the initial level of positivity?
- RQ2-3. Is the linear slope of economic pressure associated with the linear slope of positivity over time?
- RQ3. Are there intra-individual (within-person) changes (i.e., slope) of economic pressure and positivity and are those associations between time specific intra-individual positivity and economic pressure over time? In addition, are the initial level and linear slope of economic pressure associated with the initial level and linear slope of positivity?

Method

Participants

Data come from the Family Transitions Project (FTP: 559 target youth and their families) which includes two earlier studies: the Iowa Youth and Families Project (IYFP) and the Iowa Single Parent-Project (ISSP). The IYFP included 451 target adolescents, their parents, and a sibling within 4 years of age of the target youth living in 8 rural counties in Iowa. The IYFP collected comprehensive data annually from 1989 through 1992 through survey questionnaire and observation. When interviewed in 1989, adolescents were in 7th grade ($N= 451$, 236 girls, 215 boys). Due to the primarily rural sample, all participants were Caucasian. The majority of the families were lower middle- or middle-class. Parents averaged 13 years of schooling and had a median family annual income of \$33,700. Families ranged from four to thirteen members, with an average size of 4.94 members. The mean age of fathers was 40 and mothers 38. The ISSP

began in 1991 when the target adolescent was in 9th grade. In the ISPP, participants from each family consisted of a target adolescent, their single-parent mother, and a sibling within 4 years of age of the target adolescent ($N=108$). Telephone screeners identified families headed by single mothers who had divorced within 2 years prior to the start of the study. All but three eligible families agreed to participate. The characteristics of participants were similar to IYFP families. Measures and procedures for the ISPP were identical with IYFP; however, ISPP fathers did not participate in the in-home interviews. The ISPP families participated in three waves of data collection (1991, 1992, and 1993).

In 1994, the families from the IYFP and ISPP continued in another project, the Family Transitions Project (FTP). At that time, target adolescents from both studies were in 12th grade and participated in the study with their parents as they had during earlier years of adolescence. Beginning in 1995, the target youth (1 year after completing high school) participated in data collection with their romantic partner or friend. In 1997, the study extended to the first born child of the target adolescents, now young adults. Thus, the FTP has followed the target youth from as early as 1989 through 2010.

The present investigation includes targets' reports collected from emerging to middle adulthood ($n=546$) during seven developmental time points at two year intervals. Targets ($n=13$) who had not reported their positive characteristics and economic pressure at any time during the 12 year period were excluded. Time 1 examined the target's economic pressure and positivity at age 19 and Time 7 examined the target's economic pressure and positivity at age 31.

Procedure

Beginning in 1995 the target adolescents, now adults, participated in data collection. Each target adult was visited biennially in their home by a trained interviewer. During these

visits, the target adult completed a series of questionnaires on topics similar to those completed in adolescence. Further information for the FTP data collection was described in prior studies (Conger & Conger, 2002; Neppl et al., 2016). The present study utilized targets' reports on their demographic information, economic pressure and personal characteristics from 19 to 31. The means and standard deviations for all study variables are provided in Table 1.

Measures

Economic pressure. For the twelve-year period, economic pressure was measured as a latent construct with three indicators: *unmet material needs*, *cannot make ends meet*, and *financial cutbacks* (Conger & Conger, 2002). The scale of *unmet material needs* includes six items asking targets whether they have enough money to afford their home, clothing, furniture, car, food, and medical expenses. Targets were asked to consider all income sources including any financial support received from parents from ages 19 to 23, and the question was changed to consider financial support received from friends and relatives from ages 25 to 31. Each item ranged from 1 (strongly agree) to 5 (strongly disagree). The average score of the six items was used as the first indicator for economic pressure. Reliabilities of this repeated scale across 7 time points ranged from .85 to .93. The second indicator for economic pressure was *not being able to make ends meet*. This includes asking targets whether they have had difficulty paying their bills during the past 12 months (1 = a great deal of difficulty to 5 = no difficulty at all) and how much money generally they left at the end of each month over the past 12 months (1 = more than enough money left over to 4 = not enough to make ends meet). The first item was reverse-coded with the high score reflecting high economic pressure. The two items were averaged. The correlation between the two items ranged from .51 to .70 across 7 time points. The last indicator, *financial cutbacks*, consists of 17 items that ask targets whether they had made significant

financial cut-backs in the past 12 months. Questions included items such as postponing medical or dental care, changing food shopping or eating habits to save money, and taking an extra job to help meet expenses. Each item was answered with 1 = yes or 0 = no. All items were counted with the non-response missing as zero. Thus, the range of *financial cut backs* is from 0 to 17. Reliabilities of this scale across 7 time points ranged from .76 to .86.

Positivity. For the twelve-year period, positivity was measured with three indicators: *Self-mastery*, *positive affect*, and *life-satisfaction* (Jeon & Neopl, 2016). The scale of *self-mastery* (Perlin, Lieberman, Menaghan, & Mullan, 1981) included seven statements to which targets responded on a 5-point Likert scale. Targets were asked to report on how strongly they agreed with statements such as “I can do just about anything I really set my mind to”, “I often feel helpless in dealing with the problems in my life”, and “sometimes I feel that I am being pushed around in life”. Item responses for self-mastery were averaged for each time point (alpha = .81 to .84). Targets also completed an assessment of *positive affect* (Rand Health Science Program, 1986). This scale included six questions asking general views on their life during the past month such as: “You felt that the future looks hopeful and promising” and “Were you a happy person?”. Responses ranged from 1 = strongly agree to 5 = strongly disagree. A total of 6 items were recoded and averaged together (alpha = .88 to .91). *Life-satisfaction* (Conger, 1993) consisted of five items such as: “I am satisfied with my life the way it is” and “In most ways, my life is close to my ideal”. Responses ranged from 1 = strongly agree to 5 = strongly disagree. A total of 5 items were recoded and averaged together (alpha = .83 to .87).

Control variables: Target gender (0 = female, 1 = male) and most recent education level (0= less than a 4-year college degree, 1 = 4-year college degree or higher) were used as time-invariant control variables for the final ALT model.

Data Analyses

As a first step, descriptive statistics on all variables were tabulated by using SPSS. Means, standard deviations and Cronbach's Alpha for all latent indicators were calculated (see Table 1). By using *Mplus* Version 7 (Muthén & Muthén, 2012), longitudinal invariance tests were conducted to confirm whether the repeated measures of positivity was the same construct across time. If the measurement invariance is not guaranteed, results regarding the change of positivity across time can be inappropriately interpreted (Vandenberg & Lance, 2000). After confirming the longitudinal invariance of the two main constructs of this study, a measurement model was conducted which presented the correlations among latent variables of economic pressure and positivity in the Structural Equation Model (SEM). All latent variables were freely correlated and the residuals of each indicator were correlated across all time points. To address the research questions for the present study, Bollen and Curran's (2004, 2006) recommendation for the latent constructs of two main variables was followed. Notably, the present study encompassed latent variables with measurement errors of repeated measured indicators for economic pressure and positivity across 7 time points for the three models (i.e., AC, LGC, and ALT), thus, LGC and ALT models were generated as second-order factors models.

To answer the first research questions (RQ1-1 and RQ1-2), bivariate AC models (see Figure 1) were estimated. In the analysis, autoregressive associations (stability) of economic pressure and positivity and their cross-lagged associations (causality) between the ages of 19 to 31 in 2 year intervals were evaluated. The conceptual equations for the bivariate AC model are described in Equation (1) and (2).

$$y_{it} = \alpha_{yt} + p_{yt,yt-1}y_{i,t-1} + q_{yt,xt-1}x_{i,t-1} + \varepsilon_{yit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (1)$$

$$x_{it} = \alpha_{xt} + p_{xt,xt-1}x_{i,t-1} + q_{xt,yt-1}y_{i,t-1} + \varepsilon_{xit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (2)$$

The two equations represent autoregressive paths and cross-lagged paths across seven time points. In the equation, p_t represents time-specific lagged autoregressive associations (temporal-stability) of economic pressure (i.e., $p_{yt,yt-1}$) and positivity ($p_{xt,xt-1}$), and q_t represents time-specific cross-lagged associations between economic pressure and positivity. More precisely, cross-lagged parameters (i.e., $q_{yt,xt-1}, q_{xt,yt-1}$) in the equations, $q_{y2,x1}$ denotes the effect of positivity at age 19 (first time point) on economic pressure at age 21 (second time point) after controlling for the effect of economic pressure at 19, and $q_{x2,y1}$ denotes the effect of economic pressure at 19 on positivity at 21 after controlling for the effect of positivity at 19. Thus, the cross-lagged associations are considered causality effects in this model.

Next, to answer the second research questions (RQ2-1, RQ2-2, and, RQ2-3), bivariate LGC models (see Figure 2) were estimated. In the analysis, the random intercept and slope of economic pressure and those of positivity between the ages of 19 to 31 were examined. The conceptual equations for the bivariate LGC model are described in Equation (3) and (4).

$$y_{it} = \alpha_{yi} + \Lambda_{yt}\beta_{yi} + \varepsilon_{yit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (3)$$

$$x_{it} = \alpha_{xi} + \Lambda_{xt}\beta_{xi} + \varepsilon_{xit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (4)$$

The two equations represent random intercepts and slopes for economic pressure and positivity. In the equations, a represents the average of initial levels in individuals' economic pressure (i.e., α_{yi}) and positivity (i.e., α_{xi}) at age 19. In addition to the intercepts, Λ represents the slope of intra-individual changes in economic pressure (Λ_{yt}) and positivity (Λ_{xt}) between ages 19 to 31. In the equation, β_{yi} and β_{xi} denote the linear time fixed values that were assigned in the analyses within the time-series framework. Repeated economic pressure and

positivity remained as latent variables, thus the present LGC models utilized a second-order factor growth curve modeling approach. For the second-order LGC model, two second order latent factors, “economic pressure intercept” and “economic pressure linear slope,” were created with the seven waves of economic pressure data collected from targets. The economic pressure intercept factor was fixed at 1 across all data collection waves, reflecting targets’ economic pressure at age 19. The economic pressure slope factor, reflecting the rate of economic pressure growth, was fixed at 0 at age 19 and 6 at age 31, so that each increment of 1 represents the passage of 2 years. The second order latent factors for intercept and linear slope of positivity were also created using the same process as economic pressure.

Finally, to answer the third research question (RQ3), unconditional bivariate ALT models (see Figure 3) which showed trait-like and state-like stability (changes) of economic pressure and positivity across time were investigated. The present second-order bivariate ALT models combine the AC (Cole & Maxwell, 2003) and LGC (Meredith & Tisak, 1990) into a single framework. More precisely, in the present study intra-individual changes (i.e., trait-like) of economic pressure and positivity and their associations between ages 21 to 31 were examined. Furthermore, intra-individual state-like traits of economic pressure and positivity in time specific cross-lagged associations were examined. In the ALT model, the first time point of economic pressure and positivity (age 19) were identified as exogenous variables which are not influenced by the estimated trajectory factors (i.e., intercept and slope). The conceptual equations for the unconditional bivariate ALT model are described in Equation (5) and (6).

$$y_{it} = \alpha_{yi} + A_{yt}\beta_{yi} + p_{yt,yt-1}y_{i,t-1} + q_{yt,xt-1}x_{i,t-1} + \varepsilon_{yit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (5)$$

$$x_{it} = \alpha_{xi} + A_{xt}\beta_{xi} + p_{xt,xt-1}x_{i,t-1} + q_{xt,yt-1}y_{i,t-1} + \varepsilon_{xit} \quad \varepsilon \sim NID(0, \sigma^2) \quad (6)$$

The entire equations for the ALT model combined the equations from the two previous models (AC and LGC). The ALT model includes separate random intercepts and slopes for each variable series (economic pressure and positivity) and lagged autoregressive and cross-lagged effects across 7 time points. The meanings of intercept and slope in economic pressure and positivity were not different with those explained above in the LGC model. However, in the ALT model the AR structure (i.e., cross-lagged and autoregressive associations) represents “the impact of individual state-like deviations from the overall trajectories on the remaining time points” (Morin, Maïano, Marsh, Janosz, & Nagengast, 2011, p. 165).

Any missing data were handled by Full Information Maximum Likelihood (FIML; Muthén & Muthén, 2012). FIML is widely used and recommended for dealing with missing data (Duncan, Duncan, & Strycker, 2013). Several indices were used to evaluate the fit of the structural model to the data. First, the standard chi-square index of statistical fit that is routinely provided under maximum likelihood estimation of parameters was evaluated. Two indices of practical fit, the root mean square error of approximation (RMSEA; Browne & Cudeck, 1992) and the comparative fit index (CFI; Bentler, 1990) were also used. RMSEA values under .05 indicate close fit to the data, and values between .05 and .08 represent reasonable fit (Browne & Cudeck, 1992). For the CFI, fit index values should be greater than .90 and preferably greater than .95 (Bentler, 1990), for the fit of a model to the data to be considered acceptable.

Results

Descriptive results

Table 1 shows descriptive statistics regarding the study variable means, standard deviations, missing rates, and loading scores for the two study variables (economic pressure and positivity) at each time point. In the measurement model, factor loadings of manifest indicators

onto latent economic pressure variables range from .50 to .89. Factor loadings of manifest indicators onto latent positivity variables range from .61 to .86.

Longitudinal invariance

To address longitudinal invariance of economic pressure, repeated observed measures of latent economic pressure across the 7 data collection points (*model a1*: longitudinal configural invariance, see Table 3) were freely estimated. The first model regarding longitudinal configural invariance for economic pressure had good fit (*model 1a*: $\chi^2 = 121.692$, $df = 105$, $p = .127$, CFI = .997, TLI=.994, RMSEA = .017). Loading factors for the same indicator of economic pressure across the 7 time points were equally fixed. In other words, each indicator of economic pressure; *unmet material needs* as (a), *cannot make ends meet* as (b), and *financial cutbacks* (c), was fixed across time (*model 1b*: longitudinal metric invariance for economic pressure: $\chi^2 = 137.430$, $df = 105$, $p = .019$, CFI = .995, TLI=.989, RMSEA = .024). Through the obtained results (comparison between *model 1a* and *model 1b*; $\Delta \chi^2 = 16.816$, $df = 12$, $p = .157$), the longitudinal invariance for economic pressure was confirmed. The same procedures were used to confirm the longitudinal invariance for positivity. The 7 latent positivity variables were correlated and the same repeated measures across times were also correlated. The model had good fit (*model 1c*: $\chi^2 = 137.430$, $df = 105$, $p = .019$, CFI = .995, TLI=.989, RMSEA = .024). The loading factors of each indicator of positivity across the 7 time points were then equally fixed. In other words, each indicator of positivity; *self-mastery* as (a), *positive affect* as (b), and *life satisfaction* (c), was fixed across time (*model 1d*: longitudinal metric invariance). According to the chi-square difference test (comparison between *model 1c* and *model 1d*; $\Delta \chi^2 = 11.775$, $df = 12$, $p = .464$), the free model and fixed model were confirmed to not be significantly different. Thus, it was concluded that each construct of economic pressure and positivity was not significantly changed across time.

The measurement model (*model 1e*) had good fit to further develop advanced SEM models ($\chi^2 = 906.815$, $df = 626$, $p < .001$, CFI = .976, TLI=.967, RMSEA = .029).

Correlations among the 14 latent variables derived from *model 1e* are presented in Table 2. The lowest correlation among economic pressure is .31 between economic pressure at age 19 and age 27, while the highest correlation among economic pressure is .72 between economic pressure at age 25 and 27. The lowest correlation for positivity is .48 between positivity at age 19 and 31, while the highest correlation among positivity is .80 between ages 27 and 29. The lowest correlation between economic pressure and positivity is -.14 between economic pressure at age 19 and positivity at age 31, while the highest correlation between economic pressure and positivity is -.52 between economic pressure at age 25 and positivity at age 25.

AC Model

Through the AC models, the research question RQ1-1 examined whether economic pressure and positivity were stable across 7 time points. Furthermore, the research question RQ1-2 regarding cross-lagged associations between economic pressure and positivity across the 7 time points was also investigated. To test the stability of economic pressure and positivity across time, model comparisons by developing nested models were conducted. First, a free model was investigated (*model 1f*). Second, a fixed model which constrained autoregressive paths for economic pressure as (g) and positivity (f) was examined (*model 1g*). The two models were significantly different ($\Delta \chi^2 = 20.122$, $df = 10$, $p < .05$). Third, a model which constrained only positivity across time with an assumption that positivity is more likely to be stable was conducted. The third model (*model 1h*) was not significantly different with the first free model (*model 1f*). Fourth, time specific correlations and cross-lagged associations were constrained across time (*model 1i*), and then *model 1h* and *model 1i* were nested in *model 1j*. Finally, based

on the assumption regarding emerging adulthood as an unstable period, autoregressive coefficients of economic pressure and positivity and cross-lagged coefficients between the variables during emerging adulthood (19 to 23) were freely estimated. However, autoregressive coefficients of economic pressure and positivity as well as cross-lagged coefficients between the variables during adulthood (23 to 31) were constrained in *model 1k*. Given the model comparisons with the free model (*model 1f*) and theoretical assumptions of developmental stages, the *model 1k* was finalized as the AC model. The model (*model 1k*) showed a good fit ($\chi^2 = 1124.720$, $df = 702$, CFI = .964, TLI = .956, RMSEA = .033).

Final results in each model were described with unstandardized coefficients which reached statistical significance. Given the results from the final AC model (*model 1k*), prior economic pressure was associated with later economic pressure over 2 year intervals ($p_{y_{19}y_{21}} = .60$, SE=.06 between ages 19 and 21; $p_{y_{21}y_{23}} = .53$, SE=.07 between ages 21 and 23; $p_{y_{23}y_{25}} = .71$, SE=.03 between ages 23 and 25; $p_{y_{25}y_{27}} = .71$, SE=.03 between ages 25 and 27; $p_{y_{27}y_{29}} = .71$, SE=.03 between ages 27 and 29; $p_{y_{29}y_{31}} = .71$, SE=.03 between ages 29 and 31).

Similarly, positivity was associated with later positivity over 2 year intervals ($p_{x_{19},x_{21}} = .81$, SE=.06 between ages 19 and 21; $p_{x_{21},x_{23}} = .68$, SE=.05 between ages 21 and 23; $p_{x_{23},x_{25}} = .83$, SE=.02 between ages 23 and 25; $p_{x_{25},x_{27}} = .83$, SE=.02 between ages 25 and 27; $p_{x_{27},x_{29}} = .83$, SE=.02 between ages 27 and 29; $p_{x_{29},x_{31}} = .83$, SE=.02 between ages 29 and 31). In addition to the autoregressive associations, in the cross-lagged associations earlier positivity negatively predicted economic pressure over 2 year intervals ($q_{y_{21},x_{19}} = -.13$ SE=.07 between ages 19 and 21; $q_{y_{23},x_{21}} = -.12$, SE=.07 between ages 21 and 23; $q_{y_{25},x_{23}} = -.09$, SE=.04 between ages 23 and 25; $q_{y_{27},x_{25}} = -.09$, SE=.04 between ages 25 and 27; $q_{y_{29},x_{27}} = -.09$, SE=.04 between ages 27 and 29; $q_{y_{31},x_{29}} = -.09$, SE=.04 between ages 29 and 31), while the reverse direction was not

significant. As shown in the model comparisons (*model 1f* to *model 1k*), the finalized model (*model 1k*) demonstrated that stability of economic pressure and positivity and cross-lagged effects of positivity on economic pressure were significant from ages 23 to 31. Given the final model, the present study found that changes in positivity and economic pressure during emerging adulthood are not the same as those in adulthood.

LGC Model

Given the rules of second order trajectories of the LGC model, the models were developed as described here. First, the second-order LGC including measurement errors (i.e., residuals) was analyzed, but parameters were not converged due to the model complexity. Thus, the approach of constraining the same repeated observed measures (i.e., same indicators) across time was employed. After constraining means of observed measures, the model convergence was implemented. The model including indicator-level mean constraints accounts for changes in the factor level of economic pressure and positivity.

Through the LGC models, the second research questions (RQ2-1, RQ2-2, and RQ2-3) examined the intra-individual trajectories (i.e., intercept and linear slope) in economic pressure and positivity, and associations among the intercepts and linear slopes over time. The final LGC model (*model 1l*) showed acceptable model fit, $\chi^2 = 1583.713$, $df = 741$, RMSEA = .046, CFI = .928, TLI = .917. Given the results obtained from the final LGC model, the linear slope of economic pressure ($\lambda_{yt1-7} = .000$, SE=.005) was not significant, but the linear slope of positivity ($\lambda_{xt1-7} = .006$, SE=.003) was marginally significant. Thus, the results found the intra-individual linear change of positivity across time but did not find the intra-individual linear change of economic pressure. The variance of intercept and slope in each variable were all significant, which implies inter-individual differences in the initial levels of economic pressure and positivity

and those in the linear slopes of economic pressure and positivity. The results indicate that individuals' initial levels of economic pressure were negatively correlated with the individuals' initial levels of positivity ($b = -.056$, $SE = .008$). Furthermore, the linear slopes of individuals' economic pressure were negatively correlated with the linear slopes of individuals' positivity ($b = -.003$, $SE = .000$). The results demonstrated that the LGC model did not support the causality effect between economic pressure and positivity (direction between economic pressure and positivity). Given the results from AC model (*model 1k*), as post-hoc analyses, piecewise LGC model which fixed the time as [0 1 2 3 0 0 0] for emerging adulthood and [0 0 0 4 4 4] for adulthood for both economic pressure and positivity variables. Model fit was significantly increased but the overall results were not changed with the piecewise time specification. Through the piecewise model, we found that the linear slope of positivity during emerging adulthood was ($\lambda_{xt1-4} = .032$, $SE = .007$) significant, and the stability of positivity during adulthood was also significant ($\lambda_{xt5-7} = .014$, $SE = .005$), while the linear slope during emerging adulthood and the stability of economic pressure in adulthood were not significant. The initial level of economic pressure was negatively correlated with the initial level of positivity ($b = -.053$, $SE = .009$). Furthermore, the linear slope of economic pressure during emerging adulthood was negatively correlated with the slope of positivity during adulthood ($b = -.007$, $SE = .001$) and the stability of economic pressure during adulthood was negatively correlated with the stability of positivity during adulthood ($b = -.005$, $SE = .001$)

ALT Model

ALT models nesting AC and LGC models are reported in Table 3. Both AC and LGC models provided acceptable fit to the data, and the final ALT model was also satisfactory in all fit indices. Based on the theoretical assumptions and best fitting model to the data, the ALT-AR

and LGC nest model was tested (*model 1n*). In *the model 1n*, the means and variance of intra-individual linear slopes in economic pressure and positivity were not significant ($A_{yt1-7} = .006$, $SE = .005$; $A_{xt1-7} = -.001$, $SE = .004$), so, the slopes were constrained as zero, thus the ALT intercept only model was determined as the final ALT model (*model 1p*). The final ALT model nested the AC (*model 1f*) and LGC (*model 1l*) models with no slope variances in economic pressure and positivity. The final model *1p* showed acceptable model fit, $\chi^2 = 1358.913$, $df = 713$, $RMSEA = .041$, $CFI = .945$, $TLI = .934$. Since the variance of slopes for economic pressure and positivity were constrained as zero, residuals of intra-individual changes in economic pressure and positivity were not included in this model. Therefore, generally, this model can be interpreted as an intercept only ALT model which includes general individual trait-like characteristics of economic pressure and positivity over the 12 year period and the associations of remained residuals of economic pressure and positivity regarding state-like properties at each time point. Given the results obtained from the final ALT model (*model 1p*), the intercept of economic pressure was negatively correlated with positivity ($b = -.021$, $SE = .006$).

The results suggest that general individual trait-like positivity and economic pressure was negatively correlated from emerging adulthood to adulthood. In the autoregressive associations, state-like economic pressure was associated with state-like later economic pressure over 2 year intervals ($p_{y19,y21} = .31$, $SE = .07$ between ages 19 and 21; $p_{y21,y23} = .25$, $SE = .08$ between ages 21 and 23; $p_{y23,y25} = .40$, $SE = .08$ between ages 23 and 25; $p_{y25,y27} = .52$, $SE = .07$ between ages 25 and 27; $p_{y27,y29} = .51$, $SE = .07$ between ages 27 and 29; $p_{y29,y31} = .44$, $SE = .07$ between ages 29 and 31). Similarly, state-like positivity was associated with later state-like positivity over 2 year intervals ($p_{x19,x21} = .47$, $SE = .06$ between ages 19 and 21; $p_{x21,x23} = .33$, $SE = .07$ between ages 21 and 23; $p_{x23,x25} = .43$, $SE = .07$ between ages 23 and 25; $p_{x25,x27} = .41$, $SE = .08$ between ages 25

and 27; $p_{x27,x29} = .41$, $SE = .07$ between ages 27 and 29; $p_{x29,x31} = .39$, $SE = .07$ between ages 29 and 31). Cross-lagged associations between economic pressure and positivity across time were not presented in the ALT model.

The conditional ALT model which has two time-invariant control variables (i.e., gender and education level) was investigated. The intercept of economic pressure was significantly associated with target's gender ($b = -.060$, $SE = .024$) and target's education level ($b = -.102$, $SE = .027$). That is, females were more likely to have higher economic pressure than males, and targets who had a high school degree or lower were more likely to have higher economic pressure than targets who had a college degree or higher. The intercept of positivity was only significantly associated with target's education level ($b = .059$, $SE = .022$). The result suggests that targets who had a college degree or higher were more likely to show higher positivity than targets who had a high school degree or lower.

Discussion

The purpose of the present investigation was to identify inter- and intra- variabilities in economic pressure and positivity across a 12 year period from emerging adulthood to adulthood by using prospective longitudinal data, which included repeated measures in multiple waves. To address the research questions of this study, three different modeling approaches were utilized. First, AC models were examined to address the autoregressive and cross-lagged associations in economic pressure and positivity over a 12 year period. Second, LGC models were examined to address intra-individual changes (i.e., intercept and slope) of economic pressure and positivity and those inter-individual associations over the 12 year period. Third, the hybrid ALT models were examined to answer autoregressive and cross-lagged associations in state-like economic pressure and positivity after controlling the intra-individual changes of trait-like economic

pressure and positivity. Simultaneously, inter-individual associations between economic pressure and positivity were examined in the ALT model.

The AC model, which presents rank order associations of economic pressure and positivity, showed that positivity and economic pressure were temporally stable within 2-year intervals, but not statistically stable for the whole period. Based on the model comparisons, the stability of positivity and economic pressure during emerging adulthood (ages 19 to 23) was significantly different from that in adulthood (ages 23 to 31). The results regarding the stability of economic pressure showed that economic pressure was less stable during emerging adulthood than it was during adulthood. Even though a previous study found an increasing pattern of income from emerging adulthood to middle adulthood (Easterlin, 2001), the present study may be the first attempt to examine the stability (change) of economic pressure from emerging adulthood to adulthood. Thus, these results may provide more insight into how individuals' economic pressure changes across critical development points that include life stages such as employment, marriage, and having children. Likewise, positivity during emerging adulthood showed lower coefficients in autoregressive associations compared to those in adulthood. The results suggest that positivity was less stable during emerging adulthood than it was during adulthood. These results are consistent with those of Roberts and DelVecchio's meta-analysis (2000) which found that the average correlation for stability of positive personality traits was less than .5 during the college years and slightly higher at age 30. Furthermore, the present study confirmed that positive characteristics are more likely to change during emerging adulthood and will become more stable into adulthood (Lucas & Donnellan 2011; Terracciano, Costa & McCrae 2006; Roberts, Walton, & Viechtbauer, 2006). Finally, in cross-lagged associations, prior positivity negatively predicted later economic pressure over the entire 12-year period with

2-year interval time points. While previous studies have found that economic pressure negatively affects positive characteristics (Conger et al., 2012, Neppl et al., 2015; Jeon & Neppl, 2016), the present study leads to a question on whether economic pressure decreases positivity or positivity decreases economic pressure over a long period of time. The present study suggests that individuals who had positive characteristics decreased their perception of economic pressure across time. Indeed, research suggests that positive characteristics can affect economic outcomes. For example, studies have found that conscientiousness positively affected economic outcomes later in life (Borghans, Duckworth, Heckman, & Weel, 2008; Schweinhart, Montie, Xiang, Barnett, Belfield, & Nores, 2005). Furthermore, Caprara and colleagues have found that positivity was associated with academic performance (Caprara et al., 2013) and job performance (Alessandri, Vecchione, M., Tisak, J., et al., 2012; Alessandri et al., 2015) which may be associated with economic outcomes. Thus, positive personal characteristics may lead to a better financial situation and subjective well-being, which can decrease economic pressure over time.

In the final LGC model, intra-individual linear changes of economic pressure were not found from emerging adulthood to adulthood. That is, levels of individual economic pressure did not increase or decrease across time, while the level of positivity linearly increased from emerging adulthood to adulthood. The result regarding the linear change of positivity is consistent with earlier studies which have shown linear patterns of life satisfaction during adulthood (Galambos, et al., 2015; Fujita & Diener, 2005). Precisely, the piecewise LGC model provided further information regarding intra-individual changes of positivity in two developmental time periods. The results showed the intra-individual linear change of positivity during emerging adulthood and the intra-individual stability of positivity during adulthood. The results imply that in an individual level, positivity may increase during emerging adulthood, but

it will be more stable when an individual aged. Furthermore, the results showed negative correlations between the initial level of economic pressure and the initial level of positivity, as well as the linear slope of economic pressure and the linear slope of positivity. This result demonstrated the possible long-term developmental link between economic pressure and positivity. More specifically, this may imply that two continuous and related developmental changes occur simultaneously in the opposite direction. As mentioned, to our knowledge, there are no studies on long-term patterns of economic pressure and associations between long-term patterns of economic pressure and positivity. Thus, the present study may provide valuable information on these two opposite developmental processes which are critical factors in subjective well-being.

The final ALT model is the same conceptual idea of the AC model with a random intercept which presents associations of state-like economic pressure and positivity across time, after controlling the general trait-like properties between variables. More specifically, the negative correlation between the intercept of economic pressure and positivity infers that, generally, individuals who have high positivity are more likely to have low economic pressure. After controlling for the general association between individual economic pressure and positivity over the 12 year period, state-like properties of economic pressure and positivity were stable from emerging adulthood to adulthood. That is, individuals who had higher positivity at a prior time point were more likely to show higher positivity in a 2 year later time point. Similarly, individuals who had higher economic pressure at a prior time point were more likely to show higher economic pressure in a 2 year later time point. However, the ALT model did not account for a causal effect between economic pressure and positivity.

Taken together, the various modeling approaches provide unique views on associations between economic pressure and positivity from emerging adulthood to adulthood. Based on the model comparisons, the best fitting model was the *AC model 1k* with constraints in autoregressive coefficients and cross-lagged coefficients starting at age 23. However, the AC model has been criticized since it does not account for a trait-like and time-invariant nature in the autoregressive associations which can bias cross-lagged associations. Thus, recently Hamaker, Kuiper, and Grasman (2015) recommended the random intercept cross-lagged panel model which accounts for time-invariant and trait-like stability by including a random intercept. In their study, researchers pointed out “If the group means can be constrained to be equal over time, the random intercept AC model is nested under the ALT model with only a random intercept and no slope” (p.106). Thus, for the present study, the final ALT model can be inferred as the random intercept AC model with constrained means for each indicator of economic pressure and positivity over time. Through the final model, the present study showed the negative correlations between general trait-like positivity and economic pressure and state-like stability of economic pressure and positivity over time. However, no evidence was found of causality between economic pressure and positivity through the final ALT model approach.

Limitations and Future Directions

This study employed several different approaches in analyzing data to account for intra-individual changes in economic pressure and positivity across time. Through the AC model, the present study found the instability of two construct variables (i.e., economic pressure and positivity) from emerging adulthood compared to adulthood. Thus, future research could examine predictors for the instability of positivity and economic pressure during emerging adulthood. In addition, through the LGC model, the present study did not find a significance in a

linear slope of economic pressure. Even though there are possibilities to have quadratic and cubic curves in economic pressure across time, the second-order LGC model with 7 time points were not analyzed with complicated curves. Thus, future work should focus on the analytical solution to address this issue to examine assumptions on the complicated developmental patterns of changes (i.e., quadratic and curve) in economic pressure.

Furthermore, since the variance of economic pressure and positivity were significant and there was a significant negative association between the two constructs, a future study could examine latent class analyses to clarify different groups which have different change patterns of economic pressure and positivity across time. To our knowledge, second-order ALT models have not been implemented, however the conceptual ideas of the second-order ALT with a random intercept model is in the same line with the random intercept AC model. Thus, future research can identify more sophisticated evidence of similarities and differences between the second-order ALT with a random intercept and random intercept AC models.

In closing, the present study consistently found a negative long-term association between economic pressure and positivity through three different modeling approaches. Even though the present study did not confirm the causality between economic pressure and positivity in the final ALT model, the negative correlation between them may imply maladaptive processes of economic pressure and individual positive characteristics across time. Thus, prevention efforts could strive to reduce economic pressure and promote positivity. For example, supporting individuals to make ends meet and satisfy material needs can reduce their feelings of economic pressure which is negatively associated with their positive perceptions and feelings about life in general. In addition, supporting individuals to foster positivity could ultimately influence the decline of one's perception of economic felt pressures over time. As other studies have found

that positive personal characteristics may lead to better economic outcomes (Borghans et al., 2009; Donnellan et al., 2010), promoting positivity can help individuals cope with problems and seek resources to overcome economic adversity.

Based on the positive psychology movement (Frein & Ponsler, 2014; Gander, Proyer, Ruch, & Wyss, 2013; Seligman, Steen, Park, & Peterson, 2005; Seligman, Rashid, & Parks, 2006), interventions such as self-focused writing where individuals write good things about their life have been shown to increase positive affect and general life satisfaction. For example, Frein and Ponsler (2014) conducted experiments where college students wrote their ideal future as well as the ideal future of a loved one. It was found that even this simple activity can increase positive affect in college students. Therefore, programs based on the perspective of positive psychology, are aimed to increase positive views of self and others to empower people who are at risk (Seligman, et al., 2005; Seligman et al., 2006). Likewise, interventions designed to promote positivity based on the Family Resilience Framework emphasize a positive outlook. Such efforts would help to increase resiliency to economic adversity across adulthood.

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Table 1. Means, Standard Deviation, Ranges, Missing, and Factor Loadings

Variable	Minimum	Maximum	M	SD	Missing	Factor Loading
Economic Pressure age 19						
unmet material needs	1	5	2.52	.76	7%	.50
cannot make ends meet	1	4.50	2.07	.73	7%	.73
financial cutbacks	0	16	1.75	2.55	7%	.60
Economic Pressure age 21						
unmet material needs	1	5	2.42	.76	7%	.59
cannot make ends meet	1	4.50	2.30	.77	7%	.77
financial cutbacks	0	17	2.07	2.63	7%	.66
Economic Pressure age 23						
unmet material needs	1	4.17	2.21	.70	12%	.61
cannot make ends meet	1	4.50	2.25	.76	12%	.77
financial cutbacks	0	14	2.01	2.61	12%	.69
Economic Pressure age 25						
unmet material needs	1	5	2.19	.74	14%	.71
cannot make ends meet	1	4.50	2.26	.85	14%	.84
financial cutbacks	0	14	2.26	2.88	14%	.74
Economic Pressure age 27						
unmet material needs	1	5	2.19	.80	17%	.72
cannot make ends meet	1	4.50	2.23	.88	17%	.85
financial cutbacks	0	16	2.47	3.01	17%	.76
Economic Pressure age 29						
unmet material needs	1	5	2.09	.81	21%	.70
cannot make ends meet	1	4.50	2.21	.85	21%	.89
financial cutbacks	0	16	2.60	3.29	21%	.72
Economic Pressure age 31						
unmet material needs	1	5	2.06	.79	17%	.71
cannot make ends meet	1	4.50	2.20	.88	17%	.85
financial cutbacks	0	16	2.43	3.26	17%	.70
Positivity age 19						
self-mastery	1.57	5	3.94	.64	7%	.61
positive affect	1.50	6	4.22	.93	7%	.76
life-satisfaction	1	5	3.31	.74	6%	.71
Positivity age 21						
self-mastery	2.14	5	4.01	.63	7%	.63
positive affect	1.33	6	4.41	.83	7%	.86
life-satisfaction	1	5	3.36	.78	8%	.68
Positivity age 23						
self-mastery	1.57	5	4.11	.59	12%	.63
positive affect	1.67	6	4.48	.80	12%	.85
life-satisfaction	1	5	3.45	.72	11%	.69
Positivity age 25						
self-mastery	2	5	4.05	.58	14%	.65
positive affect	1.50	6	4.36	.83	14%	.82
life-satisfaction	1	5	3.49	.72	14%	.70

Table 1 continued

Positivity age 27						
self-mastery	1.57	5	4.04	.60	17%	.67
positive affect	1.67	6	4.32	.84	17%	.86
life-satisfaction	1	5	3.44	.78	17%	.68
Positivity age 29						
self-mastery	1.86	5	4.07	.58	21%	.67
positive affect	1.67	6	4.33	.84	21%	.82
life-satisfaction	1	5	3.44	.76	21%	.71
Positivity age 31						
self-mastery	1.86	5	4.00	.57	17%	.67
positive affect	1.50	6	4.35	.78	17%	.83
life-satisfaction	1	5	3.48	.74	17%	.69
Gender (1 = male)	47%				0%	
Education level (1 = 4 year college degree or higher)	45%				10%	

Table 2. Correlations among Variables Used in Analyses

Study constructs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Economic Pressure age 19	-														
2.Economic Pressure age 21	.57***	-													
3.Economic Pressure age 23	.53***	.54***	-												
4.Economic Pressure age 25	.36***	.47***	.59***	-											
5.Economic Pressure age 27	.31***	.44***	.55***	.72***	-										
6.Economic Pressure age 29	.35***	.41***	.50***	.57***	.74***	-									
7.Economic Pressure age 31	.35***	.40***	.49***	.57***	.61***	.71***	-								
8.Positivty age 19	-.40***	-.33***	-.31***	-.30***	-.23***	-.21***	-.16**	-							
9.Positivty age 21	-.25***	-.46***	-.31***	-.30***	-.29***	-.23***	-.26***	.77***	-						
10.Positivty age 23	-.26***	-.22***	-.39***	-.31***	-.24***	-.19**	-.28***	.56***	.62***	-					
11.Positivty age 25	-.23***	-.25***	-.36***	-.52***	-.39***	-.32***	-.39***	.57***	.64***	.77***	-				
12.Positivty age 27	-.15*	-.27***	-.30***	-.41***	-.42***	-.36***	-.31***	.53***	.56***	.68***	.74***	-			
13.Positivty age 29	-.15*	-.30***	-.35***	-.47***	-.41***	-.49***	-.43***	.50***	.57***	.67***	.76***	.80***	-		
14.Positivty age 31	-.14*	-.24***	-.27***	-.38***	-.36***	-.34***	-.49***	.48***	.51***	.62***	.67***	.74***	.79***	-	
15.Gender	-.04	-.08	-.17**	-.10*	-.10*	-.09 ⁺	-.07	.09 ⁺	.10*	.12*	.06	.01	.08	.01	-
16.Education	-.24***	-.20***	-.21***	-.29***	-.26***	-.32***	-.30***	.05	.14**	.08	.13**	.12*	.15**	.12*	-.05

Note. ⁺ <.10, **p* < .05, ** *p* < .01, *** *p* < .001

Table 3. Comparisons of Fit Between Nested Models

Models	χ^2	<i>df</i>	RMSEA	CI	CFI	TLI	$\Delta\chi^2$	Δdf	<i>p</i>
1a. 7-factor model for economic pressure, with measurement error correlations	121.692	105	.017	.000-.029	.997	.994	-	-	-
1b. Model 1c, with constraints in factor loadings of repeated latent variables	138.508	117	.018	.000-.029	.996	.993	16.816	12	.157
1c. 7-factor model for positivity, with measurement error correlations	137.430	105	.024	.010-.034	.995	.989	-	-	-
1d. Model 1a, with constraints in factor loadings of repeated latent variables	149.205	117	.022	.009-.033	.995	.990	11.775	12	.464
1e. Measurement model	906.815	626	.029	.024-.033	.976	.967			
1f. AC, factors freely correlated	1108.479	686	.034	.030-.037	.964	.955			
1g. Model 1f with constraints in autoregressive coefficients	1128.601	696	.034	.030-.037	.963	.955	20.122	10	.028
1h. Model 1f with constraints in positivity autoregressive coefficients	1115.125	691	.034	.030-.037	.964	.955	6.646	5	.248
1i. Model 1f with constraints in time specific correlations and cross-lagged associations	1131.220	702	.033	.030-.037	.964	.955	22.741	16	.121
1j. Model 1h + Model 1i	1152.685	707	.034	.030-.037	.962	.954	44.206	21	.002
1k. Model 1f with constraints in autoregressive coefficients and cross-lagged coefficients since age 23	1124.720	702	.033	.030-.037	.964	.956	16.241	16	.436
1l. LGC model with constraints in all means	1583.713	741	.046	.043-.049	.928	.917			
1m. Piecewise LGC model	1475.402	728	.043	.040-.047	.936	.925	108.311	13	.000
1n. ALT model + model 1f and 1l	1326.347	702	.040	.037-.044	.947	.935			
1o. ALT 1n with no variance slope in economic pressure	1341.283	708	.040	.037-.044	.946	.935	14.936	6	.021
1p. ALT 1n with no variance slopes in economic pressure and positivity	1358.913	713	.041	.037-.044	.945	.934	31.566	11	.000

Note. RMSEA = root mean square error of approximation; CI = confidence interval of the RMSEA value; TLI = Tucker-Lewis index; $\Delta\chi^2$ = change in chi-square from the immediately preceding model; Δdf = change in degrees of freedom from the immediately preceding model; *p* = probability associated with the $\Delta\chi^2$ value.

Figure 3. Autoregressive Cross-Lagged Model (Model 1k)

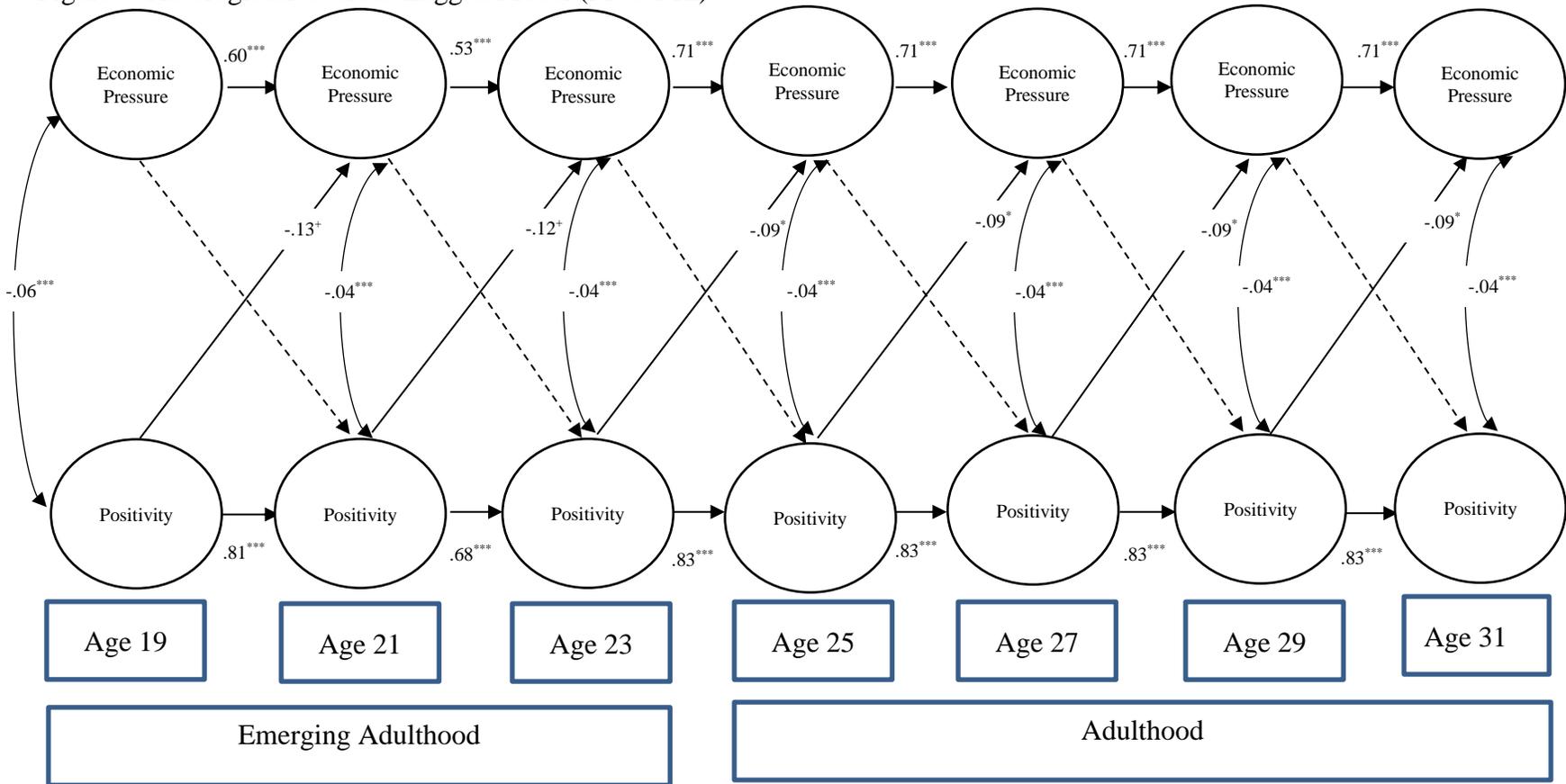


Figure 4. Latent Growth Curve Model (Model 11)

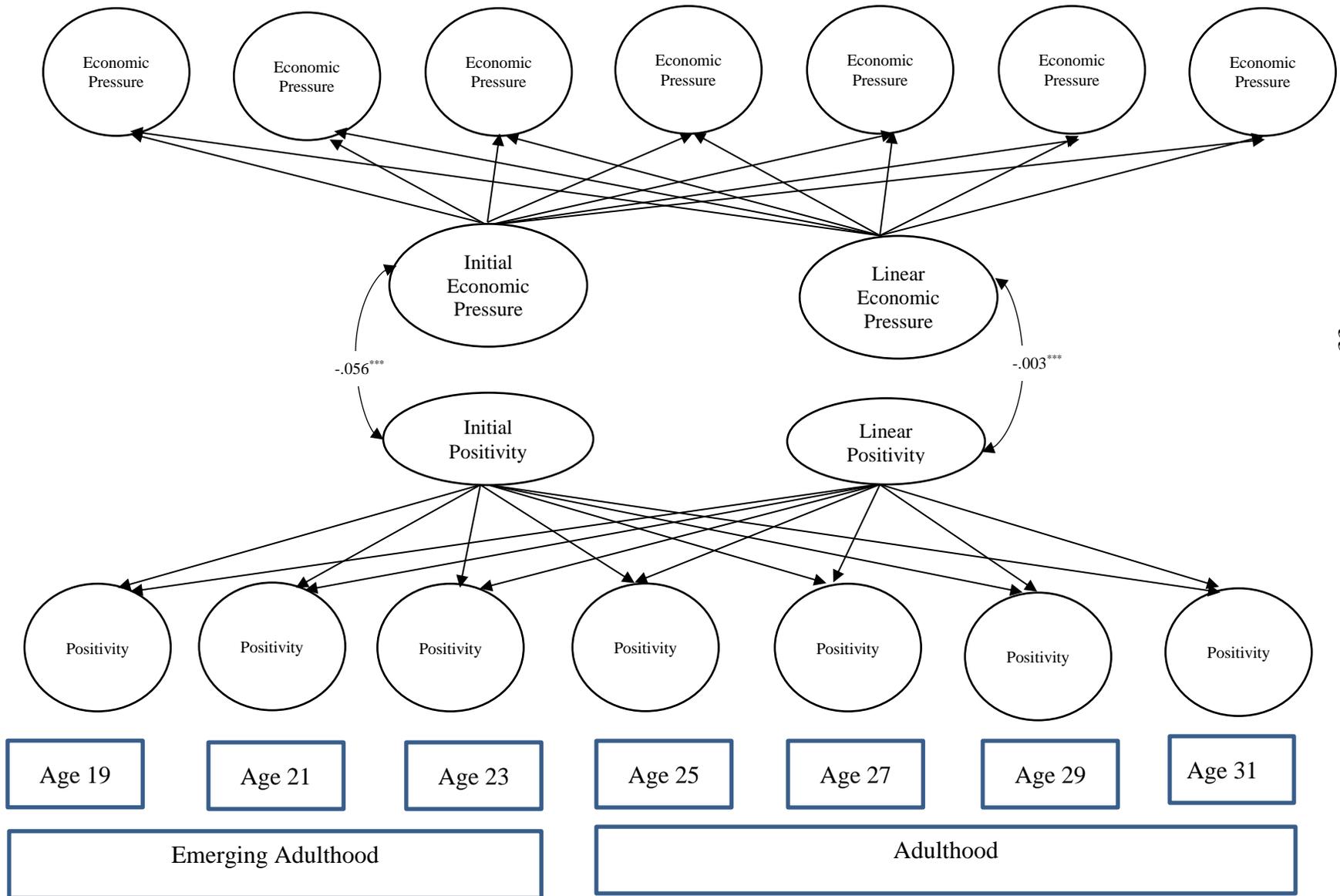
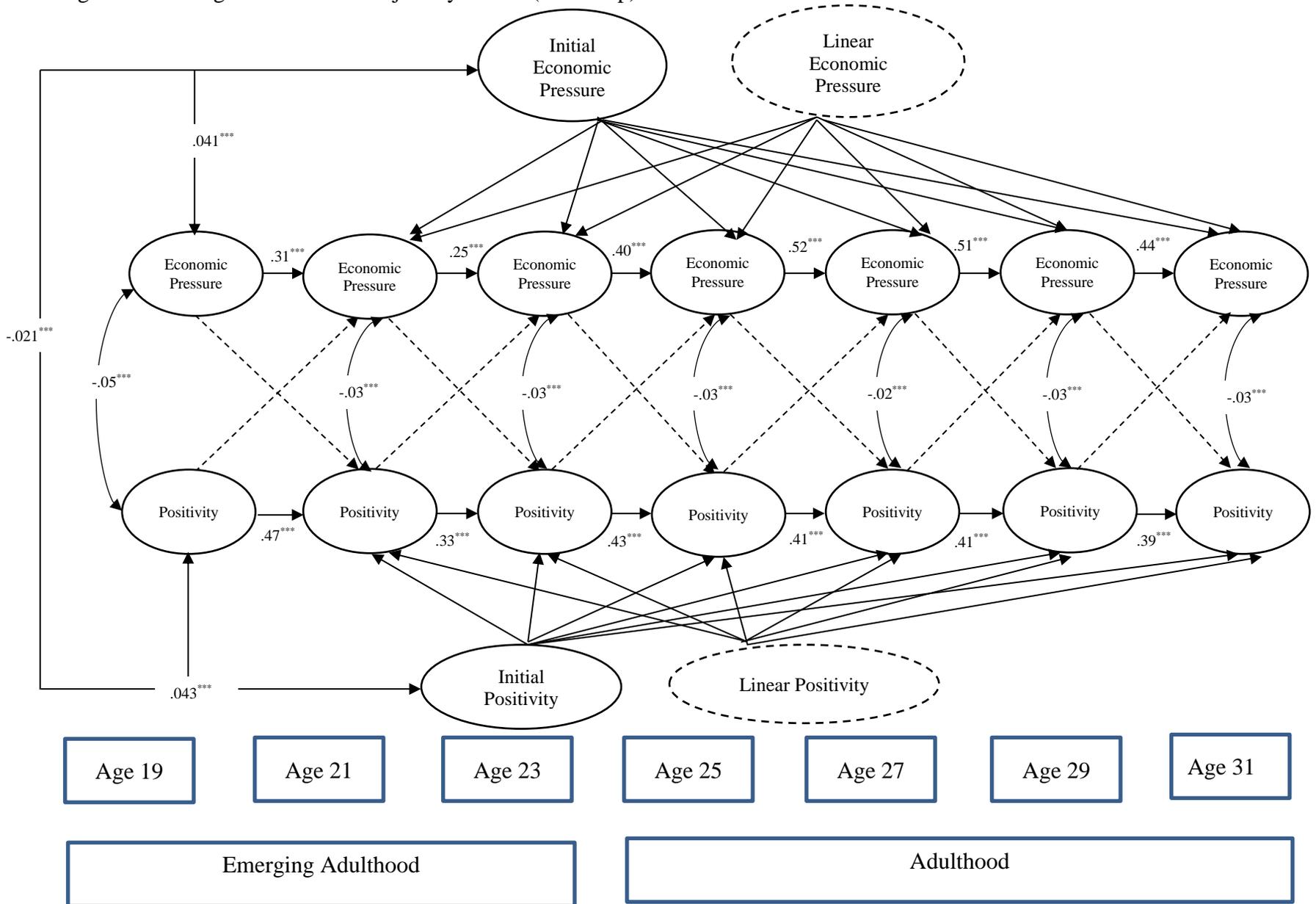


Figure 5. Autoregressive Latent Trajectory Model (Model 1p)



**CHAPTER 3. ECONOMIC PRESSURE, PARENT POSITIVITY, POSITIVE
PARENTING, AND CHILD POSITIVE EMOTIONALITY**

A paper to be submitted to *Journal of Child and Family Studies*

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Abstract

The present investigation examined how economic pressure impacts parental positivity and positive parenting separately for mothers and fathers, as well as how positivity and parenting impact positive child emotionality when children were 3 to 5 years old. This investigation included 210 target young adults and partners (N=210; 60% female) who participated from adolescence through adulthood and who had an eligible child participating in the study by 2005. This study included data from the target parent and his or her partner when the child was between the ages of 3 and 5 years old (*M* child age = 3.2 years; boys = 103). Results showed that economic pressure was negatively associated with maternal and paternal positivity. In spite of economic pressure, maternal positivity was associated with mother positive parenting, while paternal positivity was not significantly associated with father positive parenting. Maternal positivity and paternal positivity were associated with partner's positive parenting. Parental positivity and positive parenting were associated with child positive emotionality. The current results suggest that parental positivity and positive parenting are important protective factors for young children's positive emotionality under economic adversity.

Key words: Economic pressure, parental positivity, positive parenting, child positive emotionality, actor-partner interdependence model

Introduction

Family economic hardship is a risk factor for positive child development (Duncan & Brooks-Gunn, 2000). According to the Family Stress Model (FSM), economic pressure leads to parental distress, which impacts parenting and child outcomes (Conger & Conger, 2002; Neppl, Senia, & Donnellan, 2016). The FSM model has been well demonstrated with diverse populations and many studies have empirically shown the negative impacts of family economic problems on well-being (Solantaus, Leinonen, & Punamaki, 2004; Conger, Wallace, Sun, Simons, McLoyd, & Brody, 2002; Parke et al., 2004). In particular, several longitudinal studies have found the negative impacts of family economic adversity on child developmental outcomes (Conger et al., 2012; Neppl et al., 2016; Linver, Brooks-Gunn, & Kohen, 2002; Yeung, Linver, & Brooks-Gunn, 2002). For example, Conger et al. (2012) found an association between family economic hardship and children's positive personality, social competence, and school performance. More recently, others have demonstrated the negative impact of economic hardship on child outcomes through parental emotional problems and hostile parenting behaviors (Neppl et al., 2016; Nievar, Moske, Johnson, & Chen, 2014).

Nevertheless, some individuals and families adapt well and are resilient to the impact of adversity. Earlier research has found that parents who have positive character traits are more likely to display positive parenting which, in turn, impacts positive child development even under economically adverse conditions (Castro-Schilo, Ferrer, Taylor, Robins, Conger, & Widaman, 2013; Ellingsen, Baker, Blacher, & Crnic, 2014; Jeon & Neppl, 2016; Neppl, Jeon, Schofield, & Donnellan, 2015; Taylor, Larsen-Rife, Conger, Widaman, & Cutrona, 2010; Taylor, Widaman, Robins, Jochem, Early, & Conger, 2012). For example, Conger et al. (2012) found that a positive personality profile in adolescence was negatively associated with economic

hardship when they became parents. Taylor and colleagues found that in spite of economic pressure, mothers who had higher optimism were more likely to show effective parenting skills which increased their young children's social adjustment. These processes were found with both African-American single mothers (Taylor et al., 2010) and Hispanic mothers (Taylor et al., 2012). Furthermore, Jeon and Nepl (2016) found that even in the face of economic hardship, parental positivity affected positive parenting which impacted their young children's positive behavior to the parent. Taken together, parental personality and parenting behavior may be important protective factors for young children in families who are suffering from economic problems.

Despite this evidence, few studies have examined how economic pressure is related to both maternal and paternal positivity which may impact their own and partner's parenting behavior, and how those resiliency factors impact their young child's positive development. Thus, the current study expands the work of Jeon and Nepl (2016) by investigating the association between economic pressure, parental positivity, and positive parenting, separately for mother and fathers. In addition, the interdependent association between mothers and fathers was examined as well. Furthermore, we assessed how mother and father positive traits and positive parenting were each related to child's positive emotionality. Specifically, we examined mother and father self-report of their positive personal characteristics and their young child's positive emotionality, as well as observed positive parenting behaviors of mothers and fathers separately. This provides an important next step in understanding how resiliency factors such as positivity and positive parenting operate differently for mothers and fathers to impact young child development to those families affected by economic adversity.

Literature Review

Economic Pressure and Positive Traits and Behaviors

Family economic hardship can interrupt positive child development (Duncan & Brooks-Gunn, 2000; McLoyd, 1998). The FSM supports the notion that economic pressure caused by economic hardship leads to parental distress, which in turn results in impaired parenting behaviors and consequently can negatively affect child developmental outcomes. That is, how parents perceive and react to their economic situation may impact rearing a child under economic adversity. Using the same longitudinal study used for the present analyses, it was found that economic pressure leads to harsh parenting, which in turn is related to adolescent maladaptive problems such as delinquent behaviors (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992; Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1993; Conger, Ge, Elder, Lorenz, & Simons, 1994). More recently, Neppl, et al. (2016) examined the same adolescents when they became parents and found similar results where economic pressure led to harsh parenting, which was related to their young child's externalizing behavior. However, despite experiencing economic pressure, some families maintain their positive views toward themselves and other family members which may help to lessen the impact of such adversity.

As such, the family resilience framework has demonstrated the process of adaptive family functioning in spite of adversities. In particular, parental positive traits can lead to positive perspectives on their current situation which then impacts positive child development even under these adverse situations (Jeon & Neppl, 2016; Neppl et al., 2015; Taylor et al., 2010; 2012). For example, Walsh (2012) suggested that positive belief systems and positive interaction styles in the family are resiliency factors that can lead to positive development of youth who experience adversity. Others have found that parental optimism affected positive parenting which,

in turn, increased children's peer competence and decreased their internalizing and externalizing difficulties (Castro-Schilo et al, 2013; Ellingsen et al, 2014; Jones, Forehand, Brody, & Armistead, 2002). Taken together, maintaining a positive outlook under times of economic adversity, may help to foster positive parenting which then influences positive child development.

Positive Parental Traits, Parenting, and Positive Child Development

Positive child development has been assessed with positive temperamental traits or positive emotionality. Research has found that such personality traits may be transmitted across generations (Kitamura, Shikai, Uji, Hiramura, Tanaka, & Shono, 2009; Neppl et al, 2015; Jeon & Neppl, 2016). For example, Scarr, Weinberg, and Witting (1981) found that parental personality and their adolescents' personality resemble each other. More recently, Neppl and colleagues (2015) found that parental positive characteristics such as self-mastery, self-esteem, and positive emotion predicted their adolescent's positive traits into emerging adulthood. Similarly, Jeon and Neppl (2016) found that parental positive traits predicted similar traits in their children when they became parents.

It may also be that positive parenting is related to young child positive emotionality. For example, positive parenting styles have been found to predict long-term profiles of toddler temperament. Van den Akker, Dekovic, Prinzie, & Asscher (2010) found that child temperament in the first few years was more likely to be stable, but negative and positive parenting as an environmental mechanism were related to changes in temperament during childhood. That is, child positive personality traits may change when exposed to environmental stimuli such as parenting. Even though it has been found that young children's characteristics were related to similar characteristics of their parents and parenting behaviors, many previous studies have focused on the impact of maternal characteristics and parenting behaviors (Taylor et al., 2010,

2012; Ellingsen et al., 2013), or have examined either the father or mother (Jeon & Neppl, 2016). Therefore, the current investigation examined impacts of both parental positivity and positive parenting on child positive emotionality as reported by both mother and father using an Actor-Partner Interdependence Model (APIM; Ledermann, Macho, & Kenny, 2011). The model not only considers the parallel process of father or mother on child developmental outcomes separately, but also includes the interdependent impact of mother and father on child positive development.

The Present Investigation

The present investigation examined how economic pressure impacts parental positivity and positive parenting separately for mothers and fathers, as well as how positivity and parenting impact positive child emotionality when children were 3 to 5 years old (see Figure 1). Using family economic pressure as a risk factor, we tested the prediction that economic pressure would be negatively related to parental positivity, positive parenting, and positive child emotionality. Based on a resiliency framework, we also hypothesized mediation effects of parental positivity and positive parenting between economic pressure and child positive emotionality. In addition, it was expected that in spite of experiencing felt economic pressure, maternal positivity would be related to paternal positive parenting and paternal positivity would relate to maternal positivity. Finally, it was expected that child positive emotionality which was reported by mother and father separately, would be related to both mother and father positivity and positive parenting, in spite of economic pressure. In this study, parental self-reports were used to measure parental positivity and child positive emotionality, while observational data was used to assess positive parenting of both mothers and fathers. The APIM was used to conduct hypothesized paths described above.

The present study controlled for both mother and father age as well as education level to account for the effects of timing when participants became parents and participated in the study with their first born child. In addition, child age was also controlled to reduce the effect of child age on parenting styles and positive emotional development. There is evidence that parental age and education level are associated with their parenting behavior. For example, younger mothers were more likely to have a chance of adverse life events and parental education levels are associated with positive parenting (Davis-Kean, 2005; Pogarsky, Thornberry, & Lizotte, 2006). In terms of child age, mothers with younger children showed more effective parenting skills than mothers with older children (Bank, Forgatch, Patterson, & Fetrow, 1993).

Method

Participants

The present study used data from the Family Transitions Project (FTP) which is a longitudinal study of 559 target youth and their families. The FTP includes two earlier studies: The Iowa Youth and Families Project (IYFP) and the Iowa Single Parent Project (ISPP). In the IYFP, data was collected annually from 451 two-parent families living in 8 rural counties in Iowa from 1989 to 1992. Participants included the target adolescent, their parents, and a sibling within 4 years of age of the target youth. When interviewed in 1989, the target adolescent was in seventh grade (M age = 12.7 years; 236 females, 215 males).

In 1994, the families from the ISPP and IYFP were combined to create the FTP. At that time, target adolescents from both studies were in 12th grade and participated in the study with their parents as they had during the earlier years of adolescence. Beginning in 1995, the target youth (1 year after completing high school) participated in data collection with their romantic partner or friend. In 1997, the study extended to the first born children of the target adolescents,

now young adults. Targets' children were eligible to participate when they were 18 months of age. By 2005, the children in the FTP ranged in age from 18 months to 13 years.

The present study included 210 target young adults and partners (N=210; 60% female) who participated from adolescence through adulthood and who had an eligible child participating in the study by 2005. This study included data from the target parent and his or her partner when the child was between the ages of 3 and 5 years old (M child age = 3.2 years; boys = 103). The target and partner were organized as mother and father, meaning that the mother could either be the target or the target's partner (M age of mother = 26.31 years; M age of father = 28 years). In addition, since the same child could participate at ages 3-5, the present study only used data from the first time a child was assessed during that time period to assure that the same child is not counted within that age range multiple times. A total of 171 3-year-olds, 32 4-year-olds, and 7 5-year-olds participated. 83% of the targets and their partner were married or cohabiting and 75 ~94 % of partners were the biological parent to the child.

Procedure

Beginning in 1997, the target youth, now adults, participated in data collection with their romantic partner and first born child. Each target parent and his or her child were visited once each year in their home by trained interviewers. During these visits, the target parent and his or her romantic partner completed a series of questionnaires which included questions about family economics, personality characteristics, and child temperament. In addition, both target parents and the partner participated with their child in videotaped structured interaction tasks that included a 5 minute puzzle completion task. This puzzle task was adjusted to be challenging and slightly stressful for the child's age in order to provoke a stressful situation that would help elicit how well the parent handled the stressful environment. It was expected that positive and

nurturing parents would remain supportive toward the child throughout the task. Trained observers rated the quality of the interactions using the Iowa Family Interaction Rating Scales (Melby et al., 1998).

Measures

Family Economic Pressure. Family economic pressure was measured as a latent construct with three indicators: *unmet material needs*, *cannot make ends meet*, and *financial cutbacks* (Conger & Conger, 2002). *Unmet material needs* included six items asking targets and partners whether they had enough money to afford their home, clothing, furniture, car, food, and medical expenses. Each item ranged from 1 (strongly agree) to 5 (strongly disagree). Reliability of this scale was .89. The second indicator for economic pressure was *not being able to make ends meet*. This included asking targets and partners whether they had difficulty paying their bills (1 = a great deal of difficulty to 5 = no difficulty at all) and how much money he/she have left at the end of each month over the past 12months (1 = more than enough money left over to 4 = not enough to make ends meet). The first item was reverse-coded and then the two items were averaged. The correlation between the two items was .61. The last indicator, *financial cutbacks*, consisted of 17 items that asked targets and partners whether they had made significant financial cut-backs in the past 12 months. Questions included items such as postponing medical or dental care, changing food shopping or eating habits to save money, and taking an extra job to help meet expenses. Each item was answered by 1 = yes or 0 = no. All items were counted with the non-response missing as zero. Thus, the range of *financial cut backs* is from 0 to 17. Reliability of this scale was .81.

Parental Positivity. Maternal and paternal positivity were each measured with three indicators: *Self-mastery*, *positive affect*, *life-satisfaction* when the child was 3 to 5 years old. The

scale of *self-mastery* (Perlin, Lieberman, Menaghan, & Mullan, 1981) included seven statements to which parents responded on a 5-point Likert scale. Target parents and their partner (i.e., mothers and fathers) were asked to report on how strongly they agreed with statements such as “I can do just about anything I really set my mind to”, “I often feel helpless in dealing with the problems in my life”, and “sometimes I feel that I am being pushed around in life”. Item responses for self-mastery are averaged. The scores were internally consistent for both mothers ($\alpha = .80$) and fathers ($\alpha = .82$). Parents also completed an assessment of *positive affect* (Rand Health Science Program, 1986). This scale included six questions such as: “You felt that the future looks hopeful and promising” and “Were you a happy person?”. Responses ranged from 1 = strongly agree to 5 = strongly disagree. A total of 6 items are recoded and averaged together for mothers ($\alpha = .91$) and fathers ($\alpha = .92$). *Life-satisfaction* (Conger, 1993) consisted of five items such as: “I am satisfied with my life the way it is” and “In most ways, my life is close to my ideal”. Responses ranged from 1 = strongly agree to 5 = strongly disagree. A total of 5 items were recoded and averaged together. The scores were internally consistent for both mothers ($\alpha = .86$) and fathers ($\alpha = .81$).

Positive Parenting. Observer ratings were used to assess mother and father behavior toward their child (1997-2005). All behaviors were measured by a 9-point scale, ranging from low (no evidence of the behavior) to high (the behavior is highly characteristic of the parent) and coded by a trained observer. Positive parenting was assessed by parental assertiveness, communication, and listener responsiveness toward their child. Assertiveness is the manner and style of confident and positive expression while exhibiting patience with the responses of the child. Communication involves the use of reason and explanation of the child’s point of view. Listener responsiveness entails attending to and validating child verbalizations through

nonverbal and verbal assents. During the puzzle completion task, parents were asked to let the child independently solve the puzzle on their own, but the parent could offer any assistance they felt was necessary. Mother and father parenting toward the child included three indicators respectively to reflect positive parenting of each parent. Positive parenting were reported internally consistent ($\alpha = .86$ for mother; $\alpha = .89$ for father) and demonstrate inter-rater reliability ($\alpha = .94$).

Child Positive Emotionality. Two different subscales of the Children's Behavior Questionnaire (CBQ) (Rothbart, Ahadi, Hershey, & Fisher, 2001) were used to measure positive emotionality (see Neppl et. al., 2010): smiling and laughter (13 items) and approach/anticipation (13 items). Smiling and laughter is defined as the amount of positive affect in response to changes in stimuli. Parents responded to questions regarding how likely their child was to react with positive emotion to a variety of situations (i.e., "within the past 6 months, my child often laughs out loud in play with other children") Scores were internally consistent for both mother report ($\alpha = .71$) and father report ($\alpha = .75$). Approach/anticipation is defined as the amount of excitement for pleasurable activities (i.e., "within the past 6 months, when my child sees a toy she/he wants, she/he gets very excited about getting it"). Scores were internally consistent for both mothers ($\alpha = .68$) and fathers ($\alpha = .72$).

Control Variables. The control variables included mother and father age, and parental education (0 = kindergarten to 20 = education beyond a master's degree) at the time their child participated in this study, as well as child age.

Data Analyses

As a first step, descriptive statistics on all variables were conducted. Means, standard deviations and Cronbach's Alpha for all latent indicators were calculated (see Table 1). After

conducting these analyses in SPSS, a measurement model which presented all latent variable correlations (see Table 2) was tested by using *Mplus* Version 7 (Muthén & Muthén, 2012). Latent variables for economic pressure, maternal and paternal positivity, positive parenting, and child positive emotionality were included in the measurement model (Model a). After that, Actor-Partner Interdependence Models based on Structure Equation Modeling (SEM) (see Figure 1) were investigated (model b). Model comparisons were conducted given hypotheses regarding actor-partner independent associations. Based on the first free model (model b), economic pressure on maternal positivity was equated with the path from economic pressure on paternal positivity (Model c), and cross associations between mother positivity on father positive parenting was equally equated with the path from father positivity on mother positive parenting (Model d). Next, the regression of mother positive parenting on child positive emotionality reported by mother was equated with the regression of father positive parenting on child positive emotionality reported by father (Model e). Cross-interactions between mother parenting and child positive emotionality reported by father and between father parenting and child positive emotionality reported by mother were equated (Model f). In addition, the path from maternal positivity to child positive emotionality reported by mother was equally constrained with the path from paternal positivity to child positive emotionality reported by father (Model g). Finally, the cross-interaction between maternal positivity and child positive emotionality reported by father and paternal positivity and child positive emotionality reported mother were equally constrained (Model g). The model comparisons were included in Table 3.

Any missing data from the present investigation was handled by Full Information Maximum Likelihood (FIML; Muthén & Muthén, 2012). Based on the mechanism of Missing at Random (MAR), the FIML is widely used and recommended for dealing with missing data in a

longitudinal research study. The FIML approach also provides users with a better estimation of model parameters than other procedures (Allison, 2003). Model fit was determined using Chi-Square, Root Mean Square Error Approximation (RMSEA) and Comparative Fit Index (CFI) from Browne and Cudeck (1993).

Results

Table 1 shows the descriptive results including mean and standard deviation of each indicator for the latent variables. Factor loadings of each latent variable were acceptable to support the constructed variables.

Measurement model

All latent variables for the present study were tested in a measurement model. The final measurement model allowed all variables to be freely correlated. The correlations among study variables are described in Table 2. The model had good model fit ($\chi^2 = 217.442$, $df = 167$, RMSEA = .038, CFI = .965, TLI = .951).

Actor-Partner Interdependence Model

Final Actor-Partner Interdependence Model is shown in Figure 2. The final APIM showed acceptable model fit, $\chi^2 = 255.707$, $df = 192$, RMSEA = .040, CFI = .954, TLI = .945. Results showed that economic pressure was negatively associated with maternal ($\beta = -.55$, SE=.06) and paternal positivity ($\beta = .58$, SE=.06). In spite of economic pressure, maternal positivity was associated with mother positive parenting ($\beta = .25$, SE=.09), while paternal positivity was not significantly associated with father positive parenting. Maternal positivity and paternal positivity were associated with partner's positive parenting (mother to father: $\beta = .20$, SE=.09; father to mother: $\beta = .20$, SE=.08). Maternal positivity and mother positive parenting were both associated with child positive emotionality as reported by mother ($\beta = .30$, SE=.09; β

=.15, SE=.07). Likewise, paternal positivity and father positive parenting were both associated with child positive emotionality as reported by father ($\beta = .25$, SE=.08; $\beta = .14$, SE=.07). However, cross-interactional effects of maternal positivity and mother positive parenting on child positive emotionality reported by father were not significant. Similarly, cross-interactional effects of paternal positivity and father positive parenting on child positive emotionality as reported by mother were not significant.

Indirect effects. Mediating effects between economic pressure and child positive emotionality were examined (Hayes, 2009; Shrout & Bolger, 2002). All indirect analyses were conducted using the bootstrap option in *Mplus* (Muthen & Muthen, 2012). Results indicated that maternal positivity mediated the association between economic pressure and child positive emotionality as reported by mother ($\beta = -.15$, 99% confidence interval [CI] [$-.28$, $-.01$]), and paternal positivity mediated the association between economic pressure and child positive emotionality as reported by father ($\beta = -.16$, 99% confidence interval [CI] [$-.31$, $-.01$]).

Discussion

Applying aspects of the Family Stress Model, along with a family resilience framework, the present investigation examined the association between economic pressure, parental positivity, positive parenting, and child positive emotionality. Furthermore, this study also investigated how maternal positivity and paternal positivity as well as each of their positive parenting is related to their child's positive emotionality, in spite of economic pressure. In particular, the present study used self-reports of mother and positivity and their child's emotionality, as well as observational reports of positive parenting behavior. As hypothesized, economic pressure was negatively associated with both maternal and paternal positivity. This finding is consistent with previous research that has shown the negative relation between

economic problems and positive characteristics (Taylor et al., 2010, 2012; Ellingsen et al., 2014; Jeon & Neppl, 2016). Furthermore, the current findings replicate results with the first generation from the present study (see Neppl et al., 2015). That is, both generations of adults within the study experienced economic pressure which influenced their positivity. The present study extends this original work by examining these processes with generation two adults, their spouse, and young children. Moreover, it also extends the work of Jeon and Neppl (2015) by examining the association between economic pressure and parental positivity separately by mother and father.

However, in the present study maternal positivity was significantly associated with mother positive parenting, while paternal positivity was not significantly associated with father positive parenting of young children. This supports previous research with mothers that has shown that in spite of economic hardship, mother's positive personal characteristics can lead to positive parenting which, in turn, are related to children's positive developmental outcomes (Taylor et al., 2010, 2012; Ellingsen et al., 2014). Indeed, this is consistent with the work by Taylor et al. (2010; 2012) who showed similar resiliency pathways for Hispanic and African-American mothers experiencing economic hardship. For fathers, even though some studies have found the impact of paternal optimism on positive parenting (Castro-Schilo et al., 2013; Neppl et al., 2015), the study of Castro-Schilo et al. (2013) did not examine economic adversity and used parenting styles when their children were in middle childhood. Furthermore, Neppl and colleagues found the impact of paternal positivity on positive parenting when their children were adolescents.

In addition, the present study found mutual parental cross interactional impacts regarding positivity and positive parenting. That is, maternal positivity influenced father positive parenting

and vice versa. These results are consistent with previous studies that find positive character traits can predict positive couple interactions as well as positive parenting toward their children (Clark, Kochanska, & Ready, 2000; Donnellan, Larsen-Rife, & Conger, 2005; Millings, Walsh, Hepper, & O'Brien, 2013). In addition, both parental positivity and positive parenting were significantly associated with their young child's positive emotionality. The direct associations between parental positivity and child's positive emotionality suggest that individual characteristics may be transmitted from parent to child (Kitamura et al., 2009; Neppl et al., 2015; Jeon & Neppl, 2016). Moreover, child positive emotionality may also be fostered by positive environmental stimuli such as positive parenting (Van den Akker et al., 2010). This is also evident through the indirect association of positivity on the relation between economic pressure and child positive development. This is remarkable given that one set of associations is based on self-report and the other on observational assessment.

There are several limitations worth noting. First, the current study used a cross-sectional design where data on mother, father, and their first born child were all collected at the same time point. However, the data collection period ranged from 1997-2005 where one family may have been assessed in 1997 and another family in 2005. Second, the data included a mainly rural sample which may not represent racial and geographic diversity. Although, results are consistent with previous studies that included Hispanic and African-American mothers. Finally, future research should include long-term positive developmental outcomes of young children to identify long-term impacts of parental positivity and positive parenting during early childhood.

In closing, the current results suggest that parental positivity and positive parenting are important protective factors for young children's positive emotionality under economic adversity. Thus, intervention programs can emphasize the importance of a positive family atmosphere for

positive developmental outcomes. That is, family resilience programs can promote positive parental views of self, others, and the future which can increase positive parenting behaviors which influence child positive emotional development. Moreover, fostering positive family conditions can help parents' interdependent relationships which also lead to partner's positive parenting. In short, individual positivity may not only influence their own positive behaviors, but can also influence the traits and behaviors of other members of the family.

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Table 1. Means, Standard Deviation, Ranges, Missing, and Factor Loadings

Variable	Minimum	Maximum	M	SD	Factor Loading
Economic Pressure					
Unmet material needs	1	5	2.22	.70	.76
Cannot make ends meet	-3.21	4.50	.02	1.83	.86
Financial cutbacks	0	16	3.97	4.11	.72
Maternal Positivity (Mother self-report)					
Self-mastery	2	5	3.93	.57	.69
Positive affect	1.83	6	4.26	.81	.70
Life-satisfaction	2	4.11	3.14	.43	.65
Paternal Positivity (Father self-report)					
Self-mastery	2.71	5	3.99	.55	.69
Positive affect	2.33	6	4.41	.71	.73
Life-satisfaction	1.78	4.33	3.24	.39	.67
Mother Positive Parenting (Mother-child observation)					
Assertiveness	1	9	5.89	1.42	.90
Listener Responsiveness	1	9	5.21	1.63	.74
Communication	2	9	5.89	1.25	.84
Father Positive Parenting (Father-child observation)					
Assertiveness	1	9	5.91	1.49	.93
Listener Responsiveness	1	8	5.16	1.54	.80
Communication	1	9	5.67	1.34	.83
Child Positive Emotionality (Mother report)					
Smiling and laughter	3.69	7	5.81	.59	.70
Approach/Anticipation	3.46	6.77	5.21	.62	.64
Child Positive Emotionality (Father report)					
Smiling and laughter	1	5	2.09	.81	.73
Approach/Anticipation	1	4.50	2.21	.85	.69
Mother age	20	42	26.11	2.94	
Father age	20	41	27.92	3.39	
Child age	3	5	3.54	.64	
Mother education level	8	18	14.07	1.86	
Father education level	8	19	13.83	2.01	

Table 2. Correlations among Variables Used in Analyses

Study constructs	1	2	3	4	5	6	7	8	9
1.Economic Pressure	-								
2.Maternal Positivity	-.58 ^{***}	-							
3.Paternal Positivity	-.59 ^{***}	.43 ^{***}	-						
4.Mother Positive Parenting	-.15 ⁺	.30 ^{**}	.19 [*]	-					
5.Father Positive Parenting	-.12	.25 ^{**}	.10	.35 ^{***}	-				
6.Child Positive Emotionality (Mother report)	-.05	.35 ^{**}	.17	.16 ⁺	.15	-			
7.Child Positivity Emotionality (Father report)	.01	.14	.27 [*]	-.03	.14	.25 [*]	-		
8.Mother age	-.14 ⁺	.00	.09	.44 ^{***}	.33 ^{***}	.04	-.02	-	
9.Father age	-.08	.16 ⁺	.04	.26 ^{***}	.20 [*]	.04	-.02	.55 ^{***}	-
10.Child age	.06	-.13	-.07	-.25 ^{**}	-.34 ^{***}	.07	.02	-.03	-.09

Note. ⁺ <.10, * p < .05, ** p < .01, *** p < .001

Table 3. Comparisons of Fit Between Nested Models

Models	χ^2	<i>df</i>	RMSEA	CI	CFI	TLI	$\Delta\chi^2$	Δdf	<i>p</i>
Model a, measurement model	217.442	167	.038	.022-.051	.965	.951			
Model b, APIM free model	250.302	183	.042	.028-.054	.951	.939			
Model c, with constraints in regression weights from economic to positivity	250.527	184	.041	.027-.054	.952	.940	.225	1	.635
Model d, with constraints in cross-associations between positivity and parenting	252.277	185	.042	.028-.054	.951	.940	1.75	1	.189
Model e, with constraints in regression weights from parenting to positivity	252.600	186	.041	.027-.054	.952	.941	.323	1	.570
Model f, with constraints in cross-associations between parenting and positive emotionality	255.650	190	.041	.026-.053	.952	.943	3.05	4	.549
Model g, with constraints in regression weights from positivity to positivity	255.707	191	.040	.026-.052	.953	.944	.057	1	.811
Model f, with constraints in cross-associations between positivity and positive emotionality	255.707	192	.040	.025-.052	.954	.945	0	1	

Note. RMSEA = root mean square error of approximation; CI = confidence interval of the RMSEA value; TLI = Tucker-Lewis index; $\Delta\chi^2$ = change in chi-square from the immediately preceding model; Δdf = change in degrees of freedom from the immediately preceding model; *p* = probability associated with the $\Delta\chi^2$ value.

Figure 1. Conceptual Model: Actor-Partner Interdependence Model

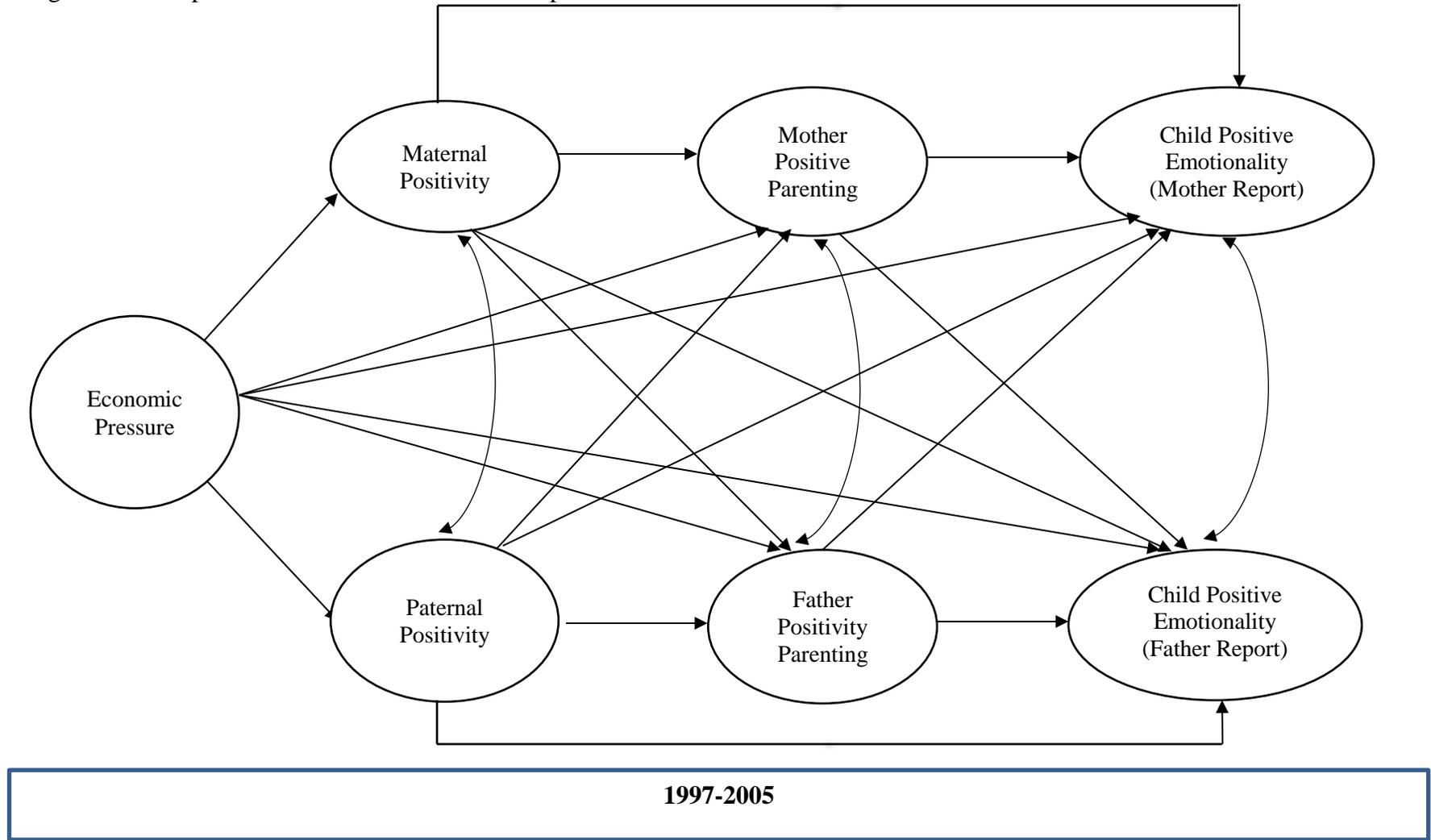
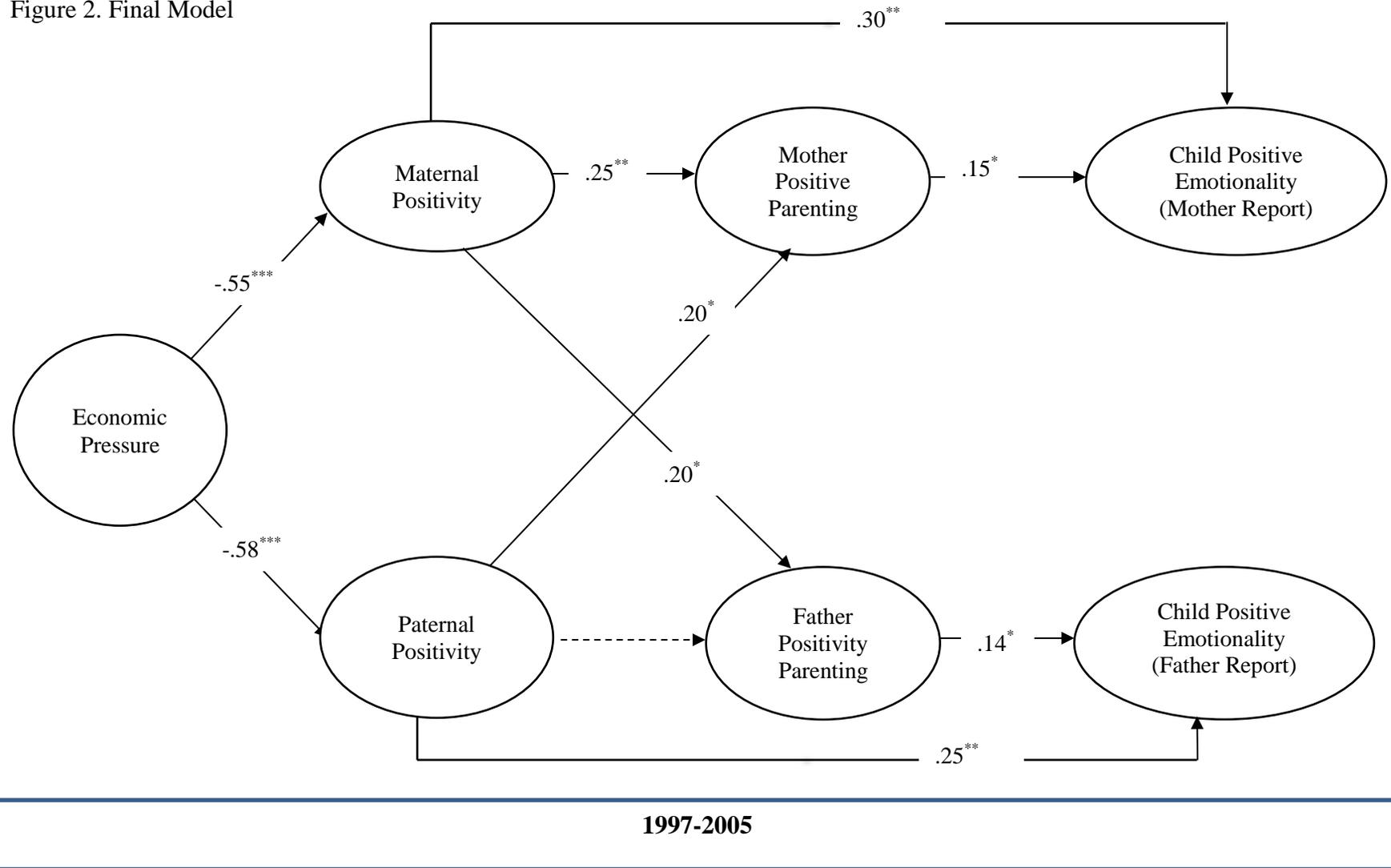


Figure 2. Final Model



CHAPTER 4. DISCUSSION

The present study examined the developmental processes of positivity and economic pressure from emerging adulthood to adulthood and the roles of parental positivity and their positive parenting on their young children's positive development. In this study, three main theoretical foundations, the Family Stress Model (FSM: Conger & Conger, 2002), positive psychology (Seligman & Csikszentmihalyi, 2000), and the resilience framework (Masten, Cutuli, Herbers, & Reed, 2009; Walsh, 2012) were utilized to generate research assumptions of positive human development under economic pressure.

First, based on the FSM, economic adversity has been identified as a risk factor for development (Duncan & Brooks-Gunn, 2000; Neppl, Senia, & Donnellan, 2016; Parke et al., 2004). Economic hardship can provoke economic pressure which leads to emotional distress such as anxiety and depression (Elder, Conger, Foster, & Ardel, 1992; Newland, Crnic, Cox, & Mills-Koonce, 2013). Furthermore, those psychological problems are negatively associated with subjective well-being and feelings of happiness in general life (Joseph, Linley, Harwood, Lewis, & McCollam, 2004; Kostouli, Xanthopoulou, & Athanasiades, 2016). Consistent with prior findings, this study also supports the negative associations between economic pressure and positive individual characteristics (Neppl, Jeon, Schofield, & Donnellan 2015; Jeon & Neppl, 2016). That is, economic pressure not only relates to a negative emotional state, but also can be negatively associated with positive individual characteristics. The first study in this dissertation found that economic pressure from emerging adulthood to adulthood was negatively associated with positivity during the same period. However, this study did not confirm the causality between economic pressure and positivity. Therefore, more work should be done to examine the

causality between environmental influences and individual characteristics to identify the direction of cause and effect.

The second study focused more on a family resilience process (Walsh, 2012), where family economic pressure was used as an exogenous variable and parental positivity as an endogenous variable to examine the roles of parental positivity on positive parenting and child positive emotionality. Based on the positive psychology, the construct of individual positive characteristics was considered as a resilience factor for family economic pressure. Furthermore, based on the family resilience framework, parental positivity and positive parenting were identified as resilience factors for positive child development. Even though research has identified the negative processes of economic pressure, some research has found resilience processes with individual positive characteristics and positive relationships (Conger & Conger, 2002; Donnellan, Conger, McAdams, & Neppl, 2009; Neppl et al., 2015; Taylor, Larsen-Rife, Conger, Widaman, & Cutrona, 2010; Taylor, Widaman, Robins, Jochem, Early, & Conger, 2012).

For example, Conger and Conger (2002) found that marital support, parental support, sibling support, and adults outside the family can be resilience factors to economic adversity. Effective problem solving skills and sense of mastery were also considered. There is evidence that conscientiousness and lower neuroticism during adolescence predicted lower economic pressure, higher marital satisfaction and less harsh parenting when they became adults (Donnellan, et al., 2009). The present study adds to this research with the finding that positivity and positive parenting may be resiliency factors for their child's positive emotionality.

Despite the findings from this dissertation, more questions still remain regarding the association between economic adversity and positivity. First, there is a question of why some

individuals are more likely to be positive compared to others. Even though the second study found that parental positivity and positive parenting impact child positive emotionality, future work should examine the long term impact through a longitudinal framework. For example, Neppl and colleagues (2010) found the stability of positive emotionality from toddlerhood to middle childhood, while the first study of this dissertation showed no change of positivity from emerging adulthood to adulthood by results of the ALT model. Therefore, future research could define what factors affect forming positive emotionality and positive perceptions of individuals from young childhood to adulthood.

Even though this dissertation has several limitations regarding the relatively small total sample size for the complicated research models and lack of diverse populations, there are unique contributions by using a two decade longitudinal study. First, this study attempted to examine the patterns of economic pressure over a 12-year period. There is no research on the long term effects regarding economic pressure and the associations with positive individual characteristics. Second, study 2 using generations 2 and 3 from the longitudinal study replicated the work of Neppl et al. (2015) which found similar results with generations 1 and 2. Finally, three different modeling approaches were introduced and applied with repeated measures representing the two main constructs of economic pressure and positivity.

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APPENDIX

INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 8/1/2013

To: Dr. Tricia Neppi
2358 Palmer

From: Office for Responsible Research

Title: Family Transitions Project, FTP

IRB ID: 12-060

Approval Date: 8/1/2013 **Date for Continuing Review:** 2/6/2014

Submission Type: Modification **Review Type:** Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- **Retain signed informed consent documents for 3 years after the close of the study**, when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.