

Cumulative Perceived Supportiveness Experiences with Biological Fathers
and Maternal Mental Health Problems

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Abstract

Together, increased popularity of the life course paradigm and availability of longitudinal data addressing family relationships have raised important questions about how family processes should be measured to ensure that cumulative experiences are accurately captured. Using the Fragile Families and Child Well-Being Study (N = 2,496) this paper focuses on trajectories of mothers' perceived supportiveness with respect to relationships with their child's biological father and mental health problems five years after a new birth. Increasing slopes of supportiveness are associated with fewer mental health problems; however, this association is completely mediated by a number of time-varying maternal and relationship characteristics, including marital status and relationship quality. The discussion calls attention to alternate ways in which longitudinal experiences can be modeled.

Key Words: social support, mental health, mothers, Fragile Families

Relationships are the fabric of social life. They give meaning to the world around us. They help to buffer us from both catastrophic events and daily hassles while, at the same time, frequently give rise to the very negative events that we experience. Certain aspects of social relationships, especially those with individuals who are closest to us, appear to be more relevant to our well-being than others (House, Landis, & Umberson, 1988a). The level of support we perceive from our parents, closest friends and family members, and our spouses is a powerful ameliorating agent. But it can also act as the source of unhappiness and dissatisfaction. And this balance between helping and hurting can shift at any time.

Cornwell (2003) argues that, while the definition of social support is itself a static concept, over time, it has dynamic properties. The key for researchers interested in social relationships and health, then, is to find a concise, and precise, way to capture cumulative experiences with constructs like social support, that can grow, decay, or remain static (House, Umberson, & Landis, 1988b). A number of options are available, each having their own strengths and weaknesses. At a minimum, all require longitudinal data. One area of research that has seen recent growth in the availability of such data is the family. In particular, the Fragile Families and Child Well-Being Study has allowed researchers to focus on relationship dynamics among non-traditional family types. In an era when rates of both cohabitation and non-marital childbearing have seen dramatic increases (Elwood & Jencks, 2004; Teachman, Tedrow, & Crowder, 2000), studying these non-traditional families over time has also grown increasingly important. Given that the majority of single-parent households are female-headed (Kreider, 2007), the bulk of this research has focused on mothers.

Why, in particular, should social scientist and policy makers be concerned with maternal perceptions of supportiveness? First, perceptions of support have shown to be very important for

mental health (Lin, Ye, & Ensel, 1999), even more so than actual received support (Wethington & Kessler, 1986). Second, because mothers are primarily responsible for raising children and spend more time with them than fathers (Sandberg & Hofferth, 2005), and because a mother's mental health affects her ability to parent (Lovejoy, Graczyk, OHare, & Neuman, 2000; Pachter, Auinger, Palmer, & Weitzman, 2006), if we care about child well-being, we should care about how mothers fare. Third, research shows that children raised in the context of low-quality, high-conflict families fare worse than either those in high-quality, low-conflict families or in high-conflict families that divorce (Amato, 2006; Hetherington & Kelly, 2003). This also holds true for adults who remain in long-term, low-quality marriages (Hawkins & Booth, 2005)

This paper will explore cumulative experiences mothers have with their child's biological father. These mothers are drawn primarily from an economically disadvantaged population, where many families are living under separate roofs. Using latent growth curve modeling, analyses will test whether trajectories of mothers' perceived supportiveness are associated with subsequent maternal mental health problems. They will also examine whether certain maternal and relationship characteristics are able to mediate this association. Ultimately, the goal of the paper is to motivate a new way of thinking about the measurement of long-term trends in variables and constructs that impact well-being, one that pushes past static descriptions to focus on the dynamic aspect of social relationships and the life course.

Theoretical Perspectives

Stress Theory. The stress process model asserts that discrete life events and chronic strains have a direct, negative impact on psychological wellbeing (Pearlin, Lieberman, Menaghan, & Mullan, 1981). However, a number of factors can alleviate the deleterious effects of stress, one of which is social support (Pearlin & Schooler, 1978; Sarason, Sarason, & Pierce,

1990). The literature identifies two main dimensions of social support: expressive versus instrumental and perceived versus received. These two dimensions are not mutually exclusive, as expressive and instrumental support can also be perceived or received (see Lin, Ye, & Ensel, 2000). Jacobsen (1986) defines expressive or emotional support as “behavior that fosters feelings of comfort and leads an individual to believe that he or she is admired, respected, and loved and that others are available to provide caring and security.” Instrumental support is defined as aid provided for practical, tangible problems, such as receiving a loan, transportation to a physician’s office, or childcare (Lin, 1986). Although the salubrious effect of expressive support has been more extensively researched, existing studies also indicate that receipt of instrumental support is positively related to mental health (Lin, Ye, & Ensel, 1999, 2000). Perceived social support refers to the cognitive appraisal, or belief, that future support would be available if needed. In contrast, received support is the actual manifestation of help. Some research suggests that hypothetical resource availability, or perception of support, is a more powerful buffer of stressful life events than received support (Helgeson, 1993; Van der Zee, Bunk, & Sanderman, 1997; Wethington & Kessler, 1986).

Social support is especially pertinent to the sample used here, namely mothers with young children. Many of these women are not coresident or romantically tied to the child’s biological father. The majority are disadvantaged in terms of educational attainment and financial resources. For these families, lack of instrumental and emotional support can have a profound effect on family functioning (Green & Rodgers, 2001; Henly, Danzinger, & Offer, 2005; Meadows, *forthcoming b*). Motherhood, although a time of many positive and exciting changes, is also very stressful. Maternal parenting stress has been linked to both increased rates of mental illness among mothers (Crnic & Greenberg, 1990; Thompson, Merritt, Keith, Bennett,

& Johndrow, 1993), as well as child behavior problems (Creasey & Jarvis, 1994; Cooper, McLanahan, Meadows, & Brooks-Gunn, *forthcoming*; Crnic, Gaze, & Hoffman, 2005).

According to family stress theory, certain family level characteristics, such as social support from intimate partners, can alleviate parenting stress. Existing research shows that mothers who are satisfied with the level of supportiveness they perceive from partners report enhanced parenting, improved mother-child bonds, higher levels of self-esteem and self-efficacy (Baumrind, 1995; Belsky, 1993), and perceive lower levels of parenting stress (Mulsow, Caldera, Pursely, Reifman, & Huston, 2002). In sum, because of the increased pressures and decreased resources among disadvantaged, new mothers, satisfaction with social support from fathers is an integral component of healthy families.

Life Course Theory. Recent decades have seen increased interest in the life course perspective. Its primary focus is on the ways in which individuals interact with each other and with their environments over time, placing an emphasis on the socio-historical period in which these interactions occur (Giele & Elder, 1998). This paradigm asserts that individual biographies reflect long-term patterns of change in social roles and statuses and that these trends can best be reflected through the use of *trajectories* (George, 1999). Integral to this approach is the dynamic aspect of social life. Life is a process, with individuals making their way through the life course, navigating all of the important developmental periods from childhood to adolescence to adulthood.

Concomitant with the popularity of the life course paradigm, longitudinal data sets became increasingly available, especially those concerning family and health. This enabled researchers to explicitly model aspects of social life and well-being over time. Elder (1985) differentiates between transitions, which are life changes that occur within a trajectory, and

trajectories, which reflect long-term pathways. So for example, being married at age 35 is a status, entering a marriage by age 36 would represent a transition, and being single for three years, cohabiting with a partner for two years, marrying that partner and remaining with him or her for 10 years, and later divorcing that partner and remaining divorced for five years would define a trajectory of marital status (Dupre & Meadows, 2007). Analogously, social support can be measured at a point in time, constructed as a change between two points in time, or it can be described as a cumulative process, or a trajectory.

Social Support as a Process

As suggested by the life course paradigm, social relationships change over time. The “life cycle” of a relationship is mirrored by a similar process in perceptions and receipt of social support (House, Umberson, & Landis, 1988b). Thus, as the nature of an individual’s relationship changes (i.e., as children age into adolescence and then into adulthood) the trajectory of support associated with those relationships changes as well (i.e., support from peers may be more influential than support from parents) (Laible, Carlo, & Raffaelli, 2000). Other evidence suggests that support levels fluctuate with age (George, 1989; Olsen, Iversen, & Sabroe, 1991; Vaux, 1985). Cornwell (2003) argues that social support is dynamic and that individuals can experience support growth, support decay, and support staticity. Each, he says, has a different implication for mental health. Increasing support trajectories suggest that individuals are forming and strengthening intimate ties, which are protective of mental health. Entering a coresidential partnership or a marriage would be one such example (Kim & McHenry, 2002). In contrast, support decay implies that an individual has become increasingly dissatisfied with the support he or she either perceives or receives from network ties. A divorce or separation may represent dissociation with a partner, in-laws, children, or friends who previously provided

emotional and instrumental support (Kalmijn, 2007; Kalmijn & Broese van Groenou, 2005; Terhell, Broese van Groenou, & Van Tilburg, 2004). Support staticity might imply that an individual is satisfied with the support he or she perceives (and/or receives) or that social conditions prevent that individual from making changes to social relationships that would alter levels of social support.

Unfortunately, Cornwell (2003) falls one step short of actually measuring trajectories in a truly dynamic fashion by relying on typologies of longitudinal trends in adolescent perceptions of parental support. These typologies are problematic for a number of reasons. First, they cannot account for all of the conceptual components of trajectories—sequencing, timing, transitions, and duration (Dupre & Meadows, 2007). Second, they cannot account for the rate of change in social support. And third, they do not allow the researcher to incorporate other time-varying characteristics of individuals and social relationships that may also affect well-being as the trajectory is itself unfolding (i.e., relationship satisfaction, marital status). Nonetheless, Cornwell finds that cumulative trends in support are predictive of mental health. For his sample of adolescents, the deleterious effect of support decay on depression was stronger than that of the salubrious effect of support growth.

Support Perceptions, Marital Status, and Relationship Satisfaction

As mentioned above, it is important to control for other factors that may change with trajectories of support and therefore also affect mental health. In general, higher levels of relationship quality are associated with better well-being (Proulx, Helms, & Buehler, 2007). Over time, however, research suggests that relationship quality and satisfaction among married couples declines (Cowan & Cowan, 1992; Gottman & Notarius, 2000; Umberson, Williams, Powers, Chen, & Campbell, 2005). Similarly, the transition to parenthood has also been linked

to a depreciation of marital quality (Belsky & Rovine, 1990; Shapiro, Gottman, & Carrère, 2000). These post-marriage and post-birth declines have also been found among cohabiting couples (Brown, 2003).

It is also important to acknowledge relationship satisfaction because of its connection to perceptions of supportiveness (Cutrona, 1996). Dehle, Larsen, and Landers (2001) find that perceived support adequacy is positively correlated with marital quality and negatively associated with depressive symptoms and perceptions of stress. In turn, Kurdek (2005) reports that low levels of social support are associated with divorce, although this association was significant only among men (see also Huston, Caughlin, Houts, Smith, & George, 2001; Karney & Bradbury, 1995). It is possible, then, that dissatisfaction with supportiveness influences the decision to dissolve a union via unhappiness with overall relationship quality. And finally, the association between perceived partner supportiveness and marital quality may be especially salient for women, given gender stereotypes which emphasize the importance of intimate relationship for women (Acitelli, 1996; Erickson, 1993).

Research Aims

This study addresses two research questions. First, how do mothers differ in their ratings of perceived supportiveness based on relationship status with the biological father? It is expected that supportiveness levels will decline prior to the end of the relationship and that mothers no longer in a romantic relationship with the biological father will report lower levels of perceived supportiveness. If this is the case, then static measures of perceived supportiveness may not fully capture the dynamic nature of support over the course of a relationship. Assessment early in the relationship may yield high levels of satisfaction whereas assessments later on may reflect dissatisfaction leading up to dissolution. Thus, the second research question

asks, what is the association between cumulative supportiveness experiences with the focal child's biological father and subsequent maternal mental health problems? To do this, the paper will utilize latent growth curve models to examine the association between the intercept and slope of perceived supportiveness trajectories and mental health problems five years after the birth of a child. It is hypothesized that mothers who start their trajectories with higher levels of perceived supportiveness will experience fewer mental health problems at year five. Similarly, mothers who experience an increase in supportiveness trajectories will also report fewer mental health problems five years later. In this stage of the analysis it will be important to control for a number of factors and to assess whether they can mediate these associations. This segment of the analysis will proceed in three steps, with each step adding a set of possible mediators: time-invariant characteristics of the mother that may affect supportiveness trajectories, previous mental health problems, and time-varying characteristics of both the mother and her relationship with the biological father that may affect her perceptions of his supportiveness.

Controls

A number of other maternal characteristics have been theoretically and empirically linked to mental health problems and that may also affect maternal perceptions of supportiveness. Higher status individuals have a lower lifetime prevalence of depression than lower status individuals (Blazer, Kessler, McGonagle, & Swartz, 1994) and the link between poverty status and poor mental health has been well documented among adults (McLeod & Nonnemaker, 1999). Ross and Wu (1995) have pointed to education, rather than income or race, as the main mechanism through which SES affects health. Two additional controls tap into a mother's stress level, which may adversely affect both her mental health and ratings of relationship supportiveness. These include the average number of hours the mother works and whether or not

she has had or adopted a new baby since the last interview. Employment characteristics, especially, the number of hours a mother spends at work, have been linked to work-family conflict, especially among mothers (Bellavia & Frone, 2004; Sulsky & Smith, 2005).

Method

Data

Data come from the *Fragile Families and Child Wellbeing Study* (FFCWS), a national longitudinal survey of parents and their children (Reichman, Teitler, Garfinkel, & McLanahan, 2001). The FFCWS consists of 4,898 children born in large U.S. cities, including 3,712 whose parents were unmarried at birth. Maternal baseline interviews were conducted in-person, within 48-hours of the focal child's birth, with follow-up interviews via telephone when the focal child was one-, three-, and five-years of age. Response rates were 89 percent at year one, 86 percent at year three, and 85 percent at year five. This analysis uses data from all four waves but is restricted to mothers who reported being married to, cohabiting with, or in a romantic relationship with the focal child's biological father at baseline on any of the follow-up interviews. Therefore, the total eligible sample is 4,532.

Measures

Supportiveness. At the baseline, year one, year three, and year five interviews mothers are given four statements related to the level of supportiveness they perceive from the child's biological father. The statements were: father is "fair and willing to compromise when you have a disagreement" (fair), "expresses love and affection" (love), "criticizes you or your ideas" (insult), and "encourages or helps you to do things that are important to you" (encourage). Frequency was measured as "often" (3), "sometimes" (2), or "never" (1). The insult item was reverse coded. Descriptive statistics use a combined mean of the four items so long as mothers

responded to at least two of the supportiveness items. Cronbach alphas are .63 at baseline, .70 at year one, .73 at year three, and .71 at year five. Growth models treat supportiveness as a latent construct, with categorical indicators (see Analyses section).

The supportiveness items were asked of all mothers, regardless of their relationship status with the father. When parents were no longer romantically involved, the statements asked mothers to rate the supportiveness of the last month of the relationship. Because this protocol may upwardly bias supportiveness ratings, an alternate specification of the variable recoded supportiveness ratings of mothers who were not in a romantic relationship with the biological father as missing for that wave. This approach should then underestimate supportiveness. However, substantive results from models using this specification did not differ. As such, all models reported here use all of the available maternal supportiveness ratings regardless of relationship status at the time of interview.

Mental Health Problems. A composite score for mental health problems is created by summing three dichotomously coded items—heavy episodic drinking (i.e., binge drinking), illicit drug use, and diagnosis of a major depressive episode—all of which are available at the year one, year three, and year five interviews. Heavy episodic drinking is defined as consumption of at least 5+ drinks in one sitting at least once in the previous month at the year one interview and 4+ drinks at the year three and five interviews. Roughly six percent of mothers at year one, 11 percent at year three, and 12 percent at year five report a recent episode of binge drinking (see Table 1). Illicit drug use is defined as use of at least one illicit drug (sedatives, tranquilizers, amphetamines, analgesics, inhalants, marijuana, cocaine, LSD/hallucinogens, or heroin) without a prescription, in larger amounts than prescribed, or for longer than prescribed in the past month. Two percent of mothers at year one, six percent at year three, and five percent at year five

report recent illicit drug use. Depression is measured using the Composite International Diagnostic Interview Short Form (CIDI-SF) Version 1.0 November 1998 (see Kessler, Andrews, Mroczek, Ustun, & Wittchen 1998). Scoring followed procedures outlined by the developers of the CIDI-SF to yield 12-month DSM-IV diagnoses of Major Depressive Episode (MDE) (American Psychiatric Association, 1994; Walters, Kessler, Nelson, & Mroczek, 2002). Fourteen percent of mothers at year one and 19 percent at years three and five meet the diagnostic criteria for MDE. The mean mental health problem score across all mothers is .22 at year one, .36 at year three, and .33 at year five.

[Insert Table 1 about here.]

Note that the CIDI depression measure is not obtained at the baseline interview because of potential overlap with postpartum depressive symptoms. Similarly, comparable measures of drug use and binge drinking are not available at the baseline interview. However, mothers are asked to indicate whether they used drugs or alcohol during pregnancy. Two percent of mothers reported using drugs and two percent reported using alcohol during the prenatal period.

Independently, each of the three items in the composite mental health problems score been cited in existing studies as an indicator of poor mental health. Moreover, Aneshensel (2002) has argued that disorder specific models provide a biased estimate of the impact of social factors and stress on mental health when these factors may influence more than one health outcome. Indeed, recent literature on the study of mental health has moved to including both internalizing (e.g., depression) and externalizing (e.g., alcohol use/abuse, violence) behaviors as indicators of mental health problems (Umberson, Williams, & Anderson 2002). Combining depression, binge drinking, and drug use into one measure of mental health problems maximizes the variability of this construct within the sample and more fully captures the breadth of

emotional distress than may result from changes in family structure (see Meadows, McLanahan, & Brooks-Gunn, 2008; Meadows, *forthcoming a*).

Time-Varying Control Variables. The analyses include a number of time-varying control variables. *Marital status* is measured at each wave. Mothers are asked to indicate whether they are married to, cohabiting with, in a romantic but non-coresidential relationship with, or in no relationship with the focal child's biological father. Married is the reference category. Maternal ratings of *relationship quality* with the biological father are available at years one, three, and five. Answers range from 5 (excellent) to 1 (poor). If the mother is not romantically involved with the father relationship quality refers to the last month the couple was together. *Poverty* is a dummy variable indicating whether or not a mother is at or below 100 percent of the federal poverty line at each wave. *Weekly hours worked* tabulates the average number of hours mothers worked during the past year, as reported by mothers themselves. At years one, three, and five a dummy variable indicates whether or not the mother had an *additional birth* or adopted a new baby.

Time-Invariant Control Variables. Basic sociodemographic controls include mother's *age* at baseline (in years), *education* (less than high school, high school, some college, college and above, with high school as the reference category), *race/ethnicity* (Black, White, Hispanic, Other with White as the reference category), and *immigrant status* (dummy variable indicating mother is a recent immigrant). Means and standard deviations of all control variables can be found in Table 1.

Analyses

Because the paper is interested in the cumulative association between maternal ratings of supportiveness and mental health problems a cumulative, summary measure of supportiveness is

needed. Further, this measure should be able to handle latent constructs. Latent growth curve modeling does both. This strategy assumes that mothers differ in initial ratings of supportiveness based on certain time-invariant characteristics, and that variance in subsequent growth (or decay) of supportiveness trajectories also varies by those characteristics. The basic growth model is depicted in Figure 1.

[Insert Figure 1 here.]

Each mother's trajectory is characterized by a unique intercept (α), linear, time-dependent slope (β), and some measurement error (ε). Thus, the level one equation is as follows:

$$y_{it} = \alpha_i + \beta_i t + \varepsilon_{it} \quad (\text{Equation 1})$$

This equation represents within-individual (i) change over time (t). In order to incorporate the time-varying control variables into the model, Equation 1 must be modified as follows:

$$y_{it} = \alpha_i + \beta_i t + \gamma_t w_{it} + \varepsilon_{it} \quad (\text{Equation 2})$$

The addition of the " $\gamma_t w_{it}$ " term represents the effect of each time (t) control variable on supportiveness at time (t) for each i th individual. In other words, each γ represents a perturbation from the latent supportiveness trajectory associated with a particular marital status, poverty level, number of weekly hours worked, or additional child at a specific point in time.

The second level of the growth model allows the random intercepts (α_i) and slopes (β_i) to be a function of variables that differ across individuals (i) but do not change across time (t). This level represents between-individual change over time. The level two equations are as follows:

$$\alpha_i = \alpha_0 + \alpha_1 x_{i1} + \alpha_2 x_{i2} + \dots + \alpha_k x_{ik} + u_i \quad (\text{Equation 3})$$

$$\beta_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_k x_{ik} + v_i \quad (\text{Equation 4})$$

Here, the x 's are the time-invariant control (i.e., age, education, race/ethnicity, and immigrant status). The intercept and slope for the supportiveness trajectory are directly regressed on these characteristics to assess for potential group differences in the means of the growth factors.

What results from this latent growth model is a unique intercept, or starting point, and trajectory, or course, of supportiveness for each mother in the sample. These trajectory parameters, then, precisely summarize a mother's cumulative experience of her perceived supportiveness from the focal child's biological father. Intercepts and slopes can then be treated as independent variables in a regression model where the dependent variable is mental health problems at year five. The full model is depicted in Figure 2. In addition to the intercept and slope, the full set of time-invariant control variables, as well as mental health problems at year three, are also regressed on mental health problems at year five.

All models are estimated using Mplus, Version 4.1 (Muthén and Muthén 2006). Although full information maximum likelihood (FIML) is available in Mplus, because both the observed supportiveness indicators and mental health problems are treated as categorical variables the analytic sample is restricted to only mothers with complete information on the x (i.e., exogenous) variables in the full model. This restricts the sample to 2,496 mothers. Mothers not in the analytic sample appear to be more disadvantaged, with lower levels of education, more likely to live in poverty, and working more hours than mothers in the analytic sample. These mothers are also less likely to be a coresidential relationship with the biological father. In terms of race/ethnicity, the analytic sample is less likely to be Hispanic or of immigrant status. Mothers not in the sample report statistically significantly lower levels of perceived supportiveness but these differences are substantively very small, always less than .10 units, and differences grow smaller over time. Mental health differences are only apparent at year one,

where mothers in the analytic sample report significantly fewer problems (.22 versus .26, $p < .01$).

Model fit is evaluated using the maximum likelihood ratio test statistic (χ^2), which if significant, indicates poor fit. Because models with sample sizes over 200 are frequently significant three supplemental measures of model fit are used—the root mean square error of approximation (RMSEA), the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI). Convention dictates that RMSEA be below .05 and TLI and CFI close to 1.0 (Bollen & Curran, 2006). All statistical tests referenced in the text are two-tailed.

Results

Supportiveness Ratings. Recall that the first aim of the paper was to assess whether mothers differ in their perceived ratings of supportiveness based on relationship status with the focal child's biological father. In doing so, it is possible to assess whether mothers “select” themselves out of relationships based on lower perceived supportiveness. Table 2 presents these results. What appears in the cells of the table are mean supportiveness ratings from mothers based on their relationships statuses up to the point of ending that romantic relationship. For example, in Row A, we see that mothers who were currently in romantic relationships with the child's father at the time of the birth rate the mean perceived supportiveness of the father as 2.65 whereas mothers who were no longer in a romantic relationship with him at birth rate supportiveness significantly lower, at 2.21 ($p < .001$). Remember that these mothers are using the last month of the relationship as the basis for their ratings, however in this case, the last month of the relationship had to fall somewhere between the conception of the child and the interview at birth (a rough maximum of nine months ago).

[Insert Table 2 about here.]

Row B in Table 2 compares mothers who remained in a romantic relationship with the father through the baseline interview but ended that relationship sometime between the birth and the year one interview. Although all of these women were coupled at baseline, there is already some evidence of lower supportiveness perceptions among mothers who will end the relationship within the next year (2.71 versus 2.48, $p < .001$). By the year one interview the difference has grown larger, 2.62 versus 2.06 ($p < .001$), again suggesting that perceived relationship supportiveness declined in the months leading up to the dissolution of the union.

Rows C and D show similar trends for mothers who end their romantic relationships with biological fathers between years one and three and years three and five. However, in Row D, significant differences in supportiveness ratings do not appear until year three (2.64 versus 2.54, $p < .05$) and even then it is not clear how substantively meaningful the difference is. By year five, the difference is much more pronounced, with mothers who left the relationship reporting significantly lower levels of supportiveness (2.61 versus 1.74, $p < .001$). Of course a word of caution is required when interpreting these results because post-dissolution mothers are retrospectively reporting supportiveness levels of relationships that were not satisfactory. Thus it is not clear if low levels of satisfaction led to the end of the relationship or whether the end of the relationship altered perceptions of supportiveness. Nonetheless, the fact that a similar pattern exists across all mothers, regardless of when the relationship was dissolved, suggests that dissatisfaction with support played an important role in the demise of these relationships. Because differences in perceived supportiveness can be seen, in some cases, years prior to the end of the relationship it is then important to think about how long-term relationship experiences may influence well-being.

Supportiveness Trajectories. Before exploring a more complex model, it is useful to first describe the basic growth model (i.e., no covariates) of supportiveness among all mothers. Figure 1 depicts this basic growth model. Maternal supportiveness ratings at each interview are treated as latent constructs and factor loadings and thresholds are constrained to be equal over time to ensure measurement invariance (e.g., $F_b = F_1 = F_3 = F_5$). Factor loadings for the intercept are set to one at each wave, as is convention in growth models, and for the slope are set to one, three, and five at the year one, three, and five interviews, respectively, to reflect time since the baseline interview. According to the model, the average mother's supportiveness trajectory starts at zero (ns) and decreases at a rate of .03 ($p < .001$) support units per year. The results may appear nonsensical, but because significant variance exists around both the intercept and slope mothers do have positive values of supportiveness. The correlation between the intercept and slope indicates that mothers who start with higher levels of perceived supportiveness will experience a small decline in perceived supportiveness over time, although this association is not significant ($\beta = -.01$, ns).

Cumulative Supportiveness Experiences and Mental Health Problems. The second aim of the paper was to assess the association between cumulative trends in maternal perceived supportiveness and mental health problems at the year five interview. Results are presented in Table 3, in three separate steps. Model 1 examines the basic association between supportiveness trajectory parameters, that is the intercept and slope, and mental health problems at year five, while controlling for associations between mothers time-invariant characteristics (TIC) and their supportiveness trajectories (see Figure 1). Building on Model 1, Model 2 adds a control for prior mental health problems as well as the association between the TIC and mental health problems at

year five. Finally, Model 3 incorporates the time-varying controls (TVC) at Level 1 in the growth model, where they directly affect the latent supportiveness constructs at each wave.

[Insert Table 3 about here.]

The first two columns of Table 3 (Model 1) report that a significant association exists between supportiveness trajectories and mental health problems at year five. Specifically, mothers who start their trajectories with higher levels of perceived supportiveness at the birth of the child have fewer mental health problems five years later ($\beta = -.35, p < .001$). Further, an increasing support trajectory (i.e., a positive slope) is associated with fewer mental health problems at year five ($\beta = -11.03, p < .001$). These results suggest that cumulative support experiences do affect subsequent mental health.

Model 2, shown in columns three and four, adds the association between mothers prior mental health problems as well as the direct association between the TVC and mental health problems at year five. The associations between the supportiveness trajectory parameters are attenuated but remain significant. Mothers who start out with higher levels of perceived supportiveness experience fewer mental health problems at year five ($\beta = -.08, p < .01$) and mothers who experience an increasing supportiveness trajectory also experience fewer mental health problems at year five ($\beta = -1.45, p < .01$).

Finally, Model 3, shown in the last two columns of Table 3, incorporates the association between the TVC and the observed measures of supportiveness at each wave. Remember that the TVC include the mother's marital status with respect to the biological father, her satisfaction rating of this relationship, her poverty status, how many hours she works per week (on average), and whether she has given birth to or adopted a new baby. Once these variables are entered into the model, the association between the supportiveness trajectory parameters and mental health

problems at year five is completely accounted for. The association between the intercept and mental health problems at year five is no longer significant and reverses direction ($\beta = .06$, ns), nor is the association between the slope and mental health problems at year five, although it does remain in the expected direction ($\beta = -5.39$, ns).

Two of the TVC appear to be particularly important mediators of the supportiveness trajectory-mental health problems association: marital status, especially having no relationship with the biological father, and maternal ratings of relationship quality. At all four waves, mothers who report having no relationship with the biological father report much lower levels of perceived supportiveness than mothers who are married to him. Table 2 showed that relationship status is associated with significant differences in perceived supportiveness, with mothers who left relationships reporting lower levels of support in the month preceding their departure from the relationship. Not surprisingly, mothers who are more satisfied with these relationships report higher levels of supportiveness. Given that supportiveness and relationship quality are measured contemporaneously, this model cannot disentangle whether perceptions of support influence perceptions of quality or vice versa.

Robustness Check

Supplementary analyses estimated the regression model for mental health problems using a Poisson distribution and a continuous distribution (results not shown). The substantive conclusions did not change. Because of the large proportion of zeros among the mental health problem measure at year five the author also examined whether a zero inflated Poisson (ZIP) regression model would be appropriate. The first step of this test was to examine whether the mean of the outcome was (roughly) equal to its variance. Using the analytic sample, the mental health problems measure at year five has a mean of .33 and a variance of .36 (at year three $\mu =$

.36, $\sigma^2 = .38$ and at year one $\mu = .22$, $\sigma^2 = .21$). The second step of this test was to compare the distribution of each measure of the mental health outcome to a known Poisson distribution using the mean of each outcome. Comparing these two figures showed good fit between the expected distribution and the observed distribution for both the FIML and restricted samples (results not shown). Taken together, these results suggest that there is no problem with a preponderance of zeros and thus the ZIP model is not necessary.

Discussion

This research sought to uncover whether long-term trends in maternal ratings of supportiveness from her child's biological father have an association with subsequent mental health problems. Building on both the stress process model and the life course paradigm it has argued that social relationships, as well as the support that is garnered from them, can be viewed as processes and should be measured as such. Latent growth models revealed that mothers who had higher levels of perceived supportiveness at the birth of their child had fewer mental health problems five years later. Similarly, mothers who experienced growth in supportiveness over time also experienced fewer problems later. However because perceived supportiveness can be influenced by a number of maternal characteristics statistical models also analyzed whether these factors could mediate the associations between supportiveness trajectories and maternal mental health problems.

Cumulative trends in perceptions of supportiveness do matter, but appear to work through relationship quality, which is likely a function of a mother's relationship status with the biological father. Once these two variables, relationship status and maternal ratings of relationship quality, were entered into statistical models as time-varying covariates, the cumulative experience of perceived supportiveness mattered less. Results also showed that

mothers who ended romantic relationships reported lower levels of supportiveness during the last month of the union. Yet mothers who remained together the longest before ending their relationships with fathers did not significantly differ in perceptions of supportiveness in the years prior to the break-up. These mothers experienced both high and low supportiveness throughout the course of their relationships. Together, these results suggest that dissatisfaction *at the end of* a broken relationship may be the real driving force behind the association between supportiveness trajectories and mental health problems observed here. Despite the fact that union dissolution, a time-specific stressful event, may have an immediate impact on mental health, long-term trends in social and emotional resources are still likely to play an important role in individual well-being. Amassing support from family and friends, even if it is only the perception of support, may well serve as a buffer when individuals do encounter stress and strain.

One alternate reason why the association between the support trajectory, especially the slope, and mental health problems was completely mediated by relationship characteristics is the lack of significant growth or decay in supportiveness trajectories over time. On average, mothers reported a very slight decline in supportiveness over the five-year observation period. Despite significant variance around this slope, means varied little. Cornwell (2003) similarly finds that the cumulative effect of social support on depressive symptoms among adolescents was significantly weaker if support trajectories were categorized by staticity versus growth or decay. These findings could reflect a statistical artifact. That is, with little or no variance in growth/decay, support may have little explanatory power. Or the findings may reflect the fact that, in general, the status quo is good enough to maintain current levels of mental health. If an individual is satisfied with his or her support, and has good mental health, that level of well-

being remains in tact. Unfortunately, this would also suggest that if individuals have poor mental health and perceive little support there positive changes in well-being will be equally unlikely.

A number of other interesting patterns emerged between supportiveness and relationship status and quality. One such example occurred in year three, when cohabiting mothers ($\beta = -.20$, $p < .01$) and non-coresident, romantically involved mothers ($\beta = -.24$, $p < .10$) both had significantly lower levels of perceived supportiveness than married mothers. This is not true at any other point. Not coincidentally, year three coincides with what many parents suggest is the most tumultuous time in a child's early life, frequently referred to as the "terrible twos." In terms of significance and salience for maternal mental health problems, child temperament may trump supportiveness ratings. In contrast, cohabiting mothers report significantly *higher* levels of supportiveness at baseline than married mothers, ($\beta = .21$, $p < .05$). This may reflect higher levels of supportiveness among couples who intend to marry after the child's birth. Indeed, 85 percent of these mothers report that she and the baby's father have plans to marry in the future.

The results presented here may have important policy implications for families, and especially child well-being. Mothers who are no longer in romantic relationships with biological fathers report lower levels of support. Social support, measured either as a snap-shot or longitudinally, is associated with a mother's mental health, which is then related to her ability to parent and provide the resources needed to raise a healthy child. Thus the findings of this study suggest that one way to improve both maternal and child mental health is to focus on relationship quality, and perceived supportiveness, among non-coresident parents (see Cowan, Cowan, Pruett, & Pruett, 2007). A recent study by Carlson and colleagues (2008) finds that positive coparenting, as perceived by mothers, is highly predictive of nonresident fathers' involvement

with children. Obviously, in the optimal situation divorced or separated parents would “get along” for the sake of the child because the impact of the parents’ relationship on child well-being works both directly, through father involvement and coparenting, and indirectly, through maternal mental health. Thus one possible unintended consequence of the Healthy Marriage Initiative, designed to foster relationship skills among *romantically* involved parents, is to cultivate continued positive interactions between parents who end their unions (Dion, 2005).

Future Research

One of the primary goals of this research was to heighten awareness of the ways in which social scientists can measure longitudinal processes in constructs important to well-being. Indeed, the perception of supportiveness *is* a process because it waxes and wanes over time, responding to normal changes in ever-evolving social relationships (Cornwell, 2003). Given the results presented here, one could conclude that perhaps perceived supportiveness is not the most influential construct for maternal mental health, since its association with mental health problems was attenuated by other maternal and relationship characteristics. Because the association between supportiveness trajectories and subsequent mental health problems was mediated by relationship status and quality, future research should begin incorporate trajectories of these longitudinal experiences as well. This would allow researchers to examine multiple trajectories and see which one may be most predictive of well-being. In addition, these models could build in lagged associations to help disentangle whether perceived supportiveness precedes perceived quality or if the reverse is true. Finally, the measurement strategy pursued here can be applied to any number of variables that may be related to mental health and well-being more generally. These include stressful life experiences and daily strains, received expressive and instrumental support, interaction with social networks, and lifestyle factors like diet and exercise. Each of

these constructs can be considered through a trajectory lens by increasing, decreasing, or remaining constant over time. Having one set of parameters to express these trends may be a useful way to summarize life experiences.

Limitations

Although the Fragile Families Study is useful for studying patterns of well-being in mothers across many relationship statuses, the sampling frame of mothers in large, urban areas may limit its generalizability. Further, despite the use of a multifaceted question-set related to relationship supportiveness, these questions are only applicable to mothers who were currently in a romantic relationship with the biological father at the specified wave. No *current* measure of supportiveness, or relationship quality, is available for non-coresident parents at each wave. Similarly, no measures of emotional support received from others, including friends and family, is available. It is possible that declines in supportiveness from fathers are offset by support garnered from others. Such counterbalancing trajectories are one possible avenue for future research.

Conclusion

As social scientists, we need to think more about the best way to summarize long-term, life-course processes, especially as more and more of our data sources become longitudinal. This paper has focused on modeling the cumulative experiences mothers have with respect to their relationships with their child's biological father. Specifically, it tested whether trajectories of perceived supportiveness were associated with subsequent mental health problems. This association does exist, but is mediated by a number of time-varying maternal and relationship characteristics, including marital status and relationship quality. Nonetheless, the results call attention to alternate ways in which longitudinal experiences can be modeled.

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Table 1

Means/Percentages and Standard Deviations for Analysis Variables (N = 2,496)

	Baseline		Year-One		Year-Three		Year-Five	
	<u>Mean/%</u>	<u>SD</u>	<u>Mean/%</u>	<u>SD</u>	<u>Mean/%</u>	<u>SD</u>	<u>Mean/%</u>	<u>SD</u>
Mental Health								
Depression (CIDI)	na		14.38		19.13		19.12	
Drug Use ^a	1.28		1.60		6.05		5.13	
Binge Drinking ^a	1.77		6.10		10.71		12.03	
Total MH Problems (0-3)	na	na	.22	(.46)	.36	(.62)	.33	(.60)
Relationship								
Characteristics								
Supportiveness ^b (1-3)	2.69	(.34)	2.54	(.50)	2.53	(.45)	2.58	(.42)
Fair ^c (1-3)	2.51	(.59)	2.35	(.65)	2.34	(.64)	2.41	(.65)
Love ^d (1-3)	2.79	(.44)	2.71	(.53)	2.68	(.55)	2.72	(.51)
Insult ^e (1-3)	2.70	(.51)	2.51	(.65)	2.50	(.63)	2.57	(.59)
Encourage ^f (1-3)	2.75	(.49)	2.61	(.65)	2.59	(.61)	2.64	(.56)
Quality ^g (0-5)	na	na	3.64	(1.23)	3.43	(1.31)	3.29	(1.36)
Marital Status								
Married	30.10		36.33		38.34		38.50	
Cohabiting	39.42		35.86		26.56		17.39	

Romantic	27.92		7.05		3.85		2.24	
None	2.56		20.75		31.25		41.87	
New Baby	na	na	5.41		25.08		32.33	
Demographics								
Race								
Black	47.59							
White	24.84							
Hispanic	23.32							
Other	3.85							
Immigrant ^h	13.26							
Age	25.42	(6.05)						
Education								
Less HS	28.04							
HS	31.41							
Some College	27.16							
College	13.38							
Poverty ⁱ	31.13		36.66		35.58		34.34	
Weekly Hours	33.20	(12.90)	33.94	(13.66)	35.43	(12.58)	36.01	(12.85)
Worked								

Notes: Variable range in parenthesis, if applicable. SD = Standard Deviation

^a At baseline, both refer to use during pregnancy.

^b Mean maternal rating of relationship supportiveness from biological father. If mother and father are no longer romantically involved score reflects supportiveness from the last month of the

relationship. Higher scores indicate higher perceived supportiveness.

^c Father is fair and willing to compromise during disagreements. Higher score indicates higher frequency.

^d Father expresses affection or love. Higher score indicates higher frequency.

^e Father insults or criticizes ideas. Reverse coded. Higher score indicates lower frequency.

^f Father encourages or helps do things important to mother. Higher score indicates higher frequency.

^g Maternal rating of relationship quality. Higher scores indicate higher quality. Asked of all mothers when father has contact with child. Not available at baseline.

^h Dummy variable indicating mother is of immigrant status.

ⁱ Dummy variable indicating mother is at or below 100% of poverty level.

Table 2

Comparison of Pre- and Post-Romantic Involvement Maternal Ratings of Relationship Supportiveness with the Biological Father

Relationship Status Until:	Baseline		Year One		Year Three		Year Five	
	<u>Mean</u>	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>	<u>N</u>
<u>A. Baseline</u>								
Involved	2.65***	3,009						
Not Involved	2.21	622						
<u>B. Year One</u>								
Involved	2.71***	2,759	2.62***	2,921				
Not Involved	2.48***	1,066	2.06	691				
<u>C. Year Three</u>								
Involved	2.73***	2,004	2.64***	2,144	2.62***	2,148		
Not Involved	2.63	528	2.52	541	2.05	484		
<u>D. Year Five</u>								
Involved	2.74	1,494	2.65	1,608	2.64*	1,610	2.61***	1,610
Not Involved	2.68	334	2.60	343	2.54	345	1.74	50

Notes: Mothers are in romantic relationships with the biological father until the wave indicated. Shaded cells indicate mothers' supportiveness ratings of the last month couples were together.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 3

Latent Growth Curve Model of Mothers' Perceived Supportiveness Trajectories on Mental Health Problems at Year Five (N=2,496)

	Model 1		Model 2		Model 3	
	β	SD	β	SD	β	SD
Year Five Mental Health Problems						
Supportiveness						
Intercept	-.35***	.06	-.08**	.03	.06	.11
Slope	-11.03***	3.03	-1.45**	.55	-5.39	3.50
MHP Year Three			.39***	.01	.71***	.04
TVC						
Baseline Support						
Cohabiting					.21*	.09
Romantic					-.02	.10
None					-.74***	.14
Poverty					-.08	.06
Hours Worked					.00	.002
TVC						
Year One Support						
Cohabiting					-.02	.09
Romantic					-.08	.12
None					-.61***	.10
Poverty					-.11†	.06
Hours Worked					-.001	.0002

New Child				-06	.09
Relationship Quality				.51***	.02
TVC					
				Year Three Support	
Cohabiting				-.28**	.10
Romantic				-.24†	.15
None				-.77***	.11
Poverty				.01	.06
Hours Worked				-.001	.00
New Child				.03	.06
Relationship Quality				.56***	.03
TVC					
				Year Five Support	
Cohabiting				-.02	.11
Romantic				-.03	.17
None				-1.17***	.19
Poverty				.07	.08
Hours Worked				.002	.002
New Child				-.06	.06
Relationship Quality				.54***	.03
Model Fit					
χ^2 (df) ^a	317.47*** (129)	697.23*** (133)	670.16*** (305)		
RMSEA	.024	.038	.022		
CFI/TLI	.977/.982	.944/.951	.914/.910		

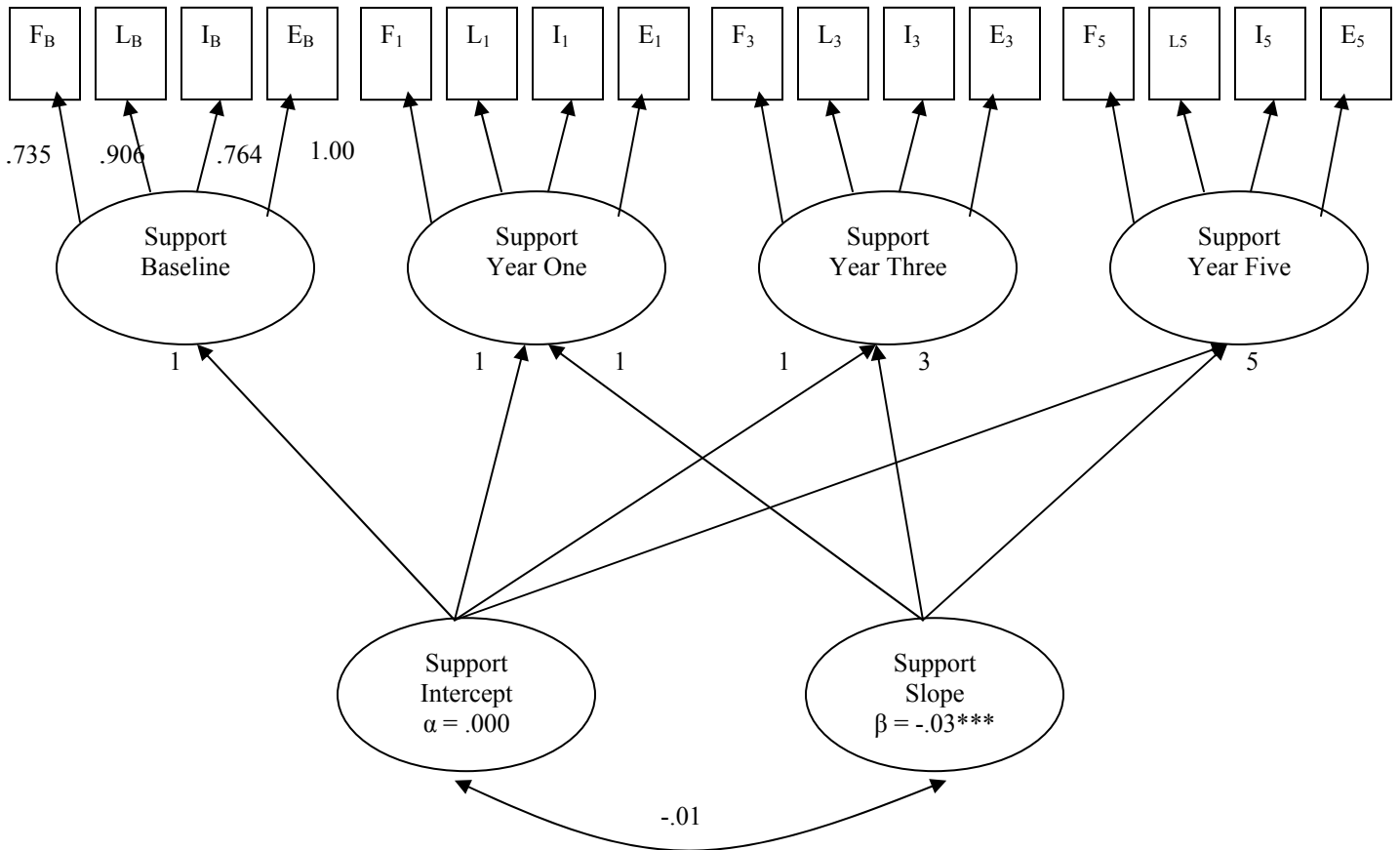
Notes: Models are nested. TVC = Time Varying Controls. TIC = Time Invariant Controls.

Model 1 includes the supportiveness growth curve, the association between the TIC and the trajectory parameters, and the association between the trajectory parameters and mental health problems at year five. Model 2 adds the association between mental health problems at year three and year five and the association between mental health problems at year five and the TIC. Model 3 adds the association between the observed trajectory components and the TVC. All models control for mother's age at baseline, education level, race/ethnicity, and immigrant status (on trajectory parameters—intercept and slope).

^a Chi-square values should not be used to compare fit across models with categorical endogenous variables.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Figure 1

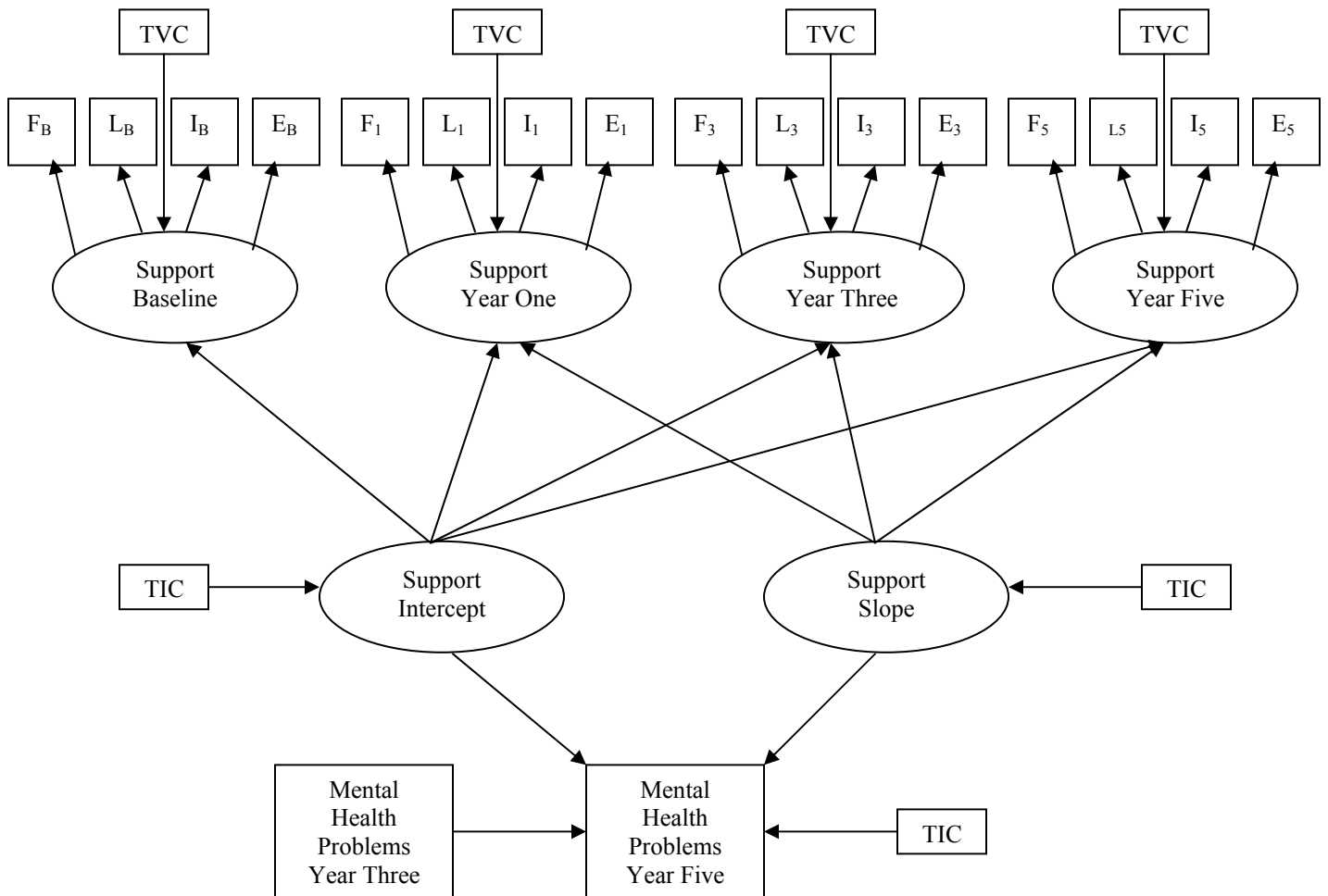
Base Latent Growth Model of Maternal Ratings of Supportiveness with the Biological Father

Notes: F = Fair; L = Love; I = Insult; E = Encourage. Subscripts indicate data wave (B = Baseline, 1 = Year One; 3 = Year Three; 5 = Year Five). Factor loadings are constrained to be equal across waves. Error variances and correlations among observed supportiveness indicators are not shown. Variances around both the intercept and slope are significant.

Model fit: $\chi^2 = 336.14$, $df = 63$, $p < .001$; RMSEA = .042; CFI/TLI = .964/.975; $N = 2,496$.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Figure 2

*Full Growth Model of Maternal Ratings of Relationship Supportiveness with the Biological**Father*

Notes: TVC = Time Varying Controls (marital status, relationship quality, poverty, weekly hours worked, additional child); TIC = Time Invariant Controls (mother's age at baseline, educational status, race/ethnicity, immigrant status); F = Fair; L = Love; I = Insult; E = Encourage. Subscripts indicate data wave (B = Baseline, 1 = Year One; 3 = Year Three; 5 = Year Five. In the interest of space, not all variance and error paths are included in the figure. Model 1 includes the supportiveness growth curve, the association between the TIC and the

trajectory parameters, and the association between the trajectory parameters and mental health problems at year five. Model 2 adds the association between mental health problems at year three and year five and the association between mental health problems at year five and the TIC. Model 3 adds the association between the observed trajectory components and the TVC. All models control for mother's age at baseline, education level, race/ethnicity, and immigrant status (on trajectory parameters—intercept and slope).