Personal Characteristics and Resilience to Economic Hardship and Its Consequences: Conceptual Issues and Empirical Illustrations

M. Brent Donnellan,[1] Katherine J. Conger,[2] Kimberly K. McAdams,[1] and Tricia K. Neppl[3]

[1]Michigan State University
[2]University of California, Davis
[3]Iowa State University

ABSTRACT   This article describes a theoretical model that links personal characteristics with resilience to economic hardship and its psychological and interpersonal consequences. This transactional model integrates social influence and social selection perspectives concerning the relation between socioeconomic circumstances and the development of individuals and families. In addition, this article discusses methodological and conceptual issues related to investigating the effects of personal characteristics in this context. Finally, initial empirical support for some of the key predictions from the proposed model are provided using longitudinal data collected from a sample of Midwestern families. Specifically, adolescent academic achievement, self-reports of Conscientiousness, and self-reports of low Neuroticism during adolescence predicted

relevant outcomes in adulthood such as less economic pressure, more satisfying romantic relationships, and less harsh parenting behaviors. These preliminary findings support the hypothesized model and extend research concerning the life course outcomes associated with personal characteristics.

Economic difficulties are associated with disruptions in psychological functioning and interpersonal relationships in adults (e.g., R. D. Conger, Rueter, & Elder, 1999; Dohrenwend et al., 1992; Karney & Bradbury, 2005) and with adjustment problems in children and adolescents (e.g., R. D. Conger et al., 1992; R. D. Conger, Patterson, & Ge, 1995; see R. D. Conger & Donnellan, 2007, for a review). The goal of this paper is to describe a theoretical framework for understanding how personal characteristics can facilitate resilience to economic hardship and its negative interpersonal and intrapersonal consequences. We also provide preliminary empirical support for our model using a prospective longitudinal data set to illustrate how the hypothesized connections play out during early adulthood, a time when most individuals assume the roles of worker, committed romantic partner, and, in some cases, parent or caregiver.

LINKING ECONOMIC HARDSHIP TO THE DEVELOPMENT OF FAMILIES AND INDIVIDUALS

We begin by explaining the conceptual model that initially guided our thinking about the processes linking socioeconomic conditions and human development—the Family Stress Model (R. D. Conger et al. 1992; for a thorough review, see K. J. Conger, Rueter, & Conger, 2000). We then describe the recent extensions of this model that have explicitly incorporated personal characteristics into our theorizing about the connections between economic conditions and psychological development (R. D. Conger & Donnellan, 2007). This conceptual background is important, following Luthar, Cicchetti, and Becker (2000), who argued that mechanisms of resilience are best understood using a broader theoretical framework. The virtue of a conceptual model is that it allows researchers to identify specific points in an unfolding process whereby personal characteristics are most relevant to processes of risk and resilience.

The Family Stress Model (FSM) links economic conditions with the psychological development of families and individuals (see Figure 1). Underlying the model is the idea that objective economic
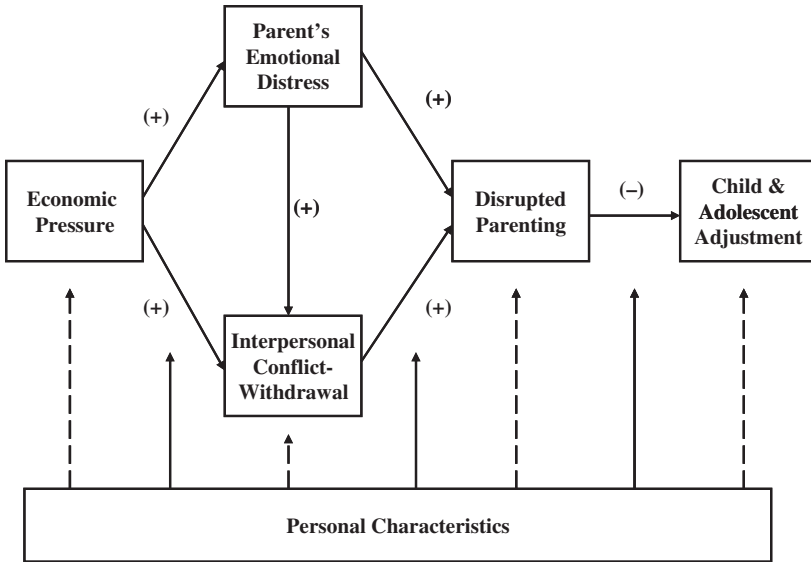
Figure 1
The Family Stress Model (modified from Conger & Conger, 2002). Dashed arrows from personal characteristics indicate statistical main or compensatory effects, and completed arrows from resources indicate statistical interaction, moderating, or buffering effects.

conditions such as low income and job loss create economic pressures, which, in turn, generate intrapersonal distress and interpersonal conflicts. According to the FSM, economic pressure is the key conduit by which objective socioeconomic conditions are given psychological reality in the lives of individuals and families. Indeed, one of the basic tenets of the FSM is that economic pressure has an adverse influence on interpersonal processes in close relationships such as romantic unions and parent–child relationships.

   Support for the FSM initially came from two sets of analyses conducted in Iowa (R. D. Conger et al. 1992, 1993). In both of these analyses, the findings were consistent with the idea that conditions of economic hardship exert their statistical effects on child and adolescent adjustment primarily through the mechanisms of adult emotional distress, marital conflict, and disrupted parenting. Since that time, predictions from the FSM have been empirically supported in several studies using diverse populations (see R. D. Conger & Donnellan, 2007). For example, R. D. Conger et al. (2002) found evidence consistent with the FSM in a sample of predominately rural African

American families whereas Parke et al. (2004) found supportive evidence in a sample of Mexican American families. International studies in the Czech Republic and Finland have also supported the FSM (Lorenz, Hraba, Conger, & Pechacova, 1996; Solantaus, Leinonen, & Punamäki, 2004). More broadly, evaluations of income supplementation have shown positive effects for children in poverty as would be predicted by the FSM (e.g., Gennetian & Miller, 2002).

All in all, the FSM is an empirically supported model that offers one explanation as to how economic conditions are associated with disruptions in family processes and individual well-being. In addition to evidence for the basic process model, previous research has found evidence of variability in how families and individuals respond to economic pressure (e.g., R. D. Conger & Conger, 2002; R. D. Conger et al., 1999). Indeed, economic difficulties, just like stressful life events of all kinds, do not have precisely the same effects on all families and individuals (see, e.g., Kim-Cohen, Moffitt, Caspi, & Taylor, 2004). Some families show considerable signs of disruption whereas others seem to weather economic challenges without showing many signs of distress and disturbance. Some people may become angry, withdrawn, and hopeless in the face of economic pressures, whereas other people may remain relatively optimistic and even adopt a proactive form of problem solving to deal with their economic difficulties. Such variability suggests that individual differences may play a role in the processes outlined by the FSM.

Given this increasing recognition of individual differences, the bottom box in Figure 1 incorporates main and moderating effects for personal characteristics into all of the processes articulated by the FSM (see R. D. Conger & Conger, 2002). (Note that not all possible main and moderating effects of personal characteristics are depicted to enhance figure clarity.) Main effects are indicated by dashed lines from personal characteristics to the major constructs of the FSM (i.e., the boxes in Figure 1). For example, individuals who have a predisposition to more readily experience negative emotions might be involved in more distressed relationships than individuals who are less susceptible to negative emotions (Donnellan, Assad, Robins, & Conger, 2007). Moderating effects are indicated by solid lines from personal characteristics to the theoretical pathways depicted in Figure 1. These are cases in which individual characteristics may either strengthen or attenuate the links specified by the FSM. For instance, emotionally stable individuals may be less likely to allow

conflicts in their relationships to spill over to disrupt parent–child relationships and parenting responsibilities.

Consistent with the main and moderating effects suggested in Figure 1, there is an emerging appreciation for individual differences in the social sciences (e.g., Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). For example, Ensel and Lin (1991) noted that personal characteristics can have "stress-suppressing" effects, and Thoits (2006) suggested that characteristics including positive self-views help individuals effectively solve problems and otherwise buffer the consequences of stressful life events. In terms of the specific case of economic conditions, certain personal characteristics may protect individuals from economic hardship by promoting more success in work and employment contexts (e.g., Roberts, Caspi, & Moffitt, 2003; Schmidt & Hunter, 1998). These considerations underscore the point that individual differences should be an important consideration of a fully articulated model linking economic conditions, family processes, and human development.

As such, our recent theorizing about the connections between economic conditions and human development has explicitly incorporated personal characteristics by adopting a transactional perspective (R. D. Conger & Donnellan, 2007).[1] To be sure, the original FSM was rooted in the social influence (or social causation) tradition, which predicts that social conditions create variations in social, emotional, cognitive, and physical functioning. The antithesis of this tradition is in perspectives that posit that individual differences in cognitive abilities and personality characteristics cause individuals to select or create particular social contexts (e.g., Scarr & McCartney, 1983). This view is often called the social selection perspective, and, when pressed to its extremes, this view can suggest that associations between socioeconomic status (SES) and developmental outcomes are causally spurious (see, e.g., Rowe & Rodgers, 1997).

It is perhaps easiest to understand the social selection perspective and spuriousness argument by considering socioeconomic

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[1]Conger and Donnellan (2007) used the term *interactionist* to describe their proposed model. We have elected to use the term *transactional* in this report to avoid any confusion between the conceptual and statistical uses of the word *interaction*. Following Caspi (1998, p. 355), we note that terms associated with transaction are methodologically neutral and should not lead readers to expect a particular type of statistical analysis such as moderated multiple regression.

conditions as a constellation of outcomes that are potentially influenced by personal characteristics such as intelligence and personality attributes. Likewise, if personal characteristics are also associated with family functioning, then there is the possibility that links between economic conditions and family processes are causally spurious. Furthermore, if personal characteristics can be passed to children (either by genetic transmission or other mechanisms such as social learning), then there is the possibility that links between economic circumstances and child outcomes are also spurious (e.g., Mayer, 1997). Thus, the social selection perspective offers a sharp alternative to the social influence perspective.

The tension between social influence and social selection perspectives is similar in form to debates over nature versus nurture or person versus situation that permeate most branches of the social sciences. All three debates are cases where the causes of behavior are attributed to either internal or external causes (see Turkheimer, 2004). It seems to us that such clean dichotomies are hard to reconcile with existing evidence. The strict social selection perspective minimizes the role that socioeconomic circumstances, such as economic catastrophes and windfalls, play in the lives of parents and children (see, e.g., Costello, Compton, Keeler, & Angold, 2003), whereas the strict social influence perspective does not place enough emphasis on the importance of individual differences in cognitive ability, personality (see, e.g., Roberts et al., 2007), and human agency (e.g., Thoits, 2006).

To account for these considerations, we have recently proposed that the links between economic conditions and human development involve a dynamic interplay between social selection and social influence processes as they play out across the life span (R. D. Conger & Donnellan, 2007). This perspective is quite consistent with recent theorizing in personality development that posits roles for both internal and external factors (see, e.g., Roberts & Pomerantz, 2004). Our perspective is also broadly consistent with the transactional perspectives long espoused by Sameroff (e.g., Sameroff, 2000; Sameroff & Chandler, 1975). The heart of this approach is the notion that "developmental outcomes are neither a function of the individual alone nor a function of the experiential context alone" (Sameroff & MacKenzie, 2003, p. 614).

Figure 2 displays a version of the framework that has guided our recent thinking about the life course dynamics connecting personal characteristics to the processes articulated by the FSM. For example,

Experiences and Characteristics
Present in Childhood
and Adolescence

Processes during Adulthood in
the Family of Destination
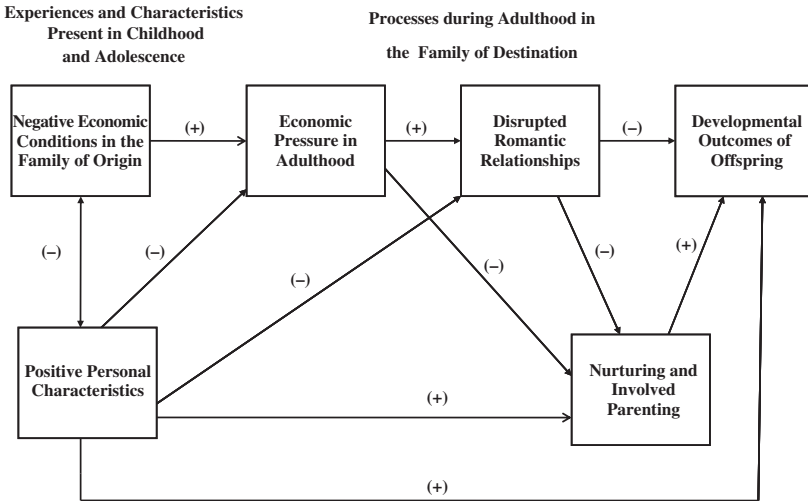
Figure 2
A transactional model linking personal characteristics, economic
conditions, interpersonal processes, and child outcomes (modified
from R. D. Conger & Donnellan, 2007).

social selection mechanisms are captured by the pathways from personal characteristics to economic pressure and from pathways between personal characteristics and interpersonal processes. In short, the framework in Figure 2 posits that personal characteristics have effects on three of the major components of the FSM—economic pressure, marital relationships, and parent–child relationships. These paths are consistent with classic theoretical suggestions by Belsky (1984) that parental personality characteristics are associated with marital relationships, parenting, and working conditions in his model of the determinants of parenting (see his Figure 1, p. 84). In addition to depicting paths from personal characteristics to economic conditions and interpersonal processes, the model in Figure 2 also includes a direct pathway between the personal characteristics of parents and the later developmental outcomes of their offspring (i.e., the link between personal characteristics in adolescence and developmental outcome of offspring). Genetic transmission may be a major part of this direct pathway, as could social learning mechanisms (e.g., Mayer, 1997).

It is worth noting why we specify an important role for personal characteristics that are evident in childhood and adolescence in

Figure 2. Quite simply, we believe that prospective connections between personal characteristics and later functioning in adulthood provide some of the more convincing evidence for the importance of individual differences. This proposition follows from the logic outlined by Kraemer et al. (1997) stipulating that terms like *risk factors* implicitly involve temporal ordering: A true risk factor must precede the outcome of interest. Likewise, it seems reasonable that personal characteristics that are hypothesized to play a role in the process of resilience in the form of protective factors or promotive factors (Sameroff, 2000, p. 308) should also show a similar temporal precedence. Temporal precedence highlights the postulate that individual characteristics can have prospective effects through transactions with social contexts such as environmental selection and manipulation (see, e.g., Caspi, Roberts, & Shiner, 2005). Moreover, an emphasis on temporal ordering encourages the use of more rigorous designs (i.e., long-term longitudinal studies) for evaluating these ideas.

Social influence mechanisms are also evident in our proposed model. Specifically, Figure 2 stipulates a link between economic pressure and disrupted romantic relationships and a link between economic pressure and disrupted parenting practices. We propose that these links will persist even when controlling for personal characteristics. In other words, we posit that interpersonal processes in families have an influence on the development of children and adolescents above and beyond just genetic transmission and social learning mechanisms. In addition, Figure 2 depicts the prediction that economic pressure in one generation will be linked with economic pressure in the next generation. In sum, Figure 2 represents one version of an integrated perspective on how social selection and social influence processes can co-occur in a dynamic process that links socioeconomic conditions and human development.

Figure 2 also serves as an explicit characterization of how personal characteristics are directly related to the major components of the FSM (namely, economic pressure, qualities of mothers' and fathers' romantic relationship, and parenting processes) by way of a life span developmental perspective. In fact, many of the primary variables of the FSM are endogenous variables in the transactional framework depicted in Figure 2. The added twist is that Figure 2 makes the temporal ordering of variables explicit, so that longitudinal studies that have followed participants from their families of origin to their families of destination can be used to evaluate the

propositions of the transactional model. One of the key differences between Figure 1 and Figure 2 is that Figure 2 offers an expanded perspective on developmental processes and specifies explicit roles for social selection mechanisms.

In a subsequent section, we provide preliminary empirical support for some of the pathways proposed in Figure 2. Specifically, we examine how personal characteristics evident in adolescence are associated with economic pressure, romantic relationship functioning, and parenting. Our goal is to illustrate how personal characteristics may promote resilience to economic hardship and its consequences using Figure 2 as a heuristic guide. We conceptualize resilience as "a dynamic process encompassing positive adaptation within the context of significant adversity" (Luthar et al., 2000, p. 543). Following in this tradition, we apply the term *resilient* to developmental outcomes rather than individuals themselves. Certain personal characteristics may facilitate resilience; nonetheless, we emphasize that developmental outcomes are the result of an inherently dynamic, probabilistic, and multiply determined set of processes. This perspective will turn out to have an important consequence for empirical research in the form of our expectations for observed effect sizes.

WHAT DO WE MEAN BY PERSONAL CHARACTERISTICS?

We use the term *personal characteristics* to refer to relatively enduring individual differences in patterns of thinking, feeling, and acting that tend to show coherence and consistency from relatively early in childhood through old age. This definition is consistent with contemporary definitions of personality traits that follow in the tradition of Allport (1937; see Funder, 1991). Personality traits of the sort captured by inventories of the Big Five are a major type of personal characteristic familiar to personality psychologists; however, we also consider cognitive abilities and beliefs about the self such as feelings of mastery (K. J. Conger, Williams, Little, Masyn, & Shebloski, 2009) and global self-esteem (Trzesniewski et al., 2006) under the broad umbrella of personal characteristics. To our minds, the defining aspects of personal characteristics are that they are attributes that demonstrate (a) individual variation; (b) relative stability across development; and (c) broad relevance to adaptation in the important domains of life such as work, relationships, and psychological

health. We do not view personal characteristics as simply inborn attributes that are somehow immutable or unresponsive to contextual features; rather, we see them as dynamic characteristics that tend to develop early in life and show reciprocal relations with an individual's social contexts (e.g., Caspi, 1998).

Masten (2001) noted that a small set of individual characteristics have been linked to demonstrations of resilience. These psychological qualities include "cognitive and self-regulation skills, positive views of self, and motivation to be effective in the environment" (p. 234). We try to capture several of these characteristics in our empirical illustrations using measures of the Big Five personality trait domains and a measure of cognitive ability. The advantages of using the Big Five domains is that they are well known to personality psychologists and they have been associated with a wide range of real world outcomes (see Ozer & Benet-Martínez, 2006; Roberts et al., 2007). Similarly, it is often argued that the Big Five can serve as a useful organizing framework for locating the myriad individual differences studied in the social sciences (see Ozer & Reise, 1994), and the Big Five domains do seem to capture many of the attributes associated with resilience as identified by Masten (2001). For example, the domain of Conscientiousness incorporates good self-regulation skills and a motivation to be effective whereas low Neuroticism captures certain aspects of emotional regulation and positive views of the self (Watson & Clark, 1984). In addition to personality predictors, we also consider the role of cognitive abilities (indexed by adolescent achievement test scores) in our examples. Cognitive ability measures are among the best individual difference predictors of job performance (e.g., Hunter & Schmidt, 1996; Judge, Higgins, Thoresen, & Barrick, 1999) and are therefore likely to be important factors in predicting socioeconomic outcomes in adulthood. To be sure, Werner (1995) noted that "intelligence and scholastic competence are positively associated with the ability to overcome great odds" (p. 82).

CHARACTERIZING THE EFFECTS OF PERSONAL CHARACTERISTICS: CONCEPTUAL AND STATISTICAL ISSUES

Masten (2001) made important conceptual and statistical distinctions between *compensatory* and *buffering* effects of personal

characteristics. Compensatory effects refer to main effects of personal characteristics whereas buffering (or moderating) effects refer to statistical interactions involving personal characteristics (Masten, 2001). Compensatory effects are analogous to the seemingly ''direct'' effects of certain characteristics on developmental outcomes such as the link between conscientiousness and job performance. Statistical evidence for direct effects for personal characteristics on developmental outcomes likely means that more proximal intervening processes are involved. As such, the hypothesized main effects for personal characteristics as outlined in Figure 2 are intended to reflect the net outcomes of complicated person–environment transactions whereby certain characteristics help individuals create, modify, and shape social conditions. In contrast to compensatory effects, buffering effects occur, for example, when personal characteristics moderate the deleterious impact of adverse conditions on developmental outcomes.

To further illustrate the difference between buffering and compensatory effects, we draw on two relevant illustrations. In terms of compensatory effects, there is a long tradition in the social sciences suggesting that self-esteem is implicated in better adjustment (e.g., Greenberg, 2008; Rosenberg, Schooler, & Schoenbach, 1989). Trzesniewski et al. (2006) recently investigated the young adult outcomes associated with self-esteem in adolescence in a birth cohort from New Zealand. They found that high adolescent self-esteem predicted a reduced risk for internalizing and externalizing problems. In addition, adolescent self-esteem was positively associated with educational attainment at age 26. These main effects held in models controlling for low SES in the family of origin, suggesting that high self-esteem had an independent effect on the successful transition to adulthood. These findings are broadly consistent with the suggestion by Masten (2001) that positive views of the self are related to resilience processes (see also Werner, 1995).

A second example suggests that personal characteristics may moderate a key prediction stemming from the FSM—the idea that socioeconomic disadvantage disrupts effective and developmentally supportive parenting practices. Kochanska, Aksan, Penney, and Boldt (2007) evaluated statistical interactions involving parental personality characteristics and ecological adversity when predicting the parenting of young children. Ecological adversity was an index that included family income and family size. As expected, ecologi-

cal adversity was negatively associated with warm and affectionate parenting. However, parental optimism buffered this effect such that there was no association between ecological adversity and parental warmth for mothers and fathers who scored at least 1 SD above the mean on optimism. Thus, there is emerging evidence that high levels of optimism may attenuate the link between socioeconomic disadvantage and suboptimal parenting. This buffering effect compliments existing work showing that optimism has associations with health and well-being (see Carver & Scheier, 2002) and romantic relationships (e.g., Assad, Donnellan, & Conger, 2007).

It is worth noting that evidence for the compensatory effects of personal characteristics is typically much more robust than evidence of buffering effects. The reasons are primarily statistical, given that it is easier to find evidence of main effects compared to interactive effects in field studies (McClelland & Judd, 1993). The explanation boils down to issues of effect size and statistical power. In terms of expected effect sizes, it is safe to assume that the strength of interactions involving personal characteristics will be fairly modest (Chaplin, 2007) and will not usually involve a complete cross-over of effects. McClelland and Judd (1993) noted that, "it may not be reasonable theoretically to presume that coping responses . . . can be so strong as to make stressful life events have an antidepressant effect" (p. 377).

In terms of power, the reality is that it can be difficult to reliably detect interaction effects with the sample sizes that are typically used in current research (McClelland & Judd, 1993). Moreover, the pernicious effects of measurement error on the ability to detect effects are amplified when interaction terms are created (Aiken & West, 1991). Cohen, Cohen, West, and Aiken (2003) remarked that "for a small effect size interaction, the required sample size for .80 power to detect an interaction may exceed 1000 cases when the reliabilities of the individual predictors are each .80!" (p. 297). These caveats are helpful for researchers who are reviewing the existing literature and planning future studies. In that vein, the best advice is that the absence of evidence is not equivalent to evidence of absence and that future studies interested in interactions should plan to obtain very large sample sizes and use high quality measures. Given these statistical concerns, we focus on the statistical main effects of personal characteristics in Figure 2 and in our empirical examples.

A final methodological issue concerns the actual size of the "direct" effects associated with personal characteristics. For example,

many correlations between personality traits and outcomes of real-world significance such as divorce, mortality, and SES (Roberts et al., 2007) are generally labeled ''small'' to ''medium'' when using conventional labels and rules of thumb (see McCartney & Rosenthal, 2000). However, the interpretation of the so-called personality coefficient is a contentious issue (e.g., Funder & Ozer, 1983; Sarason, Smith, & Diener, 1975).[2] The debate boils down to whether one should equate correlations in the range of .20 to .30 with theoretically unimportant and practically trivial effects. As we noted, all of the outcomes depicted in Figure 2 are multiply influenced variables, and Ahadi and Diener (1989), using a Monte Carlo study, demonstrated that large effects are not to be expected in such instances. In the case of the associations posited in Figure 2, we believe that ''small'' effects for personal characteristics are theoretically meaningful and practically consequential.

STUDYING INDIVIDUALS AND FAMILIES THROUGH TIME (1989–PRESENT)

The data used to provide empirical illustrations for some of the pathways depicted in Figure 2 were obtained from participants in the Iowa Youth and Families Project (IYFP). The IYFP began as study of 451 families based in rural Iowa and provided the initial support for the Family Stress Model (see R. D. Conger et al., 1992, 1993). A complete description of this project is available in R. D. Conger and Elder (1994). This panel study started in 1989, when the target child was in the seventh grade. Targets, their parents, and one near-age sibling were studied annually from 1989 to 1992. Families were selected because they lived in areas of Iowa that were heavily dependent on agriculture, a sector of the U.S. economy that was hit by economic decline in the 1980s. Given the ethnic structure of rural Iowa at that time, all of these families were of European origin. In addition to the questionnaire-based assessments, observational data were gathered from the family members, which were then coded using the Iowa Family Interaction Rating Scales (Melby & Conger, 2001).

[2]One of the more ironic twists in this debate is that a summary of meta-analytic findings in social psychology concluded that the mean situational effect size was .22 (Richard, Bond, & Stokes-Zoota, 2003, p. 337).

In 1994, the sample from the IYFP was combined with the Iowa Single Parent Project and rechristened the Family Transitions Project.[3] Data collection continues to the present day as targets have gradually transitioned to adulthood (extensive data are usually collected every other year on targets). Thus, there is a wealth of data related to these target individuals, and the information necessary to thoroughly evaluate the model proposed in Figure 2 is starting to become available. We caution, however, that relevant sample sizes will increase in future waves as more and more targets enter into stable romantic unions and have children. Thus, the analyses reported here are preliminary attempts to gauge the level of support for some of the predictions depicted in Figure 2. These analyses are not intended as the last word on the empirical evaluation of the model.

In general, we use measures from the IYFP obtained from 1990 to 1994 (see below) to predict adult outcomes using data from 2005, a wave in which a total of 396 individuals from the IYFP provided some information to the project (7 participants have died since 1989; 2%).[4] Approximately 68% of the 451 original IYFP seventh graders were married ($n = 253$) or cohabiting on a full-time basis ($n = 52$) in 2005; however, 287 of these participants (i.e., 64% of the 451 IYFP participants) and 279 of their romantic partners (i.e., 62% of the 451) provided questionnaire data on relationships. An additional couple was excluded because they provided conflicting reports of their level of commitment.

<center>Brief Description of Measures</center>

Economic Conditions in the Family of Origin

Economic pressure.   Economic pressure was measured using three variables that are commonly used in reports from the Iowa Youth and Families Project (see, e.g., R. D. Conger et al., 1992, 1993).

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[3]The analyses in this report are restricted to the IYFP because those members completed a standard measure of the Big Five traits during adolescence. Moreover, given the timing of personality measurement, we do not use variables measured in 1989.

[4]Those who died scored unusually low on Conscientiousness. We z-scored Big Five scores within gender to calculate effect sizes. The group that died had an average z score of $-.82$ ($SD = 1.12$) compared to an average z score of .01 ($SD = .99$) for the group that was alive in 2005 ($d = .84$, $p < .05$). No other comparisons were statistically significant.

Measures were separately completed by the mothers and fathers of the targets (when available) and then averaged to create household indices of economic hardship. This composite captured the degree to which material needs were left unmet, the degree to which financial obligations were not met, and whether financial cutbacks and sacrifices were made in the past year in several important domains (e.g., reduced health care expenditures and reduced payments on debts). We used a summary score that was the average of the 1990, 1991, 1992, and 1994 composites for Economic Pressure. We had scores on this measure for 438 participants.

Family of origin per capita income.   Income from all sources for 1990, 1991, 1992, and 1994 was calculated from an extensive reporting of family finances and then divided by household size to obtain a measure of per capita income at each wave (median per capita income ranged from $7,599.38 in 1990 to $10,760.20 in 1994). Families could have negative per capita incomes if their total farm receipts were less than total farm operating expenses. However, this was rare and occurred for 2, 7, 9, and 9 families, respectively, in 1990, 1991, 1992, and 1994. A summary per capita income in the family of origin was calculated by taking the average of the four assessments (mean: $9,747.15, $SD = $6,609.48$, median $8,500.94, range: $-31,391.67$ to 61,768.75).[5] This measure was available for 438 participants. Family of origin income and economic pressure in the family of origin were negatively correlated ($r = -.43$). Although there was considerable variation in income, no more than 29% of the families at any wave from 1991 to 1994 had income-to-needs ratios below 150% of the poverty line.

Personal Characteristics in Adolescence

Big Five traits.   In 1991 and 1992, the target youth completed the 60 items of the NEO-FFI (Costa & McCrae, 1989) using a 5-point scale ($1 = $ *strongly agree*, $5 = $ *strongly disagree*). Items from the NEO-FFI were spread across the 1991 and 1992 assessments to reduce respondent burden; however, the bulk of the NEO-FFI items were completed in 1991. The internal consistencies of these scales ranged from .70 (Openness) to .85 (Neuroticism). All items were scored so that

[5]Results were essentially the same whether we used raw income scores or used the natural log of income after setting negative scores to 1.

higher scores indicated higher levels of a trait. Big Five trait scores were available for 403 to 423 participants depending on the trait.

Achievement test scores. Academic achievement was measured using the overall percentile rank from the Iowa Tests of Educational Development in 1990, 1991, and 1992. For analyses, we used the average of the three scores because achievement scores were extremely stable as assessed by retest correlations (e.g., the correlation between the 1991 and 1992 assessments was .93). Achievement test scores were available for 427 participants.

Outcomes in 2005

Economic pressure. Economic pressure was assessed using items that parallel the measures used to assess economic pressure in the family of origin. Measures were separately completed by both targets and their romantic partners when available (for those participants in unions with shared resources) and then averaged to create household indices of economic hardship. We had reports of economic pressure in 2005 from 359 of the original participants in the IYFP (80% of the original sample). Economic pressure was negatively associated with per capita income in 2005 ($r = -.38$).

Negative relationship interactions. Target participants completed a measure of the frequency with which they engaged in eight behaviors toward their romantic partner (e.g., "Shout or yell at him/her because you were mad at him/her") during the last month using a 7-point scale ($1 = $ *always* to $7 = $ *never*). This measure was coded so that higher scores reflected a greater frequency of high hostile/low warmth interactions ($\alpha = .89$). In addition, romantic partners of the target participant completed an informant-report version of this measure in which they reported on the behavior of the focal participant (for further details on these measures, see Donnellan et al., 2007). This measure was internally consistent ($\alpha = .91$) and was correlated with focal reports of the same behaviors ($r = .55$). These measures were also correlated with self-reports of relationship quality ($r = .65$ for target participants and $r = .75$ for informant reports). For primary analyses we used a composite of the target's negative interactions calculated as the average of self- and informant reports.

Relationship quality.   Global evaluations of the romantic relationship were measured using five items modified from Quality of Marriage Index (Norton, 1983). Target participants and their partners indicated how much they agreed with five statements about the relationship using a 5-point scale (1 = *strongly agree* to 5 = Strongly Disagree). Sample items include "We have a good relationship." Items were coded so that higher scores reflected a more positive evaluation of the romantic union. Self-reports from targets and their romantic partners were internally consistent (αs $\geq$ .96) and strongly correlated within the dyad (r = .63). For primary analyses we used a composite measure that was the average of self-reports and partner reports of relationship quality.

Observed harsh parenting (1997–2005).   Target participants who had children participated in videotaped parent–child interactions from 1997 through 2005 with their first-born child. Observational codes derived from the "clean up task" were used to construct a measure of observed harsh parenting. After playing with various developmentally appropriate toys alone, an interviewer joined the child in play. The interviewers were instructed to dump out all of the toys in order to set up the task. Interviewers then retrieved the parent and instructed the parent that his or her child needed to clean up the toys alone, but parents could provide any assistance necessary. The task lasted 5 min for 2-year-olds and 10 min for 3- to 5-year-olds. Trained observers rated the quality of interactions during this task using the Iowa Family Interaction Rating Scales (Melby & Conger, 2001). Harsh parenting was constructed from six observed codes (α = .95), and it captured angry, critical, insensitive, and hostile behavior on the part of the parent to her or his child. To maximize sample size, the harsh parenting variable was created from the first time a videotaped interaction occurred between a target and her or his first child (N = 218). Thus, the video interaction may have occurred anywhere from 1997 to 2005 because target participants had children at different points in their lives. The majority (approximately 73%) of harsh parenting observations were taken after 2000. Children averaged just over 2.2 years of age at first assessment (47% were girls).

Analytic Strategy

We used a mixture of correlational and regression analyses for our empirical illustrations. We started with an examination of zero-order

correlations focusing on the associations for the theoretically relevant personal characteristics predicting the outcomes in question. For example, we examined Conscientiousness when predicting adult economic pressure and Neuroticism when predicting relationship functioning. We then used multiple regression analyses to calculate independent effects controlling for economic conditions in the family of origin as well as gender.

As a last step, we conducted exploratory analyses to see if additional Big Five predictors were relevant to the outcomes in question. That is, any remaining personality predictors were added to the basic model to see if they accounted for additional variance in outcomes. The practical issue is that controlling for variance that is shared among the Big Five traits can create interpretational difficulties when all Big Five trait measures are entered simultaneously in any given model. Although the Big Five are thought to be orthogonal traits at a conceptual level, measures of the Big Five are not completely independent in practice (see Funder, 2001). The degree of correlation between the dimensions varies somewhat with different Big Five instruments, and difficulties arise when one tries to psychologically interpret the independent effects in such a case of correlated predictors. Thus, we first tested the most conceptually or theoretically relevant personality predictor(s) and then examined whether additional Big Five predictors added incremental validity to the prediction of the relevant outcomes. However, we examined all Big Five domains separately for predicting parenting, given that the literature is not developed enough to provide a clear rationale for selecting focal traits for such a hierarchical strategy.

ILLUSTRATION 1: CONSCIENTIOUSNESS AND ACADEMIC ACHIEVEMENT IN ADOLESCENCE ARE ASSOCIATED WITH LESS ECONOMIC PRESSURE IN YOUNG ADULTHOOD

Figure 2 displays a hypothesized pathway between positive personal characteristics earlier in development and later economic pressure. Conscientiousness seems like a good candidate for such a role, given that there is considerable evidence linking Conscientiousness with success in the achievement domains of life including success at school (e.g., Noftle & Robins, 2007) and work (e.g., Barrick, Mount, & Judge, 2001). Likewise, cognitive ability is thought to be robust

Table 1

Self-Reports of Conscientiousness and Academic Achievement in Adolescence Predict Economic Pressure in Adulthood Controlling for Family of Origin Economic Conditions

Predictor	Zero-Order Correlation (r)	Standardized Regression Coefficient (β)
Conscientiousness in 1991	− .19*	− .12*
Academic achievement (1990–1992)	− .27*	− .20*
Family of origin income (1990–1994)	− .12*	− .02
Family of origin economic pressure (1990–1994)	.24*	.16*
Gender (1 = *male*)	− .02	− .05
R^2		.12

Note. Economic pressure was assessed in 2005. $N = 341$.
*$p < .05$.

predictor of adjustment in the agentic domains of adult life (see, e.g., Judge et al., 1999). Thus, it seems plausible that both Conscientiousness and adolescent academic achievement may promote reduced economic pressure in adulthood. The results of the relevant analyses are reported in Table 1.

Consistent with our predictions, there was a correlation between Conscientiousness and economic pressure in 2005 as seen in Table 1. Adolescents who reported that they were organized, dutiful, and motivated to achieve reported less economic pressure in adulthood. Nonetheless, the effect was small, as we anticipated. Likewise, Achievement Test scores were negatively associated with economic pressure. Moreover, self-reports of Conscientiousness and Achievement Test scores had independent effects for statistically predicting economic pressure in regression analyses (see Table 1). Table 1 also suggests that there is an enduring legacy of economic pressure experienced in adolescence because economic pressure in the family of origin predicted economic pressure in the family of destination in 2005, even controlling for individual characteristics, a finding consistent with the model in Figure 2. Of interest is the fact that family of origin income did not predict later economic pressure in multivariate analyses with family of origin economic pressure. This pattern of results is consistent with the contention embedded in the

Family Stress Model (see Figure 1) that economic pressure is the primary conduit (or statistical mediator) of links between objective economic conditions and family processes and later psychological outcomes. Finally, as previously outlined, we evaluated whether the other four Big Five characteristics added incremental validity for predicting economic pressure in 2005 using a hierarchical regression strategy. In this case, the additional four traits did not improve prediction at conventional levels ($\Delta R^2 = .02$, $p = .12$).

ILLUSTRATION 2: ADOLESCENT PERSONALITY CHARACTERISTICS ARE ASSOCIATED WITH SATISFYING ROMANTIC RELATIONSHIPS IN YOUNG ADULTHOOD

The model in Figure 2 posits that personal characteristics are associated with interpersonal processes in adulthood, including disrupted relationships. Indeed, a topic of perennial interest to researchers associated with the IYFP has to do with the correlates of successful or dysfunctional romantic relationships (e.g., R. D. Conger, Cui, Bryant, & Elder, 2000; Donnellan et al., 2007), and there is also a long tradition of research that has pointed to associations between personality characteristics and relationship quality (e.g., Cooper & Sheldon, 2002; Karney & Bradbury, 1995). Karney and Bradbury (1995) noted that "whether other personality variables account for significant variance in marital outcomes after controlling for neuroticism remains to be examined" (p. 21). Indeed, Heller, Watson, and Ilies (2004) conducted a meta-analytic review of the association between the Big Five personality traits and marital satisfaction (see also Karney & Bradbury, 1995) and found that Neuroticism was the strongest Big Five correlate of marital satisfaction based on a synthesis of 40 studies involving 7,640 people (measurement error corrected correlation = − .29). Findings from IYFP are consistent with previous research, as we have found evidence that personal characteristics related to the tendency to easily experience negative emotions in adulthood (i.e., negative emotionality; see Donnellan et al., 2007) are associated with relationship difficulties in adulthood. No previous studies from this project have examined whether Neuroticism in adolescence predicts relationship variables in 2005.

Consistent with our predictions, there was a correlation between Neuroticism and both negative interactions and relationship quality

Table 2
Self-Reports of Neuroticism in Adolescence Predict Indices
of Relationship Distress in Young Adulthood

	Couple Average Negative Interactions		Couple Average Relationship Quality		Couple Average Relationship Quality with Negative Interactions as a Mediator	
	r	β	r	β	r	β
Neuroticism	.22*	.17*	− .20*	− .16*	− .20*	− .03
Academic achievement (1990–1992)	− .17*	− .11	.23*	.14*	.23*	.07
Family of origin income (1990–1994)	− .06	− .04	.16*	.12	.16*	.09*
Family of origin economic pressure (1990–1994)	.07	− .03	− .14*	.02	− .14*	− .00
Economic pressure (2005)	.26*	.22*	− .30*	− .25*	− .30*	− .09*
Gender (1 = *male*)	− .09	− .05	.03	.01	.03	− .03
Negative interactions (2005)	—	—	—	—	− .76*	− .72*
R^2		.12		.16		.60

Note. Relationship variables were assessed in 2005. $N = 252$.
*$p < .05$.

in 2005 as seen in Table 2. There was also an association for cognitive ability, as seen in Table 2, which was not anticipated. Consistent with Figure 2, there was a correlation between economic pressure in 2005 and relationship quality in 2005. This association is of particular significance as it is a cornerstone of the FSM that economic pressure disrupts interpersonal processes in intimate unions.

Neuroticism remained a statistically significant predictor of relationship outcomes in multivariate analyses. Moreover, a key prediction embedded in Figure 2 is that personality and economic pressure each will have independent effects on relationship variables, and this

prediction was supported as both Neuroticism and economic pressure had independent effects for predicting both negative interactions and relationship quality. Another prediction from Figure 2 is that economic conditions in the family of origin will primarily transmit their effects on subsequent interpersonal processes in adulthood by increasing the risk for economic pressure in adulthood. A statistical consequence of this prediction is that the statistical effects of family of origin variables should be attenuated in a multivariate analysis that includes adult economic pressure. Consistent with this idea, the effects of family of origin variables were diminished in multivariate analyses. We then evaluated whether the other four Big Five characteristics added incremental validity for predicting adult relationship variables using a hierarchical regression strategy and found no indication that the additional four traits improved prediction at conventional levels (for negative interactions: $\Delta R^2 = .03$, $p = .06$; for relationship quality: $\Delta R^2 = .03$, $p = .08$).

Finally, we tested a model in which negative interactions were entered into the regression equation predicting relationship quality. These results are displayed in the last two columns in Table 2. These analyses were motivated by the prediction from theoretical models that posit that traits like Neuroticism influence relationships to the extent that they shape couple interaction patterns (e.g., Donnellan et al., 2007; Karney & Bradbury, 1995). Consistent with this postulate, Table 2 provided some evidence that negative interactions serve as a potential mediator of the Neuroticism effects. To test this idea more rigorously, we used procedures designed by Preacher and Hayes (2008) to evaluate whether the data are consistent with the hypothesis that the association between Neuroticism and relationship quality is mediated by negative interactions controlling for adolescent academic achievement, economic pressure, family of origin variables, and gender. The 95% C.I. for the indirect effect of Neuroticism, calculated using bias-corrected confidence intervals from 5,000 bootstrap draws, did not include 0. Likewise, the effect of economic pressure in 2005 was not statistically significant in this model, and here again the 95% C.I. for this indirect effect did not include 0. This result is consistent with the idea that concurrent economic pressure is linked with summary evaluations of the relationship because it disrupts couple interactional processes, a pattern suggested by the original Family Stress Model.

ILLUSTRATION 3: PERSONAL CHARACTERISTICS IN ADOLESCENCE ARE ASSOCIATED WITH OBSERVED HARSH PARENTING BEHAVIOR IN YOUNG ADULTHOOD

Last, the transactional model depicted in Figure 2 posits that personal characteristics in adolescence are associated with subsequent parenting behavior. Indeed, Belsky (1984) has long posited a connection between personality and parenting. This pathway actually turns out to be one of the more speculative paths based on the empirical literature. As noted by Caspi et al. (2005), ''Whereas a great deal of research has investigated the influence of personality on friendships and intimate relationships, fewer studies have considered the possibility that parents' personalities shape their parenting styles and relationships with their children'' (p. 472). With such a caveat in mind, there are indications in the literature consistent with the hypothesized association depicted in Figure 2. Belsky and Barends (2002) suggested that, if one had to choose a parent based on a Big Five profile, most people would select someone ''low in neuroticism, high in extraversion and agreeableness, [and] perhaps high in openness to experience and conscientiousness'' (p. 431). Kochanska, Friesenborg, Lange, and Martel (2004) and Metsäpelto and Pulkkinen (2003) have reported data that provide preliminary support for the Belsky and Barends profile using measures of observed and self-reported parenting, respectively.

We conducted a very preliminary evaluation of this idea by considering prospective associations between the Big Five in adolescence and observed harsh parenting in young adulthood. The correlations reported in Table 3 are largely consistent with the Belsky and Barends (2002) profile with the exception that we did not detect an association between Extraversion and harsh parenting. Observed harsh parenting was negatively associated with Agreeableness, Conscientiousness, and Openness and positively associated with Neuroticism. In short, adolescent personality seemed to forecast observed parenting behaviors in adulthood.

We conducted additional analyses to see if gender moderated the associations in question, given that Kochanska et al. (2004) reported that some personality–parenting associations were statistically significant for mothers but not fathers (and vice versa). Accordingly, we used moderated multiple regression analysis so that we could test whether we had evidence that ''slopes'' differed for women versus

Table 3
Self-Reports of the Big Five in Adolescence Predict Observed Harsh Parenting in Young Adulthood

	Zero-Order Correlation	Regression Coefficient Controlling for Gender, Academic Achievement, and Economic Conditions in the Family of Origin
Extraversion	− .06	.01
Agreeableness	− .21*	− .18*
Conscientiousness	− .25*	− .20*
Neuroticism	.20*	.16*
Openness	− .15*	− .13

Note. $N = 197$ to 208 for correlations. $N = 189$ to 200 for regression analyses.
*$p < .05$.

men. Parenting was predicted by gender and a given Big Five trait (mean-centered) on the first step whereas the interaction was entered in the second step. The p value was not statistically significant at less than .05 for any Big Five traits when we examined the ΔR^2 from Step 1 to Step 2 in these analyses.

As a final step, we examined multivariate analyses controlling for adolescent cognitive ability, economic conditions in the family of origin, and gender in separate regression models for each trait predicting parenting. We were not able to rigorously pursue analyses that included measures of relationship quality or economic conditions in the family of destination, given that the time of first assessment for observed parenting varied across participants (anywhere from 1997 to 2005). This issue of timing introduced measurement complications and reduced sample sizes. For instance, it is difficult to obtain good psychometric properties for measures of economic pressure in this sample before 2001 when participants were entering into adulthood and the relationship quality measure used for these analyses was incorporated into the study in 1999. Thus, we view these personality–parenting analyses as preliminary and look forward to conducting stronger tests of these links as more participants have children. However, as seen in Table 3, all of the zero-order personality associations remained statistically detectable except for Openness. Achievement test scores were the other statistically detectable

independent predictor in these analyses (range of βs $= -.19$ to $-.26$), an effect that was also evident when inspecting the zero-order correlation ($r = -.26$). As such, the conclusion that we drew from all of these analyses was that there was preliminary evidence for the contention that personal characteristics in adolescence are associated with later parenting behavior in adulthood.

CONCLUSIONS AND IMPLICATIONS

The broad objective of this paper was to describe a model that links personal characteristics with resilience to economic pressure and its interpersonal consequences. This model, depicted in Figure 2, is the product of recent theorizing about the dynamics that connect socioeconomic conditions and human development across the life course (e.g., R. D. Conger & Donnellan, 2007). In addition, we provided empirical illustrations for three of the associations hypothesized in Figure 2. In particular, we found that personal characteristics evident in adolescence were related to measures of economic pressure, qualities of romantic relationships, and parenting in adulthood. However, there were indications that different traits seemed to figure more or less prominently in different pathways of Figure 2. For example, Conscientiousness had a negative association with economic pressure whereas Neuroticism was linked with relationship variables. We note that these associations were all consistent with findings in the existing literature.

In sum, we have proposed that personal characteristics are important factors when considering how economic conditions are linked with family processes and individual development. By extension, there seems to be an important role for personal characteristics in the process of resilience to economic hardships as it plays out across the life span and from one generation to the next. Even so, we hope that our discussion does not overshadow the point that socioeconomic conditions, especially in the form of heightened economic pressures, can have consequences for children and families. This social influence mechanism is placed in clear relief when considering the Family Stress Model, and we hasten to reiterate that there is empirical support for this model (K. J. Conger, 2009; R. D. Conger & Donnellan, 2007). Our current assumption is that personal characteristics and economic pressure have independent effects on

developmental outcomes, and we have provided preliminary support for this idea. First, both Neuroticism and concurrent measures of economic pressure were associated with less satisfying relationships in adulthood (see Table 2). Second, and perhaps even more impressively, economic pressure in the family of origin was associated with economic pressure in the early stages of adulthood controlling for Conscientiousness and adolescent achievement (see Table 1). This set of findings seems to suggest that exposure to economic pressure in adolescence has somewhat enduring consequences for developing individuals.

In closing, we believe that a more complete understanding of those characteristics that facilitate resilience to distressing economic conditions may offer important clues for the development of successful intervention and prevention efforts. It seems reasonable to conclude that intervention strategies that promote conscientiousness and emotional stability, interpersonal sensitivity, and a relatively positive outlook on life may confer benefits for individuals, their families, and perhaps even society. At the very least, there is little empirical reason to suspect that such efforts will have negative consequences. Indeed, these are the kinds of personal characteristics that are consistently linked with successful adjustment in adulthood and with resilience in general (e.g., Masten, 2001; Werner, 1995). A broad strokes interpretation of our empirical illustrations suggests that high adolescent achievement, high Conscientiousness, low Neuroticism, and perhaps even high Agreeableness (especially with respect to parenting) are part of a core set of positive personal characteristics that are related to resilience. As such, we believe that there may be considerable value in exploring ways that parents, teachers, policy makers, and other concerned adults might help youth to further develop these sorts of personal characteristics. In fact, these attributes appear to capture many of the internal characteristics that are specified in the 40 Developmental Assets framework proposed by the Search Institute (Benson, Mannes, Pittman, & Ferber, 2004), such as achievement motivation, caring, and the attributes of a positive identity. Thus, the study of the personal characteristics associated with resilience is an important area of shared focus for researchers interested in personality traits, social development, and family psychology. We offer the conceptual framework described in Figure 2 as one possibility for such integration.

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