

I. Introduction

A. Nature of the Research Problem

The powerful role the family exerts on the psychosocial functioning of children and adolescents is well known by practitioners in the field of maternal and child health (MCH), and researchers from a variety of disciplines have documented aspects of the family that are related to concurrent or short-term mental health and functioning.¹⁻⁷ However, there has been little systematic research on the *long-term* impact of child and adolescent family environments on outcomes in adulthood. To fill this gap in the literature we prospectively examined the relationship between both negative and positive (health-promoting) family relationships on multiple aspects of adult functioning at age 30, a key developmental time when career decisions are solidified, intimate relationships are established, and the role of parenting is often undertaken.⁸

Our findings have direct implications for family support and educational programs designed to promote healthy child and adolescent development. Our project most directly addressed the MCH Bureau's Strategic Research Issue IV (SRI-IV) to promote the healthy development of MCH populations, but our findings also contribute to MCH SRI-I by informing the design of effective screening and intervention programs for women and children at-risk for poor mental health.

B. Purpose, Scope, and Methods of the Investigation

Our study had two broad aims: (**Aim I**) to examine the impact of family risk variables (an increase in family arguments by age 15 and the occurrence of family physical violence by age 18) on adult mental health and functioning at age 30; and (**Aim II**) to investigate the long-term effects of positive family relationships during adolescence (feeling like a highly valued member of the family and/or having a family confidant at age 15) on developmentally salient outcomes in adulthood.

Participants were part of a single-age cohort (the Simmons Longitudinal Study; n=400) from a predominately Caucasian working-class community whose psychosocial development has been traced from age 5 to age 30. Both positive and negative aspects of family relationships were assessed through self-reports during adolescence (age 15 or age 18). Multiple areas of current adult functioning (mental, psychological, social/interpersonal, occupational, and physical health) were measured by self-reports, structured diagnostic interviews, and clinical interviewer ratings.

C. Nature of the Findings

For Aim I, we found that both family arguments and physical violence were significantly related to impaired functioning across multiple areas of adult functioning. Although many observed relationships were somewhat attenuated after controlling for gender, other early family adversities, and family history of disorder, most retained statistical significance. Both risk factors were associated with later mental health problems and deficits in psychological and occupational/career functioning. Family violence was also linked to poorer physical health at age 30. For Aim II, we found that feeling valued by family members and being able to confide in parents or siblings at age 15 were each predictive of positive adult functioning across several domains, including mental health and social/interpersonal functioning, but there was little overlap in the specific aspects of functioning that were impacted. Associations between positive family relationships and later functioning (1) persisted after controlling for the effects of gender, family history of disorders, and family adversity and (2) were not moderated by gender or other aspects of the family context.

In summary, results for Aim I underscore the potential long-term impact of troubled family interactions and highlight the critical importance of early intervention programs for youth experiencing either verbal conflict or physical violence in the home. On the other hand, findings from Aim II provide compelling evidence about the enduring role positive family relationships during mid-adolescence have in promoting healthy functioning in adulthood.

II. Review of the Literature

A. Aim I - The Impact of Family Arguments and Physical Violence on Adult Functioning at Age 30

To date, most evidence about the relationship between early family conflict and violence and adult functioning comes from cross-sectional investigations of adults from mixed-age groups.⁹⁻¹⁵ Although these studies have usually found significant associations between verbal conflict or physical violence and indices of compromised adult functioning, cross-sectional studies have several well-known limitations (e.g., biases in the retrospective recall of childhood and adolescent family factors) that limit our ability to draw definitive conclusions.^{16, 17} Prospective longitudinal designs are better-suited to trace the impact of negative early family environments on later functioning, but such studies are rare and, to date, have provided inconsistent findings. Results from some prospective studies support the conclusion that the impact of family conflict extends into adulthood and is independent of the effects of other family risk factors (e.g., gender, family social class, parental divorce). While this may be true for some problems such as violence directed towards the child, there is also evidence that less severe forms of troubled family interactions, such as parent-child discord, may have long-term implications.^{18, 19} In contrast, other investigations support the competing hypothesis that the impact of family conflict diminishes over time and/or can be largely explained by other elements of the family environment.²⁰⁻²²

Our study makes several important contributions that serve to further research on the long-term impact of negative family interactions and help resolve some discrepancies in the existing literature. A particular strength of the current work was our ability to prospectively follow participants to age 30, a critical developmental time for career decisions, intimate relationships, and the initiation of parenting roles.²¹ We also examined two aspects of troubled family interactions that are potentially modifiable or amenable to intervention efforts and reflect extremes of a continuum - verbal arguments and physical violence. This enabled us to determine whether adult functioning was differentially impacted by various types of problematic family interactions. Additionally, we examined a wide array of outcomes at age 30 that encompass the developmental tasks of this life stage, rather than focusing on only a single or limited number of areas of functioning as done in most prior research. To examine the independent contributions of family verbal and physical conflict on adult outcomes we also controlled for the effects of important potential confounding factors (e.g., indicators of family adversity and family history of psychopathology).

B. Aim II - Impact of Positive Family Relationships on Adult Functioning at Age 30

Although much research has focused on the impact of negative family environments on mental health and functioning, fewer researchers have sought to document the potential health-promoting aspects of the family. To date, existing prospective investigations of community groups extending to adulthood (late 20's and older) have yielded limited information about the areas of functioning influenced by positive family relationships. One major limitation is that these prior studies have typically included information on only a few adult outcomes. Findings do, however, suggest that positive family relationships may have a beneficial impact across multiple areas of adult functioning such as self-esteem^{23, 24} and quality of life.^{23, 25} Additional research has shown that positive family relationships may reduce the risk for of later psychological distress²⁵ and psychopathology, including depressive symptoms,²⁶ alcohol use,^{26, 27} and illicit drug use.^{26, 28}

A number of factors within the family context, such as family socioeconomic status (SES) and parental psychopathology, are likely to be related to both adolescent family interactions and aspects of adult functioning. Although it is critical to control for the effects of such factors to determine whether the presence of positive family relationships has an independent effect on long-term functioning, previous studies have not always accounted for such factors. Yet the limited evidence available does suggest that positive family relationships remain significant, independent predictors of some aspects of adult functioning after adjusting for the effects of gender,^{24, 25, 28, 29} family SES,^{24, 25, 28, 29} family structure,^{25, 28, 29} and family history of disorders.^{25, 26, 28, 29}

Also important for clinicians is evidence indicating whether positive family relationships are uniformly beneficial in promoting healthy adult functioning among all youth or are moderated by gender or the family context so that some groups of youth will benefit more than others. Currently, there is mixed

evidence about whether the link between positive family relationships and later adult functioning differs by gender.^{23, 28-30} Less is known about the potential moderating effects of family context, although it may play a role in determining which adolescents are most influenced by positive family environments.³¹

Several features of the current study enable us to address some of these important gaps in the literature. For instance, our design permitted us to examine whether differing aspects of the family environment (feeling valued in the family, having family confidants) have differential effects on subsequent functioning, as suggested by some prior work.^{30, 32} We once again examined a wide array of adult outcomes that fully encompass the developmental tasks of this life stage (age 30) rather than focusing on only a limited number of outcomes. Lastly, since it is unclear from existing research, we examined whether positive family relationships are uniformly beneficial in promoting healthy adult functioning for all youth, or are moderated by gender or aspects of the family context so that only some youth are likely to benefit.

III. Study Design and Methods

A. Study Design

We conducted secondary analyses with prospectively collected data from the Simmons Longitudinal Study (SLS) to determine how potentially modifiable family risk and health-promoting variables from childhood and adolescence predicted a broad range of adult outcomes at age 30. The SLS is one of the longest and most comprehensive multi-disciplinary, multi-method community-based longitudinal studies in the U.S. that has traced the life course of a single-aged cohort (400 participants) from early childhood (age 5) to adulthood (age 30). Data were collected at 8 major time points from multiple informants, using measures with demonstrated reliability and validity.

As previously mentioned, the study had two Aims:

In **Aim I** we examined the impact of family risk variables experienced during childhood and adolescence (up to age 18) on adult mental health and functioning at age 30. Two specific research questions were addressed:

- (1) To what extent are increased family arguments by age 15 and family physical violence by age 18 related to problems in current functioning at age 30 across multiple domains?
- (2) Do family arguments and physical violence predict poor adult functioning after controlling for other early family adversities and family history of mental disorders?

In **Aim II** we investigated the extent to which positive family relationships at age 15 promote healthy adult functioning at age 30. The three research questions were as follows:

- (1) To what extent are feeling valued by family members and being able to confide in family members at age 15 related to current functioning at age 30 across multiple domains?
- (2) Is the impact of these two indicators of positive family interactions on adult functioning independent of the effects of gender and other aspects of the family context?
- (3) Are the relationships between feeling valued by family members and confiding in family members and later functioning moderated by gender or other aspects of the family context?

The family risk and health-promoting variables were prospectively assessed at either ages 15 or 18 by self-report. Adult outcomes at age 30 encompassed 5 broad domains: (1) mental health, (2) psychological well-being, (3) social and interpersonal, (4) occupational/career, and (5) physical health. Information on functioning was collected from multiple sources: self-reports, structured diagnostic interviews, and clinical interviewer ratings (See "Instruments Used" section for further detail.)

B. Population Studied and C. Sample Selection

Analyses drew on previously collected data from the SLS. Data were collected from multiple informants at the following time points: age 5 (1977), age 6 (1978), age 9 (1981), age 15 (1987), age 18 (1990), age 21 (1993-94), age 26 (1998), and age 30 (2002).

The original 1977 sample included all youth (50% female) entering kindergarten within one public school system participating in state-mandated preschool testing of developmental, academic, and behavioral factors (N=763). The school district was located in a predominately Caucasian, working-class community in the Northeastern U.S. and the original sample reflected the composition of the community at that time. When last interviewed at age 30, the sample of 377 included 193 males and 184 females. Almost all (98%) subjects were white. Over half (61%) had completed post-high school educational programs and 89% were employed. Sixty-one percent (61%) were married, engaged, or living with a partner, and 37% were parenting.

Between 1977 and 2002, attrition occurred primarily at the end of kindergarten when students transferred from the public school system to parochial and private schools. Because data collection occurred within the public schools, those transferring out of this school system after kindergarten were purposely excluded from follow-up.³³ Overall attrition for the 21-year period was 28% of youth remaining in public schools through grade 3. Recent analyses demonstrated that the sample was not compromised by selective attrition. Participants at age 30 did not differ from those lost from the initial 1977 group on factors originally characterizing the cohort known to be associated with poor developmental outcomes, including key demographic, academic, health, and behavioral-emotional characteristics.³⁴

D. Instruments Used

The measures used to assess modifiable family risk factors (Aim I) and family health-promoting variables (Aim II) in childhood and adolescence are described in Table 1. The age-appropriate measures of adult functioning at age 30 are listed in Table 2. Finally, Table 3 identifies early family context variables that are potential confounding variables.

<i>Table 1. Family Risk and Health-Promoting Variables During Childhood and Adolescence</i>	
Family Predictor Variables	Measure
Risk Variables (Aim I): Negative Family Environments	
(1) Family arguments by age 15	Age 15 interview items asking adolescents about: (1) “Increase in number of arguments with parents,” and (2) “Increase in number of arguments between parents.”
(2) Family physical violence by age 18	Age 18 interview items asking adolescents whether: (1) “A family member was physically violent to you,” or (2) “A family member was physically violent to another family member.”
Health-Promoting Variables (Aim II): Positive Family Environments	
(1) Feel highly valued by family (parents and siblings) at age 15	Five true-false items from the Piers-Harris Children’s Self-Concept Scale, ³⁵ such as “I am an important member of my family” ($\alpha=0.66$).
(2) Able to confide in family members (parent(s) and/or sibling(s)) at age 15	Open-ended item from the Arizona Social Support Inventory ³⁶ “If you wanted to talk to someone about things that are very personal, who would you talk to?” evaluated whether adolescents identified parent(s) and/or sibling(s) as confidants.

Table 2. Adult Outcomes at Age 30	
Adult Outcome Domain	Measure
<p>Mental Health Current DSM-IV disorders (major depression, alcohol abuse/depend, drug abuse/depend) Adult antisocial behaviors Current suicidal ideation Internalizing & externalizing behavior problems Interviewer-rated overall functioning</p> <p>Psychological Well-Being Self-esteem Coping & self-efficacy Life satisfaction</p> <p>Social and Interpersonal Interpersonal problems Satisfaction with social support received Relationship with spouse-partner Relationship with children</p> <p>Occupational/Career Interviewer-rated social/occupational</p> <p>Socioeconomic status Currently unemployed No long range career plans Satisfaction with career progress</p> <p>HEALTH Health problems Tobacco use</p>	<p>Diagnostic Interview Schedule, Version IV (DIS-IV)³⁷</p> <p>DIS-IV (count of adult behaviors) Young Adult Self-Report (YASR),³⁸ DIS-IV YASR Global Assessment of Functioning, DSM-IV Axis V^{39, 40}</p> <p>Rosenberg Self-Esteem Scale⁴¹ General Perceived Self-Efficacy Scale⁴² Life Satisfaction Scale^{43, 44*}</p> <p>Interpersonal Problems Scale^{45*} Arizona Social Support Inventory³⁶ Dyadic Adjust Scale⁴⁶ Parenting Stress Scale⁴⁷</p> <p>Social and Occupational Functioning Assessment Scale, DSM-IV Axis V^{39, 40} Hollingshead 2-Factor Index^{48, 49} Interview item Interview item Interview items</p> <p>Interview items re: any serious health problems in past year Interview items</p>

*SLS project created scale used in prior analyses with study group.

Table 3. Potential Confounding Family Variables*	
Family Variables	Measure
<p>(1) Family Adversity: (a) lower family SES (lowest 2 categories) (b) marital disruption (separation/divorce of parents) (c) live in single parent household (d) death of parent</p> <p>(2) Family history of disorders by age 15</p>	<p>Number of adversities participant experienced by age 15** Hollingshead 2-Factor Index^{48, 49} at ages 5, 9, and 15 Interview items at ages 5, 9, and 15</p> <p>Interview items at ages 5, 9, and 15 Interview items at ages 5, 9, and 15</p> <p>Family History Assessment Module^{50, 51***} Major depression, alcohol disorders or drug disorders in parent(s) or sibling(s) that onset by the time participant was age 15</p>

*Gender was also examined as a covariate. **All aspects of family adversity were assessed prospectively using parent and participant reports. ***Combined mother and self-reports at age 26.

E. Statistical Techniques Employed

The overarching objective (for both Aims I and II) was to produce findings that are both scientifically valid and of practical use to MCH practitioners, policymakers, and other researchers. Because few prior studies have looked at both multiple family predictor variables and multiple adult functioning outcomes within the same set of analyses, we conducted straightforward analyses designed to characterize the relationship between multiple aspects of the family and an array of developmentally relevant adult outcomes.

A multi-step approach was used to address our two research aims. First, to assess the link between (a) family risk indicators (arguments, physical violence) and subsequent adult functioning in Aim I and (b) family health-promoting factors (feeling valued by family, having a family confidant) and age 30 outcomes in Aim II, a series of univariate logistic regression (for binary outcomes) and linear regression (for dimensional outcome measures) analyses were conducted. These initial models separately evaluated the relationship between each of the family predictor variables and each indicator of age 30 functioning. For the binary outcomes, unadjusted Wald χ^2 tests and unadjusted odds ratios and 95% confidence intervals were computed. For the dimensional outcome measures, F tests and Cohen's d (a measure of effect size) were computed.

Second, to determine whether the impact of each family risk or health-promoting factor on each aspect of adult functioning was independent of the effects of gender and family context, we conducted a series of multivariable logistic and linear regression analyses that included gender, family adversity, and family history of disorders as covariates. Adjusted test statistics and effect size estimates were computed.

Third, for Aim II only, we evaluated whether gender, family adversity, or family history of disorders moderated the relationship between positive family relationships and later adult functioning. To do so, we conducted a series of multivariable logistic and linear regression models to test the significance of the interaction between feeling valued in the family or having a family confidant and each of these three potential moderators (gender, family adversity, and family history of disorders). A significant interaction would indicate that these positive family relationships were beneficial in promoting subsequent healthy adult functioning for only some groups of adolescents, depending on their gender, level of family adversity, or family history of disorders.

IV. Detailed Findings for Aims I and II

A. Aim I - The Impact of Family Arguments and Physical Violence on Adult Functioning at Age 30

There were striking differences in the prevalence of our two indicators of troubled family interactions. At age 15, more than half (55.2%) of participants reported that they had experienced increased family arguments. In contrast, at age 18, far fewer (only 15.9%) indicated having experienced either physical violence by family members or witnessing violence between other family members. Although these two risk factors were significantly correlated ($\phi=0.19$, $p<0.001$), we examined each predictor separately because of the wide disparity in their pervasiveness, as well as their conceptual differences in reflecting two extremes of a continuum of troubled family interactions. Table 4 summarizes the areas of functioning that were impacted by these 2 aspects of negative family environments.

Increased Family Arguments by Age 15 and Functioning at Age 30

Unadjusted results indicate that participants reporting increased family arguments by age 15 later experienced significant impairments in 10 of 20 areas of adult functioning. Results from a series of multivariable regression models showed that family arguments continued to be a significant predictor of impaired functioning at age 30 after controlling for gender, family adversity, and family history of disorder. Only one index of functioning, use of tobacco products, was no longer statistically significant in the multivariable models.

The strongest associations were found for indices of poor mental health. Participants who reported increased arguments by age 15, compared to their peers, had a substantially elevated risk (adjusted odds ratio [AOR]=3.6, 95% confidence interval [CI]: 1.7-7.5) for any current mental disorder at age 30, including major depression, alcohol abuse/dependence, and drug abuse/dependence. Adolescents with family arguments were also significantly more likely to have engaged in adult antisocial behavior

(AOR=2.7, 95% CI: 1.5-4.8) and to have reported clinical levels of internalizing behavior (AOR=3.9, 95% CI: 1.1-14.2). Deficits in overall functioning among those experiencing verbal conflict were also reflected in GAF ratings of the clinical interviewers at age 30.

There was also evidence of some impairment in psychological functioning (i.e., lower life satisfaction). In the domain of occupational/career functioning, participants who reported increased family arguments had over a twofold increased risk of being unemployed at age 30 (AOR=2.3, 95% CI: 1.1-4.8). No deficits in social and interpersonal functioning and physical health were identified in the multivariable models.

Family Physical Violence by Age 18 and Functioning at Age 30

Family physical violence by age 18, although substantially less prevalent than family arguments, was an important predictor of later impaired functioning. In the unadjusted models we found this risk factor to be associated with 13 of 20 markers of compromised adult functioning. Social and interpersonal functioning was the only domain in which no significant differences were found. Results were largely upheld after controlling for gender and other aspects of problematic family environments. Only two outcome measures (adult antisocial behavior, lower adult SES of participants) were no longer statistically significant in the multivariable models.

At age 30, participants who were exposed to family violence were significantly more likely than their unexposed peers to have a current mental disorder (AOR=2.9, 95% CI: 1.4-5.8), notably alcohol and drug abuse/dependence, and report clinical-levels of internalizing (AOR=4.6, 95% CI: 1.6-13.4) and externalizing (AOR=5.3, 95% CI: 1.7-16.2) behavioral difficulties. The assessments of clinical interviewers confirmed the self-reported compromised functioning at age 30 of those exposed to family physical violence; they were 2.2 times as likely to receive poor ratings on the GAF (95% CI: 1.2-4.3).

In the domain of psychological functioning, physical violence was linked to lower self-esteem (AOR=2.1, 95% CI: 1.1-3.9) and life satisfaction (AOR=3.0, 95% CI: 1.6-5.6). In the area of occupational/career functioning, interviewer ratings on the SOFAS were significantly poorer for the group exposed to physical violence by late adolescence (AOR=3.1, 95% CI: 1.5-6.5). Physical health at age 30 was also compromised by earlier exposure to family physical violence; those who experienced this type of troubled family interaction, compared to those who did not, were twice as likely to report a significant health problem (AOR=2.6, 95% CI: 1.3-5.0) and to use tobacco products in the past year (AOR=2.3, 95% CI: 1.2-4.2).

Table 4. Impact of Family Arguments by Age 15 and Family Violence by Age 18 on Functioning at Age 30

Area of Functioning at Age 30	Increased family arguments vs. No Increased arguments		Family physical violence vs. No family violence	
	Unadjusted Wald χ^2	Adjusted Wald χ^2 ^a	Unadjusted Wald χ^2	Adjusted Wald χ^2 ^a
Mental health				
Current (1-Year) DSM-IV disorders				
Major depression	5.5*	4.3*	2.1	2.2
Alcohol abuse/dependence	4.3*	5.5*	9.6**	8.6**
Drug abuse/dependence	11.0*** ^b	--- ^c	7.7**	6.0*
≥1 current disorders	11.9***	11.7***	10.0**	8.8**
Adult antisocial behavior	12.2***	11.3***	4.6*	2.8
Clinical-level internalizing behavior (YASR)	4.0*	4.3*	8.3**	8.0**
Clinical-level externalizing behavior (YASR)	1.5	1.2	10.2***	8.6**
Poor interviewer-rated GAF (≤70)	7.0**	6.0*	6.5*	5.7*
Psychological				
Lower self-esteem	0.2	0.3	5.2*	5.7*
Lower coping and self-efficacy	0.4	0.4	0.5	1.1
Lower life satisfaction	4.4*	4.3*	11.7***	11.3***
Social/interpersonal				
Higher interpersonal problems	2.0	1.8	0.1	0.1
Lower dyadic adjustment ^b	0.3	0.3	0.3	0.4
Higher parenting stress ^c	1.4	1.4	0.1	0.1
Occupational/career				
Currently unemployed	5.2*	4.8*	1.5	2.0
No long-range career goals	0.1	0.1	1.9	1.3
Poor interviewer-rated SOFAS (≤70)	0.3	0.2	10.3***	9.7**
Lower SES	0.8	0.9	3.8*	2.8
Physical health (past year)				
Health problems	2.3	1.3	7.6**	7.3**
Tobacco use	3.9*	3.6	9.0**	7.0**

Note: YASR=Young Adult Self-Report; GAF=Global Assessment of Functioning; SOFAS=Social and Occupational Assessment Scale; SES=socioeconomic status. All outcome variables were dichotomized to reflect problematic levels of functioning.

^aAdjusted for gender, family adversity, and family history of disorder. ^bPearson chi-square. ^cCannot be computed because none of the participants without increased family arguments met criteria for a current drug disorder.

^dAssessed only among subsample involved in romantic relationships (n=190). ^eAssessed only among subsample with children (n=130).

*p<0.05; **p<0.01; ***p<0.001, two-tailed

B. Aim II - Impact of Positive Family Relationships on Adult Functioning at Age 30

Both aspects of positive adolescent family relationships were prevalent during adolescence; 65.4% of participants reported feeling valued by family members and half of the sample (50.7%) disclosed having at least one parent or sibling confidant at age 15. Although these variables were correlated ($\sigma=0.20, p<0.001$), a substantial percentage of participants who reported experiencing only one of these family indicators, pointing to the importance of examining them separately as predictors of adult mental health and functioning. Table 5 summarizes the areas of functioning that were impacted by these two aspects of positive family environments.

Feeling Highly Valued by Family Members at Age 15 and Functioning at Age 30

Unadjusted results showed that feeling highly valued by family members at age 15 played an important role both in reducing the likelihood of negative adult outcomes and in promoting healthy functioning. Statistically significant effects were found for 9 of 19 indicators examined, representing 4 of the outcome domains (all except occupational/career functioning). Results from multivariable analyses

showed that, with few exceptions, controlling for gender, family adversity, and family history of disorders did not impact these associations. Only one relationship (i.e., the reduced likelihood of current major depression among those who reported being valued by family members) was no longer statistically significant in the adjusted models. There was also little evidence that these relationships were moderated by gender, family adversity, or family history.

At age 30, youth who felt highly valued by members of their families, compared to their peers, were less than half as likely to experience a mental disorder at age 30 (AOR=0.46; 95% CI: 0.24-0.87) and were significantly less likely to report internalizing (effect size $d=.24$) and externalizing ($d=.28$) behavior problems. Their overall functioning was also rated by trained interviewers as significantly higher than that of participants who did not previously report feeling highly valued in the family ($d=.22$).

In the domains of psychological and social/interpersonal functioning, feeling highly valued by family members during mid-adolescence was significantly associated with higher self-esteem ($d=.21$), greater satisfaction with social support ($d=.27$), and fewer interpersonal problems ($d=.28$). In the area of physical health, this indicator of positive family relationships substantially reduced the risk of tobacco use in the past year (AOR=0.52; 95% CI: 0.33-0.80).

Able to Confide in Family Members at Age 15 and Functioning at Age 30

In the unadjusted analyses we found that being able to confide in parents and/or siblings was significantly associated with 11 of 19 areas of functioning. Significant effects were found across three domains of functioning: mental health, social/interpersonal relations, and occupational/career functioning. Although the magnitude of most associations were somewhat attenuated in the multivariable models, results from the unadjusted analyses were upheld after controlling for potentially confounding factors. There was little evidence that the relationships between having a family confidant and adult functioning were moderated by gender, family adversity, or family history of disorders.

In the domain of mental health, being able to confide in family members was associated with a substantially reduced risk for any current mental disorder (AOR=0.39; 95% CI: 0.21-0.72), including alcohol abuse/dependence (AOR=0.30; 95% CI: 0.12-0.77) and drug abuse/dependence (AOR=0.15; 95% CI: 0.04-0.55). Youth with family confidants were also less than a third as likely as their peers to experience suicidal ideation at age 30 (AOR=0.30; 95% CI: 0.10-0.96) and reported significantly fewer externalizing behavior problems ($d=.24$). Clinical interviewers also rated those who previously indicated having family confidants as having substantially higher GAF scores ($d=.26$).

Having family confidants during adolescence also promoted healthy social/interpersonal functioning at age 30. Being able to confide in family members was associated with greater satisfaction with social support 15 years later ($d=.26$). Among participants involved in an adult intimate relationships, those who viewed family members as confidants at age 15 rated the quality of their subsequent relationships with spouses/partners as significantly better than their peers lacking family confidants ($d=.39$).

A strong impact was also found for occupational/career functioning. Compared to their peers, adolescents who identified themselves having a family confidant were nearly two times as likely to be satisfied with their career progress (AOR=1.96; 95% CI: 1.22-3.14) and to have achieved a higher SES (AOR=1.74; 95% CI: 1.07-2.82). Interviewers also rated their overall occupational and social functioning as significantly higher on the SOFAS ($d=.24$).

Table 5. Impact of Feeling Highly Valued and Being Able to Confide in Family Members at Age 15 on Functioning at Age 30

Area of Functioning at Age 30	Feels valued by family vs. Doesn't feel highly valued		Able to confide in family vs. Not able to confide	
	Unadjusted Wald χ^2	Adjusted Wald χ^{2a}	Unadjusted Wald χ^2	Adjusted Wald χ^{2a}
Mental health				
Current (1-Year) DSM-IV disorders				
Major depression	4.89*	3.75	0.49	0.55
Alcohol abuse/dependence	0.55	0.73	6.70**	6.38*
Drug abuse/dependence	3.65	3.85	8.21**	8.04**
≥ 1 current disorders	6.28*	5.77*	9.30**	8.95**
Current suicidal ideation	2.00	2.03	3.91*	4.12*
	Unadj. F	Adjusted F ^a	Unadj. F	Adjusted F ^a
Internalizing behavior problems	5.69*	4.78*	3.51	3.79
Externalizing behavior problems	5.89*	6.97**	5.36*	4.76*
Interviewer-rated GAF	4.93*	4.15*	5.72*	5.60*
Psychological				
Self-esteem	4.31*	4.48*	2.32	2.27
Coping and self-efficacy	1.74	1.40	0.00	0.01
Social/interpersonal				
Interpersonal problems	8.61**	7.65**	1.23	1.19
Satisfied with social support	10.08**	7.96**	6.11*	6.54*
Quality of intimate relationship ^b	1.76	1.50	6.40*	6.70*
Parenting stress ^c	2.45	2.65	0.02	0.02
Occupational/career				
Interviewer-rated SOFAS	2.32	1.87	5.37*	5.41*
	Unadjusted Wald χ^2	Adjusted Wald χ^{2a}	Unadjusted Wald χ^2	Adjusted Wald χ^{2a}
Satisfied career progress	0.01	0.05	7.43**	7.83**
Higher SES	0.16	0.27	5.44*	5.05*
Physical health (past year)				
Health problems	3.08	2.02	3.12	3.38
Tobacco use	7.89**	8.60**	0.54	0.36

Note: GAF=Global Assessment of Functioning; SOFAS=Social and Occupational Functioning Assessment Scale; SES=socioeconomic status.

^aAdjusted for gender, family adversity, and family history of disorders. ^bAssessed only among subsample involved in romantic relationships ($n=191$). ^cAssessed only among subsample with children ($n=130$).

* $p < .05$; ** $p < .01$; *** $p < .001$, two-tailed

V. Discussion and Interpretation of Findings

A. Conclusions to be Drawn from Findings

Our findings for both Aims I and II powerfully demonstrate that specific, potentially modifiable aspects of the family environment during childhood and adolescence are strongly linked to later functioning in adulthood (age 30).

Aim I - The Impact of Family Arguments and Physical Violence on Adult Functioning at Age 30

Results suggest that the negative influences of family verbal arguments and physical conflict extend well into adulthood. Moreover, these deficits are pervasive across critical salient domains, including mental health, psychological well-being, and occupational/career functioning (see Table 4). The impact of both verbal arguments and physical violence on key aspects of age 30 mental health, such as substance disorders and behavior problems, is particularly noteworthy. Although it is not surprising that we found long-term effects for physical violence, we also documented the lasting influence of verbal conflict among family members. While increased arguments with parents during adolescence may be viewed as normative as youth seek to develop autonomy from their parents, these findings are important in showing that these verbal conflicts may serve as a marker of subsequent impaired functioning in adulthood. We also determined that these deficits in critical areas of adult functioning were largely independent of the effects of gender and other adverse family characteristics that often co-occur with conflict and violence within the home, such as family history of mental disorders and family adversity (e.g., low SES, marital disruption, parental death).

Aim II - Impact of Positive Family Relationships on Adult Functioning at Age 30

We documented that both feeling highly valued by family members and being able to confide in parents and siblings were each significantly linked to several areas of functioning 15 years later. Together, these two aspects of family relationships were significantly related to nearly all indicators of adult functioning (see Table 5). Our findings, however, suggest that different dimensions of positive family relationships may promote different types of healthy adult functioning; only 4 of 16 significant results from the multivariable analyses were shared in common. Importantly, we showed that the impact of adolescent family relationships on later adult functioning was largely independent of the effects of gender, family adversity, and family history of mental disorders. This is particularly useful information because family interactions are potentially amenable to intervention efforts, unlike broad contextual factors (e.g., low SES) which may be used to identify youth at-risk for later poor functioning but cannot themselves serve as foci for targeted interventions. Lastly, our findings indicate that positive family relationships in adolescence may be uniformly beneficial in promoting healthy adult functioning across a broad range of outcomes; their influence does not depend substantially on gender, family adversity, or family history of disorders.

B. Study Limitations

Although our study is one of few to prospectively assess the long-term impact of family risk (arguments, violence) and health-promoting (feeling valued by family members, having a family confidant) factors during childhood and adolescence on a full array of age-appropriate areas of functioning in adulthood (age 30), a few limitations should be noted. First, because our sample was from a predominately white working-class community, findings may not be generalizable to more racially and economically diverse populations. Second, our indices of family risk and health-promoting variables, although covering a wide range of family interactions, lacked additional detail that might prove useful to researchers and clinicians. For example, our measures of family arguments and family violence did not provide information about the severity and frequency of family arguments and violence, or who was involved in the conflict (parents, siblings, and/or study participants). Similarly, our indices of feeling valued by and being able to confide in family members at age 15 did not allow us to disaggregate the separate effects associated with positive relationships with mothers, fathers, and siblings. Third, although the inclusion of a relatively large number of adult outcomes permitted us to examine the effect of positive family relationships on multiple areas of age-appropriate functioning at age 30, it raises potential concerns about multiple comparisons. However, with α set the 0.05 significance level, the relatively large number of significant group differences summarized in Tables 4 and 5 cannot be explained by chance, and suggest the long-term potency of these family factors. Finally, although our study extended to age 30 (full adulthood) it will be important to assess whether the beneficial effects of early positive family relationships persist into middle and late adulthood.

C. Comparisons with Findings of Other Studies

Aim I - The Impact of Family Arguments and Physical Violence on Adult Functioning at Age 30

Examining the limited number of prospective studies on this topic we found diverse results. One long-term British study found that parent-child discord in mid-adolescence was significantly linked to later adult physical health problems, controlling for sex and social class.¹⁹ A study in the U.S. reported that children exposed to marital discord were at risk for psychological problems in adulthood, such as lower self-esteem and less life satisfaction.¹⁸ In contrast, several other prospective studies support the hypothesis that the impact of early family conflict diminishes over time and/or is explained by other elements of the family context.²⁰⁻²² Reports from a longitudinal New Zealand birth cohort revealed that witnessing parental conflict and violence was associated with a series of negative outcomes, including mental disorders and violent and criminal behavior.^{21, 22} However, the authors found after controlling for social class and parental mental disorder and criminal behavior, the effect of witnessing parental conflict and violence was no longer significant.

Overall, our findings largely confirm the results of prior cross-sectional investigations documenting significant long-term associations between troubled family interactions and compromised adult functioning and concur with findings from some prospective studies.^{18, 19, 21, 52} At the same time, they may appear to contradict findings from other investigations.²⁰⁻²² Yet a more fine-grained comparison of results suggests that this may not necessarily be the case. Differences may, in part, lie in the types of outcomes that were assessed. Prior studies have tended to include information on only a limited number of outcomes. As illustrated in our work, while troubled family interactions were associated with multiple problems in later functioning not all areas were impacted. Only investigations assessing multiple areas of adult functioning can assess the general long-term influence of family verbal conflict and violence.

Our study also stands in contrast to investigations suggesting that the relationships between problematic family interactions and deficits in long-term functioning are largely explained by the context in which this exposure occurs (e.g., low SES, parental psychopathology).^{21, 22} One possible explanation for this divergence is that we did not control for all important family variables in our analysis. However, we did account for the effects of many important factors noted by other researchers.^{13, 16, 18} Another explanation is that the type of problematic family interaction under study may play a role. For instance, Fergusson et al.²² focused on interparental violence. We included both the occurrence of violence towards the child and between other family members in our physical violence variable. As suggested by another study²¹ based on the same New Zealand birth cohort used by Fergusson and coauthors,²² violence directed towards the youth may leave a more lasting imprint independent of other contextual factors.

Aim II - Impact of Positive Family Relationships on Adult Functioning at Age 30

Our findings concerning the long-term impact of positive family relationships during adolescence on adult mental health and functioning complement and add needed detail to the literature in this field. Findings across the existing (limited) prospective studies suggest that positive family relationships may have a beneficial impact across multiple domains of functioning, including an increased likelihood of positive self-image²³⁻²⁵ and a reduced risk of later psychological distress²⁵ and mental health problems.²⁶⁻²⁸ Other investigations have identified a link between early positive family relationships and the stability and quality of participants' subsequent relationships with their spouses/partners.^{23, 25, 30, 53} However, several important issues remain unresolved. It is currently unclear (1) whether different aspects of the family dynamic may have differential effects on later adult functioning; (2) whether indicators of positive family relationships remain significant, independent predictors of healthy adult functioning after adjusting for the effects of potentially confounding variables; and (3) whether positive family relationships in adolescence may be uniformly beneficial in promoting healthy adult functioning.

Our results are important in highlighting that supporting, accepting family relationships during adolescence may have an enduring and pervasive influence on healthy functioning into adulthood. We documented that both feeling highly valued by family members and being able to confide in parents and siblings were each significantly linked to several areas of functioning 15 years later. Consistent with prior research, we found that positive family relationships: (1) reduced the risk for poor mental health,

including substance abuse/dependence²⁶⁻²⁸ and suicidal behavior,⁵⁴ and (2) increased the likelihood of positive psychological,^{23-25, 54-57} social-interpersonal,^{29, 30, 53, 57} and occupational/career^{58, 59} functioning.

Our findings suggest that different dimensions of positive family relationships may promote different areas of healthy adult functioning. Although our two indicators of positive family relationships were each significantly related to multiple indices of adult functioning, only 4 of 15 significant results from the multivariable analyses were shared in common. For example, while feeling valued was significantly associated with higher self-esteem, lack of interpersonal problems, and a reduced likelihood of tobacco use, these important areas of adult functioning were not significantly impacted by having a family confidant during mid-adolescence. Alternatively, while being valued in the family was not significantly related to later occupational/career functioning, this domain was one of the areas most strongly influenced by having a family confidant. Having a family confidant was also more influential in reducing the risk of mental health concerns at age 30, such as suicidal ideation and substance disorders, than our other indicator of positive family relationships during adolescence.

Lastly, we found that that impact of adolescent family relationships on later adult functioning was (1) largely independent of the effects of gender, family adversity (e.g. low SES, marital disruption, parental death), and family history of mental disorders; and (2) was uniformly beneficial in promoting healthy adult functioning across a broad range of outcomes. Some researchers have found that the association between positive family relationships and adult functioning differs by gender and family structure for a few specific outcomes, including psychological well-being and quality of life,²³ self-image,³¹ relationships with spouses/partners,³⁰ and illicit drug use.²⁸ Our findings suggest that when considering the broader picture and the multitude of outcomes that characterize healthy adult functioning, gender and family context may not always play a significant role in moderating the association between positive family relationships and subsequent functioning.

D. Possible Application of Findings

There are a number of potential applications to MCH health delivery programs. First, as we found in our recently published article based on Aim I,⁶⁰ the impact of family violence and arguments on long-term outcomes argues for the need to train health practitioners to focus on signs of problematic, negative family interactions. For example, marked negative verbal child-parent interactions should not be ignored as phasic and passed off as “normal” rebellion but considered for possible intervention.

Results from Aim II (manuscript under review) point to the essential need for a multi-faceted approach in family-centered interventions and parental education programs. Our findings clearly reveal the unique importance of a youngsters’ self-perception of being valued within the family. Also, although there was some overlap in the areas of functioning impacted by feeling valued and having an available family confidant, there were specific areas positively and uniquely impacted by having a family member who could serve as a confidant. Being less at risk for mental disorder and more occupationally successful were strongly associated with the ability to confide in a family member. These results speak to the need for a broad-based approach to family interventions and educational programs undertaken or used as resources by MCH programs. Findings from Aims I and II indicate that both therapeutic and family strengthening approaches must be considered as interventions.

E. Policy Implications

Since the family serves as the crucible for later development, it is important to promote policies that strengthen families and avoid the negative results of family dysfunction. One policy initiative stemming from our findings is the strong need to educate health workers at all levels as well as educators to identify the symptoms of family stress, such as family conflict and abuse. Second, policies should include funding for adequate resources not only to train workers in the identification of family problems, but to initiate programs of family intervention at all developmental levels from infancy to adolescence. Third, there is a need to fund research and develop new, innovative programs in the field and to evaluate the effectiveness of these programs.

F. Suggestions for Further Research

We have several suggestions for further research based on our study. First, since our sample is predominantly white and working-class, the study should be replicated with more ethnically and socio-economically diverse groups. Because of widespread interest in this HRSA sponsored research across many countries (spanning media sources from North and South America to Europe to the Middle East to Asia) we believe that there may be considerable universality in the work. However, study of more diverse groups is the best way to confirm that the findings have application to a broader society. Second, there is a need to replicate our findings with a bigger sample. With a larger number of respondents, more fine-grained analyses could separately investigate the potency of specific types of family relationships on adult outcomes, such as the long-term beneficial influence of having parent versus sibling confidants during adolescence. Another critical suggestion for future research concerns the need to extend the age of the study population. While our study extended further into adulthood (age 30) than much prior work, it will be important to see if adolescent family influences continue to middle age and beyond. Finally, further investigations should begin to comprehensively examine the current program efforts to enhance family relationships to clearly identify the most efficient and efficacious. Only by careful evaluation can we select the best evidence-based methods for prevention and intervention for negative outcomes for the healthy future of children and families.

VI. List of products (and Dissemination of Findings)

During the period of the grant we have published a peer-reviewed article based on findings from Aim I. The article, *Long-Term Impact of Family Arguments and Physical Violence on Adult Functioning at Age 30 Years: Findings From the Simmons Longitudinal Study*,⁶⁰ appeared in the March 2009 edition of the *Journal of the American Academy of Child and Adolescent Psychiatry*. This publication had extensive, world-wide media attention including an extended discussion on the Bill Moyers Show on PBS. The PI (Dr. Reinherz) gave numerous interviews including one to United States Department of Health and Human Services (HHS) reporter Ira Dreyfuss, which will appear as a podcast on the HHS website; she was also interviewed on National Public Radio. Many other print interviews include USA Today and the Boston Globe. The story also appeared in Europe, the Middle East, India, Pakistan, and South America. There were hundreds of stories about the article and its implications (see appendix). In addition we recently submitted a second article based on Aim II results to a peer-reviewed journal and are awaiting their decision.

The initial findings of this HRSA funded study provided a framework for a keynote speech, made by the PI, at the National Association of Social Workers (NASW) "Social Work Pioneers" meeting in Washington, D.C. in the fall of 2007. Almost 200 social work leaders from all over the country were present at this meeting. Also stressed in the presentation was the public-private partnership of academic research and federal funders (e.g., HRSA) to disseminate key research findings. Recently, we submitted a proposal for a Massachusetts NASW Symposium in which the impact of health-promoting family factors will be presented as well as discussions of how these factors can be implemented in a broad array of community-based programs.

Thus, the work which was supported by the Maternal and Child Health Research Program was disseminated locally, nationally, and internationally. The extent of international coverage, exemplifies the universality of the findings for programs enhancing the healthy growth and development of children and adolescents.

VII. References

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Appendix

The study of the impact of family arguments and physical violence by the Simmons Longitudinal Study appeared in the following media outlets (including print, television, radio and websites) from March 9 through May 27, 2009:

USA Today	Norwich Bulletin	Great Dad
PBS: Bill Moyers Journal	Dover Post	Needham Times
NPR: Here & Now	New Kerala	Dallas Morning News
Boston Globe	Sindh Today	Entrepreneur
NASW Mass. Focus	Benton Evening News	Examiner.com
Patriot Ledger	The Holland Sentinel	PR Newswire SEO
PR Newswire	Gonzales Weekly Citizen	Healthcare Industry Today
Pittsburgh Tribune-Review	Leesville Daily Ledger	US Politics Today
Times of India	The Middletown Transcript	Interest!ALERT
Irish Sun	Bella Online	Ticker Technologies
Elmundo.es	The Statesman	AOL Money News
Cooperativa.cl	Enterprise (MA)	Earth Times
Eltiempo.com	MetroWest Daily News (MA)	Daily Messenger
Diario Hoy	Taunton Daily Gazette (MA)	Enterprise Open Source Magazine
Kuwait Samachar	Leesville Daily Leader	Forbes.com
The Gridley Herald	Daily Review Atlas	Bizjournals.com
Bastrop Daily Enterprise	Milford Daily News	Hoover's
New Scientist	The Enterprise	Linux
Entertainment & Showbiz.com	WBUR.org	Breitbart.com
Marion Daily Republican		Reuters
		Yahoo! Politics

May 28, 2009

PI: Helen Reinherz
R40MC08718

MarketWatch	WTXL ABC 27 (Midway, FL)	WIVB CBS 4 (Buffalo, NY)
AlphaTrade Finance	KXLT FOX 47 (Rochester, MN)	KKFX FOX 11 (Santa Maria, CA)
SYS CON US	KFOR NBC 4 (Oklahoma City,	KTTC NBC 10 (Rochester, MN)
SYS-Con Canada	WLEX NBC 18 (Lexington, KY)	WBTV CBS 3 (Charlotte, NC)
SYS-CON Australia	KION CBS 46 (Salinas, CA)	WCAX CBS 3 (Burlington, VT)
SYS-CON Belgium	WTNZ Fox 43 (Knoxville, TN)	WOOD NBC 8
SYS CON India	KYTX CBS 19 (Tyler, TX)	KATC ABC 3
SYS-CON UK	WBOC CBS 16 (Salisbury, MD)	WTOL CBS 11 (Toledo, OH)
Opposing Views	KCWI CW 23 (Des Moines, IA)	WHO NBC 13 (Des Moines, IA)
RBC Dain Rauscher Inc.	KTEN NBC 10 (Denison, TX)	WLOX ABC 13 (Biloxi, MS)
Bolsamania (Web Financial Group)	WOI ABC 5 (West Des Moines, IA)	KCBD NBC 11 (Lubbock, TX)
WR Hambrecht & Co.	WVVA NBC 6 (Bluefield, WV)	WWBT NBC 12 (Richmond, VA)
WHBF CBS 4 (Rock Island, IL)	WNEP ABC 16 (Moosic, PA)	KFVS CBS 12
WALB NBC 10 (Albany, GA)	KPAX CBS 8 (Missoula, MT)	KNOE TV CBS 8 (Monroe, LA)
KRON San Francisco TV4	KVIA ABC 7 (El Paso, TX)	WHNT CBS 19 (Huntsville, AL)
WXOW ABC 19 (La Crosse, WI)	KHNL NBC 8 (Honolulu, HI)	KRIS NBC 6 (Corpus Christi, TX)
KLTV ABC 7 (Tyler, TX)	KPSP CBS 2 (Thousand Palms, CA)	WSFA NBC 12 (Montgomery, AL)
WMBF NBC 32 (Myrtle Beach, SC)	WWSB ABC 7 (Sarasota, FL)	KXLY 920 AM (Spokane, WA)
KVBC NBC 3 (Las Vegas, NV)	WFLX FOX 29 (West Palm Beach, FL)	KXLY ABC (Spokane, WA)
WLNS CBS 6 (Lansing, MI)		KGUN ABC 9 (Tucson, AZ)

May 28, 2009

PI: Helen Reinherz
R40MC08718

WMC NBC 5 (Memphis, TN)	KFDA CBS 10 (Amarillo, TX)	KOTA ABC 3 (Rapid City, SD)
KSLA CBS 12 (Shreveport, LA)	WECT NBC 6 (Wilmington, NC)	WKRN ABC 2 (Nashville, TN)
KMIR NBC 6 (Palm Desert, CA)	WBAY ABC 2 (Green Bay, WI)	KVOA NBC 4 (Tucson, AZ)
KTRE ABC 9 (Lufkin, TX)	WOIO CBS 19 (Cleveland, OH)	KPLC NBC 7 (Lake-Charles Lafayette, LA)
WTKR CBS 3 (Norfolk, VA)	KLKN ABC 8 (Lincoln, NE)	WGBA NBC 26 (Green Bay, WI)
WTOC CBS 11 (Savannah, GA)	KFSM CBS 5 (Fort Smith, AR)	KTIV NBC 4 (Sioux City, IA)
WTEN ABC 10 (Albany, NY)	WDRB FOX-41 (Louisville, KY)	WPRI FOX 12 (East Providence, RI)
WDAM NBC 7 (Hattiesburg- Laurel, MS)	WAVE NBC 3 (Louisville, KY)	KAIT ABC 8 (Jonesboro, AR)
WQAD ABC 8 (Moline, IL)	KOLD CBS 13 (Tucson, AZ)	KAZT IND 7 (Phoenix/Prescott, AZ)
KRNV CBS 4 (Reno, NV)	KQCW CW 12/19 (Tulsa, OK)	WTVM ABC 9 (Columbus, GA)
WTHR NBC 13 (Indianapolis, IN)	WRIC ABC 8 (Richmond, VA)	Pittsburgh Business Journal
KESQ ABC 3 (Palm Desert, CA)	WCSC CBS 5 (Charleston, SC)	San Antonio Business Journal
WLBT NBC 3 (Jackson, MS)	WXIX FOX 19 (Cincinnati, OH)	Washington Business Journal
WAFB CBS 9 (Baton Rouge, LA)	KLFY CBS 10 (Lafayette, LA)	Dallas Business Journal
WISTV NBC 10 (Columbia, SC)	WTVR CBS 6 (Richmond, VA)	Philadelphia Business Journal
WAFF NBC 48 (Huntsville, AL)	KWQC NBC 6 (Davenport, IA)	South Florida Business Journal
WFIE NBC 14 (Evansville, IN)	KFVE MyNetwork TV (Honolulu, HI)	Austin Business Journal
KCOY CBS 12 (Santa Maria, CA)	KCAU ABC 9 (Sioux City, IA)	Houston Business Journal
WDBJ CBS 7 (Roanoke, VA)	KDBC CBS 4 (El Paso, TX)	

May 28, 2009

PI: Helen Reinherz
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Business Journal Phoenix	Pacific Business Journal
Triangle Business Journal	San Jose Business Journal
Cincinnati Business Journal	Nashville Business Journal
Business First of Columbus	New Mexico Business Journal
Business Journal of Great Milwaukee	St. Louis Business Journal
Wichita Business Journal	Birmingham Business Journal
Business Review (Albany)	Boston Business Journal
San Francisco Business Journal	Minneapolis/St. Paul Business Journal
Memphis Business Journal	Business Journal of the Greater Triad Area
Business First of Louisville	Puget Sound Business Journal
Jacksonville Business Journal	Charlotte Business Journal
Denver Business Journal	Baltimore Business Journal
Dayton Business Journal	Kansas City Business Journal
Orlando Business Journal	Tampa Bay Business Journal
Business First of Buffalo	Atlanta Business Journal
Los Angeles Business Journal	
Portland Business Journal	
East Bay Business Journal	
Sacramento Business Journal	

