



Published in final edited form as:

Am J Intellect Dev Disabil. 2011 November ; 116(6): 479–499. doi:10.1352/1944-7558-116.6.479.

Midlife and Aging Parents of Adults with Intellectual and Developmental Disabilities: Impacts of Lifelong Parenting

Marsha Mailick Seltzer,
University of Wisconsin-Madison

Frank J. Floyd,
University of Hawaii

Jieun Song,
University of Wisconsin-Madison

Jan S. Greenberg, and
University of Wisconsin-Madison

Jinkuk Hong
University of Wisconsin-Madison

Abstract

Using population data, this study included parents of individuals with intellectual and developmental disabilities (IDD, $n = 220$) and parents of individuals without disabilities ($n = 1042$). Parents of individuals with IDD were further divided into those who co-resided with their adult child and those whose adult child lived elsewhere, and the three groups were compared regarding parental patterns of attainment, social participation, psychological functioning, and health in midlife and early old age. In midlife, parents of individuals with IDD were mainly similar to comparison parents. However, by early old age, these parents had poorer health and mental health. Co-residence between the adult with IDD and the parent was prevalent during midlife (51.4%) and in the early years of old age (38.6%), and there were different patterns of parental outcomes depending on the residential status of the adult with IDD.

Parents of children with intellectual and developmental disabilities (IDD) generally serve as supports and caregivers for their children throughout their lives. A great deal of research has been conducted about the impacts of parenting a child with IDD on mothers and, to a lesser extent on fathers, with a focus on the impacts during early childhood (Baker, McIntyre, Blacher, Crnic, Edelbrock et al., 2003, Crnic & Low, 2002), the school years (Floyd & Gallagher, 1997), and adulthood (Ha, Hong, Seltzer, & Greenberg, 2008; Lloyd & Hastings, 2009; Miodrag & Hodapp, 2010). Overall, parents of children with IDD evidence patterns of resilience and effective coping with their parenting responsibilities (Seltzer, Greenberg, Floyd, Pettee, & Hong, 2001), although they also have been shown to have greater difficulties in psychosocial functioning than the general population (Fidler, Hodapp, & Dykens, 2000). The purpose of the present study is to extend the developmental perspective to examine long-term outcomes for these parents through midlife and into the early years of old age.

Parents of children with IDD have been shown to differ in a number of important dimensions from similarly-aged parents of non-disabled children. For example, previous research has shown that their patterns of employment may differ, due to lower rates of labor force participation among mothers (Baldwin & Glendinning, 1983; Hirst, 1985) and less involvement by fathers with child care and housework (Bristol, Gallagher & Schopler, 1988; Crnic, Arbona, Baker, & Blacher, 2009; Floyd, Costigan, & Phillippe, 1997). There is evidence that this is a lifelong pattern (Essex, Seltzer, & Krauss, 1999; Grant, 1986), extending well into the son or daughter's adulthood. They also may be at somewhat greater risk of divorce. According to a recent meta-analysis, there are relatively small but significant elevations in marital distress and divorce rates as compared to couples with typically developing children (Risdal & Singer, 2004), although certain sub-groups may be more vulnerable to marital disruption (e.g., parents of individuals with autism spectrum disorders; Hartley, Barker, Seltzer, Floyd, Greenberg, Orsmond, & Bolt, 2010).

In a prior publication based on a sub-group of the sample reported on here, we examined the life course impacts of parenting a child with IDD or mental illness (Seltzer, Greenberg, et al., 2001) for a cohort of adults from the Wisconsin Longitudinal Study (WLS; described below), a probability sample study that first recruited participants when they were age 18 in 1957 and followed through midlife and early old age. The original goal of the WLS was to describe the transition from high school to adult life among Wisconsin young adults (Hauser, Sheridan, & Warren, 1998). A unique feature of the WLS is that the participants were *randomly selected for the study prior to the time when they became parents* and thus their involvement in the WLS is independent of the event of later having a child with a disability. In our prior analysis (Seltzer, Greenberg, et al., 2001), we used reports of family caregiving, children's educational attainment, and receipt of disability benefits to identify a subgroup of parents who had children with IDD. Although the lack of direct questioning about children's disabilities meant that some appropriate cases were not identified, this data source provided a sample not biased by the self-selection process that is characteristic of most volunteer samples of parents of children with identified disabilities or those recruited through treatment settings.

In our prior analysis of WLS parents in adulthood (average age 36) and midlife (average age 53), those with children and young adults with IDD were similar to a comparison group of parents who did not have any children with disabilities with respect to parents' educational attainment, marital status, physical health, and psychological well-being (Seltzer et al., 2001). However, they had lower rates of employment and social participation than the comparison group. Additional analyses clarified the divergent patterns of employment for WLS mothers of children with IDD (Parish, Seltzer, Greenberg, & Floyd, 2004), who returned later than their age-peers to the labor market after the birth of their child and were less likely to work full-time. As a result, these families had less savings and investments in midlife.

Another characteristic that distinguished this sample of parents from their age peers who did not have children with disabilities was the continued co-residence of the child with the parent well past the time when most children leave home and establish an independent residence. Indeed, we found a higher rate of co-residence of adult children with IDD when their parents were in midlife than was characteristic of the comparison group (57% vs. 16%). In population studies, when parents are in midlife and early old age, having an adult child live at home is generally associated with poorer well-being for parents, particularly mothers (Pudrovska, 2009). However, the situation likely is more complex for parents of children with IDD because launching often does not result in complete independence for the adult child and some parenting responsibilities continue. In a longitudinal study tracking 117 families from before to after residential relocation of an adult son or daughter with IDD,

Seltzer, Krauss, Hong, and Orsmond (2001) found that although aging mothers maintained close relationships and had frequent contact after their adult child's relocation, they had decreasing levels of direct caregiving and less frequent contact with residential staff during the first three years after their son or daughter moved away from home; thus, their daily lives were quite different than during the co-resident period. Therefore, in the present study, in addition to contrasts with the comparison group who do not have children with disabilities or chronic health problems, we examine how parents whose grown child with IDD continues to live with them differ in their profiles of attainment, social participation, psychological well-being, and health from parents whose grown child with IDD lives away from the parent's home.

Similar to the general population, the transition from midlife to the early years of old age likely brings an increased risk of health problems for these parents and transitions in employment and marital roles. In addition, there is an increased likelihood that adult children with IDD will move away from the parental home during these stages of life (Seltzer & Krauss, 2001). Therefore, we examine family roles in midlife and the early years of old age, as well as how co-residence between the parents and adult child with IDD may be differentially associated with the physical and mental health of the parents.

The Present Study

The present study aimed to advance knowledge about the long-term impacts of parenting a child with IDD based on more thorough case finding, a broader range of health outcomes, and extension of our assessment of parental midlife functioning to the subsequent wave of data on WLS participants when they were in the early years of old age (i.e., in their mid-sixties). The study is unique in examining how an unselected sample of parents at this stage of life differs from their age peers who do not have children with disabilities. The WLS data make it possible to examine the impacts of parenting a child with IDD in a broad set of parental life course outcomes, including educational and occupational attainment, marital status, social participation, psychological functioning, and health.

In this study, we compare three groups of parents: (1) those who have a co-residing grown child with IDD, (2) those whose adult child with IDD lives elsewhere, and (3) those whose children do not have disabilities or chronic health problems. Comparisons were made at two stages of life – midlife and the early years of old age. The midlife comparisons seek to confirm the findings of our previous investigation (Seltzer, Greenberg, et al., 2001) with a larger sample that was ascertained more systematically. The comparisons during the parents' early years of old age extend our investigation of the life course impacts of non-normative parenting during a period of potentially increased health vulnerability. We further examined how patterns of co-residence were associated with different outcomes for parents. Our hypotheses were as follows:

1. We anticipated that our prior findings about functioning in midlife would be confirmed and would extend to the early years of old age. We hypothesized that the lower rates of social participation in midlife parents of adults with IDD (Seltzer, Greenberg, et al., 2001) would extend into old age when these parents would be less active socially than the comparison group. In particular, we hypothesized that parents of co-residing adults with IDD would have lower rates of social participation than comparison group parents.
2. Additionally, the relatively later return to the work force and lower rates of employment for the mothers of individuals with IDD would be associated with lower rates of employment in old age, again particularly among mothers whose son or daughter with IDD continues to live at home. However, based on past research indicating the more traditional gender roles in families who have children with IDD

(e.g., Crnic, Arbona, Baker, & Blacher, 2009; Floyd et al., 1997; Parish et al., 2004), we hypothesize that during midlife and the early years of old age, fathers will be more likely to remain in the labor force than fathers in the comparison group.

3. Based on findings from earlier stages in the family life course indicating that there is a somewhat higher rate of divorce in couples who are parenting a child with IDD (e.g., Hartley et al., 2010; Risdal & Singer, 2004), we hypothesize that parents of grown children with IDD will be less likely to be married in the early years of old age than the comparison group.
4. Although past research has been mixed regarding the physical and mental health impacts through midlife of parenting a child with IDD (e.g., Fidler, Hodapp, & Dykens, 2000), we hypothesize that such parents (both those whose son or daughter continues to live at home and those whose son or daughter lives elsewhere) will have poorer physical and mental health during the early years of old age than the comparison group (Clark, Bond, & Hecker, 2007; von Kanel, Dimsdale, Patterson, & Grant, 2003).
5. Midlife and older parents whose adult children with IDD continue to co-reside with them will differ in several respects from parents whose adult children with IDD do not live with them, in part as a result of both having experienced a longer period of caregiving demands and also currently having ongoing daily caregiving responsibilities. Specifically, we expected that these circumstances would accentuate the expected effects of raising a child with IDD, such that mothers of co-residing adult children with IDD will be less likely to be employed outside of the home, and that parents of co-residing children with IDD will have lower levels of social participation and will have greater physical and mental health difficulties than parents of adults with IDD who do not live with them.

Methods

The Wisconsin Longitudinal Study

The WLS is a random sample of 10,317 women and men who graduated from Wisconsin high schools in 1957 (Hauser et al., 1998). Follow-up surveys were conducted in 1975 with 9,138 (90.1%) surviving members of the original sample when they were, on average, 36 years old; in 1992 with 8,493 (87.2%) of the surviving original respondents when they were in their early 50s; and again in 2004 with 7,265 (80.0%) of the surviving respondents when they were in their mid-60s. In addition, parallel data collection procedures were conducted with one randomly selected sibling of the respondents in 1977, 1994, and 2006, with 5,823 siblings participating in one or more of these data collection points. Family background data in 1957 and high school IQ scores were available for both the respondents and their randomly selected siblings. Data from three of the four rounds of data collection (1957, 1992/94, and 2004/06) were used in the present analyses. The 1992/94 and 2004/06 points were conceptualized as the parents' midlife and the early years of old age, respectively.

Participants

To be included in the present analysis, parents in both the IDD and the comparison groups had to have participated in both the 1992/94 and 2004/06 surveys. Parents of individuals with IDD were identified through a series of screener questions asked of all parents during the 2004/06 survey. The screener consisted of a maximum of 31 questions that began by asking parents if any of their children (living or deceased) had an intellectual or developmental disability and the specific diagnosis. If the parent indicated that the son or daughter had a specific IDD condition (e.g., Down syndrome, fragile X syndrome, autism

spectrum disorder), or used terms such as “developmental disability,” “mental retardation,” “cognitive disability,” he or she was included in the IDD sample. In 12 cases (5.4%), the parent did not know the specific diagnosis given to his or her child, but indicated that the child had difficulties in school. In such cases, branching follow-up questions asked if the child was below-average in intelligence, attended special education classes, and/or had difficulty performing activities of daily living (ADLs). If so, he or she was included in the IDD group. In addition, when a parent indicated that the child had epilepsy or seizures, the question about intelligence was asked, and only if the epilepsy was accompanied by below-average intelligence was the child included in the IDD group. A total of 220 WLS respondents who met inclusion criteria for the present study had children with IDD conditions out of a total of 28,305 biological or adopted children in the WLS. This translates into a prevalence of IDD of nearly 1% (0.8%).

Parents in the comparison group met the following criteria: none of their children had an IDD or a mental health condition, or required ongoing care for a chronic health problem. Also, none of the parents in any of the groups had experienced the death of a child. To take full advantage of the WLS data and to obtain the best estimates of the effect of having a child with IDD, instead of selecting one comparison group case for each IDD case, we selected at a ratio of 5:1, resulting in 1100 potential comparison group cases.

These 1320 respondents in the IDD or comparison groups included 58 sibling pairs. To avoid the dependence in the data that could have emanated from the inclusion of sibling pairs in the analysis, one member of each sibling pair was dropped from the analysis. In cases where one sibling had a child with IDD and the other did not ($n = 10$ pairs), we selected the respondent who had a child with IDD for inclusion in the sample, in order to maximize the size of that group. In cases where both siblings were in the comparison group ($n = 48$ pairs), one member of each pair was randomly selected for inclusion in our sample.

Thus, participants in the present analysis were 220 WLS respondents (112 men and 108 women), drawn from both the original and sibling samples, who became parents of individuals with IDD, and 1042 WLS respondents (533 men and 509 women) who had children without chronic health problems or disabilities and who constituted the comparison group. Note that these men and women were not married to each other, i.e., the unit of analysis was the individual WLS respondent, about half of whom were males (fathers) and half females (mothers).

Of the 220 adult children with IDD conditions, 28 had cerebral palsy, 28 had an autism spectrum disorder (ASD), 25 had Down syndrome (DS), 47 had a variety of other specific IDD diagnoses or conditions, and 92 had an IDD of unspecified cause (generally these parents said that their child had mental retardation or developmental disability). There was a significant association between the son or daughter’s diagnosis and current living arrangements in 1992/94 and also in 2004/06; adults with DS were more likely to live at home with their parents than the other adults with IDD ($\chi^2 = 16.15, p < .01$ for 1992/94; $\chi^2 = 21.31, p < .001$ for 2004/06). Specifically, while over 75% of adults with DS lived with their parents at these two time points, about 45% of the adults with the other diagnoses lived at home in 1992/94, and between 28% and 38% of the other groups lived at home in 2004/06.

Table 1 presents the characteristics of both groups of respondents in 1957, when they averaged 18 years of age (prior to becoming parents). We adjusted for respondents’ age in these ANCOVAs because, whereas all of the original WLS respondents were the same age, the participants from the sibling sample varied in age. However, although the ANCOVAs adjusted for respondent age, the unadjusted means are presented for descriptive purposes. As shown in Table 1, respondents who later had a child with IDD had early family backgrounds

that were mainly similar to comparison group respondents; the two groups did not differ with respect to father's education, father's occupational SES, family income, number of siblings, and IQ. However, respondents who later had a child with IDD grew up in communities with significantly larger sized populations than the comparison group.

In the analyses reported below, we further divide the sample of parents of grown children with IDD into those who co-resided with their child with IDD and those whose child lived elsewhere. The background characteristics of these two groups did not differ.

Measures

The measures included in this study cover three domains: (1) attainment (educational, occupational, income, marital), (2) social participation, and (3) psychological functioning and physical health. Unless otherwise specified, measures were obtained from parents at both time periods – midlife and the early years of old age.

Attainment—Measures of attainment included years of education, employment status (0 = not employed, 1 = employed), occupational SES, the number of years in the present job, family income, current marital status (0 = not married, 1 = married), and whether currently married to the first spouse (0 = no, 1 = yes). Occupational SES was measured using Duncan's Socio-Economic Index, which is a weighted composite of occupational and educational attainment (Stevens & Featherman, 1981). Scores ranged from 4.10 to 92.30; higher scores indicate higher SES (e.g., a score of 75 indicates a professional job, a score of 57 is associated with a manager or official, a score of 17 indicates a service worker). Years of education, occupational SES, and number of years in the present job are reported for the 1992/94 point of data collection only, because education remained stable between midlife and old age, and because by 2004/06, approximately half of the sample had retired and the occupational status and stability variables were no longer relevant.

Social Participation—Measures of social participation included the number of organizations in which the respondent was a member (endorsed from a list of 17 organizations) and the number of visits in the past four weeks with friends and relatives, as well as a measure of emotional support. The measure of emotional support was whether the respondent reported having a confidant, i.e., a friend "with whom you can really share your very private feelings and concerns" (0 = no, 1 = yes).

Psychological Functioning and Physical Health—Depression symptoms were measured by the Center for Epidemiological Studies – Depression Scale (CES-D, Radloff, 1977), which has been used extensively in samples of mid-life and older adults (Gatz & Hurwicz, 1990). For each of 20 depression symptoms, the respondent was asked to indicate how many days in the past week the symptom was experienced. The data were recoded into four categories (0 = never, 1 = 1 to 2 days, 2 = 3 to 4 days, and 3 = 5 to 7 days), consistent with the conventional scoring of the CES-D. The total score is the sum of the ratings for the 20 items ($\alpha = .85$ for both the 1992/94 and 2004/06 rounds of data collection), with higher scores indicating more depression symptoms. A score of 16 or greater indicates the risk of clinical depression.

In addition, a modified version of Ryff's Psychological Well-Being measure (Ryff, 1989) was available, covering six dimensions of well-being: Self-Acceptance, Positive Relations with Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth. All subscales consisted of 3 items, which were the items in common across both the 1992/94 and 2004/06 rounds of data collection. Each item was rated on a scale of 1 to 6 (1 = agree strongly to 6 = disagree strongly). For the present analyses, the items were reverse coded so

that a higher score reflected higher levels of well-being. Next, each subscale was averaged to obtain a subscale score, and the six subscale scores were summed for an overall well-being score ($\alpha = .89$ for both the 1992/94 and 2004/06 rounds of data collection).

Measures of physical health included self-rated health (measured on a 5-point scale ranging from 1 = very poor to 5 = excellent), body mass index (BMI), measured as [weight in lbs X 703]/height in inches²; and self-reports of somatic symptoms consisting of musculoskeletal problems (muscle ache, stiff/swollen joints, back pain/strain, and diagnosed serious back trouble) and cardiovascular problems (including chest pain and shortness of breath). The sensitivity of these latter two health measures to life stress is supported by earlier research that demonstrated that in midlife, both musculoskeletal and cardiovascular problems were associated with low socioeconomic status and job stress (Warren, Hoonakker, Carayon, & Brand, 2004) and cardiovascular problems were related to the experience of child death (Rogers et al., 2008).

Limitations in activities of daily living (ranging from 0 to 6), measured only in 2004/06, were assessed by difficulties with (1) bathing or dressing; (2) climbing stairs; (3) bending, kneeling, stooping; (4) lifting or carrying groceries, (5) moving around, moderate physical activity, and (6) vigorous physical activity.

Health Related Quality of Life (HRQoL) was measured in 2004/06 by the Health Utilities Index Mark 3 (HUI-3). This is a multidimensional self-report measure of overall health status (Boyle, Furlong, Feeny, Torrance, & Hatcher, 1995; Feeny et al., 2002; Horsman, Furlong, Feeny, & Torrance, 2003) that evaluates eight attributes of health: vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain (Horsman et al., 2003). Each attribute is assessed by five or six levels of health status or functionality. For example, vision is evaluated from level 1, “able to see well enough to read ordinary newsprint and recognize a friend on the other side of the street” to level 6, “unable to see at all.” Emotion is assessed from level 1, “happy and interested in life” to level 5, “so unhappy that life is not worthwhile”. Corresponding weights are assigned to each level of each attribute by a standardized scoring system, resulting in a multi-attribute summary HUI-3 score (see Feeny et al., 2002), ranging from 0 to 1 where 0 means poorest health status and 1 means perfect health. The test-retest reliability and predictive as well as construct validity of the HUI-3 have been demonstrated in many studies (Boyle et al., 1995; Feeny et al., 2002; Feeny, Huguette, McFarland, & Kaplan, 2009; Maddigan, Feeny, Majumdar, Farris, & Johnson, 2006) and it has been used extensively in national population health studies (Feeny, Furlong, Boyle, & Torrance, 1995; Fryback et al., 2007; Kaplan et al., 2008; Robert et al., 2009).

Co-residence Status: We divided the group of parents of individuals with IDD into those whose son or daughter continued to live with the parent respondent and those whose son or daughter lived away from the respondent’s home. At midlife (1992/94), 51% of the sons and daughters with IDD lived at home, and by the early years of old age (2004/06) the rate of co-residence was 39%. Patterns of co-residence are complex, as some of the sons and daughters with IDD moved away from home between 1992/94 and 2004/06, and a few moved back. Thus, the composition of the co-resident and not co-resident groups differed at the two time points. Note that when we refer to “co-residence” or “living at home,” we are referring to the son or daughter with IDD living in the home of the WLS respondent parent.

In contrast, co-residence of the child with the parent was rare in the comparison group, with rates of 15% and 2% at the two time periods, respectively. According to our selection criteria, these adult children who lived at home did not have disabilities and did not receive care from their parents, and because of the relatively low rates, we did not separate co-resident and not co-resident families in the comparison group.

Methods of Data Analysis

Two approaches were used to compare the three groups (parents of co-residing adults with IDD, parents whose adult child with IDD lived elsewhere, and parents in the comparison group). Logistic regression was used to test group differences with respect to dichotomous variables (employment status, marital status, whether the respondent was still married to the first spouse, and whether the respondent had a confidant). Analysis of covariance was used to test group differences on the remaining continuous variables. Post-hoc tests were used if the overall test statistic was significant; these post-hoc tests contrasted (a) co-residing IDD versus the comparison group, (b) not co-residing IDD versus the comparison group, and (c) co-residing IDD versus not co-residing IDD groups. In all of these analyses, gender (mothers versus fathers) was entered as a factor/variable because of the known pattern of gender differences in the key dependent variables (e.g., employment, income, depressive symptoms, health). However, because the main effect of gender was not the focus of our hypotheses, gender effects are included in the tables but not discussed in the text. We tested Parental Status X Gender interaction effects for all variables; only two effects were significant, and these effects are described in the text and noted as footnotes to the tables. Respondents' age was controlled in the logistic regressions and the ANCOVAs because, whereas all of the original WLS respondents were the same age, participants from the sibling sample varied in age.

Although the design of the WLS was longitudinal, we were unable to use a repeated measures approach in these analyses both because some measures (e.g., occupational SES, number of years in present job, ADLs, and HRQoL) were available or pertinent only at one of these time periods and because, as noted, the composition of the co-residing and not co-residing groups changed from 1992/94 to 2004/06.

Cohen's *d* (Cohen, 1992) was used to calculate effect size for all significant differences in ordinal or interval level variables, and odds ratios were calculated for dichotomous variables. Effect sizes and odds ratios are reported in the text. The formula for calculating Cohen's *d* is $[M1 - M2] / [(SD1 + SD2) / 2]$, where *M* is the mean of each group and *SD* is the standard deviation of each group. Cohen defines a small effect as .2-.3, a medium effect as approximately .5, and a large effect as .8 or higher.

Results

Patterns of Attainment

Table 2 presents data regarding patterns of attainment (educational, occupational, income, marital) in 1992/94 (the midlife period). We present unadjusted means for six subgroups (mothers and fathers of co-residing adults with IDD, mothers and fathers of not co-residing adults with IDD, and mothers and fathers in the comparison group). As shown in Table 2, midlife parents of grown children with IDD, whether co-residing or not, did not differ from the comparison group in the number of years of education they completed (approximately 14), employment status (approximately 80% were employed), or the number of years they were employed in their present job (approximately 12–13). Unexpectedly, parents whose adult child with IDD continued to live at home had significantly lower levels of occupational SES than those whose adult child with IDD lived elsewhere (effect size = .36) or than the comparison group (effect size = .27). This finding differs from our hypothesis of divergent patterns for mothers and fathers. There also was a significant difference in income, with midlife parents of co-residing grown children with IDD earning significantly lower annual incomes (approximately \$44,000) than the comparison group (approximately \$52,000 per year) in 1992/94 (effect size = .25).

Although parents of children with IDD (co-resident and not co-resident) and parents in the comparison group did not differ in marital status in midlife (over 80% of all three groups were currently married), there was a significant difference in the proportion still married to their first spouse. Respondents who did not co-reside with their son or daughter with IDD differed significantly from both the comparison group (odds ratio = .50) and from parents with co-resident adult children with IDD (odds ratio = .43). Whereas about three-fourths of the midlife parents in the comparison group and of those whose son or daughter with IDD co-resided were still married to their first spouse, only about half of the parents whose son or daughter with IDD was living away from home were still married to their first spouse. Thus, it was not marital status but rather *marital stability* that differentiated the groups.

We further explored this difference in marital stability to determine whether it reflected divorce or widowhood and we found that there was an elevated rate of both divorce and widowhood in midlife among those whose son or daughter with IDD had moved away from the respondent's home ($\chi^2 = 20.64, p < .001$). Nearly one-third (33.0%) of this group was divorced from the other biological parent of the son or daughter with IDD, and 6.8% had experienced the death of the other biological parent. In contrast, the rates for the co-resident parents of adult children with IDD were 13.6% divorced and 5.5% widowed, and for the comparison group the rates were 20.0% divorced and 2.7% widowed.

Table 3 presents group comparisons in patterns of employment and marital status in 2004/2006, the early years of old age for these parents. When they were in their mid-sixties, only about half of the sample members were still employed, and parents of grown children with IDD had levels of employment and incomes that did not differ from the comparison group. Similar to patterns already evident in midlife, current marital status did not differ among the three groups; however, respondents whose grown children with IDD lived away from home were about half as likely (odds ratio = .54) to be married to their first spouse than parents in the comparison group and about 60% less likely (odds ratio = .39) to be married to their first spouse as parents co-residing with their adult children with IDD. Again, the probability of being divorced (32.3%) and widowed (12.8%) was considerably higher in this group of parents than the other two groups ($\chi^2 = 21.00, p < .001$).

Thus, parents of grown children with IDD showed normative profiles with respect to their level of education, employment status, and marital status in midlife and the early years of old age. However, in midlife, those who were co-residing had substantially lower incomes than the comparison group and those whose son or daughter lived elsewhere had higher occupational SES. By the early years of old age, the income differences were no longer evident, likely reflecting retirement of about half of all sample members. The most notable differences at both midlife and the early years of old age in this sample were in the realm of marital *stability*, particularly among parents whose grown children with IDD no longer lived at home with them; these parents were considerably more likely to be divorced from the other biological parent of the child with IDD and also more likely to have experienced the death of the other biological parent than the other two groups.

Social Participation

Table 4 summarizes data for social participation in midlife. The patterns of social participation of parents of children with IDD in midlife were similar to the comparison group with respect to the number of organizations to which parents belonged, the frequency of visits with friends and relatives, and their likelihood of having a confidant.

Table 5 presents the social participation comparisons reflecting the early years of old age for these parents. At this stage of life, parents of grown children with IDD did not differ from the comparison group in the number of organizations to which they belonged. However,

parents of co-residing grown children with IDD were considerably less likely to visit with friends and relatives during the past month than the comparison group (effect size = .53). Additionally, parents of not co-residing adults with IDD were considerably less likely to report having a confidant than comparison group parents (odds ratio = .58) or than parents of co-residing adult children with IDD (odds ratio = .49).

Thus, with respect to life course patterns of social participation, parents of grown children with IDD were mainly similar to the general population during midlife, but by the early years of old age those whose son or daughter with IDD still lived at home visited with friends and family less frequently than the comparison group, and those whose son or daughter lived away from home were less likely to have a confidant than either the co-residing IDD group or than the comparison group.

Psychological Functioning and Health Outcomes

As shown in Table 6, with respect to psychological functioning, midlife parents of children with IDD did not differ from the comparison group in depression symptoms or psychological well-being, regardless of whether their son or daughter with IDD lived at home or elsewhere.

Regarding physical health in midlife, the groups did not differ in self-rated health or in their number of musculoskeletal problems. However, there was a significant Parent Status X Gender interaction effect in BMI in midlife, with mothers of co-residing adult children having significantly higher BMIs than fathers in this group, whereas for parents of adults with IDD who lived away from home and for the comparison group, fathers had higher BMIs than mothers (effect size = .24). The groups also differed significantly in cardiovascular problems in midlife, with parents of co-residing grown children with IDD having higher rates of such problems than the comparison group (effect size = .24).

However, by the early years of old age, parents of children with IDD had a greater number of health and mental health difficulties (see Table 7). Specifically, parents of co-residing adult children with IDD had higher levels of depression symptoms than the comparison group (effect size = .30). However, parents of children with IDD (co-residing or not) did not differ from the comparison group in the measure of positive psychological well-being.

In the early years of old age, parents of adult children with IDD had health problems and functional impairments that set them apart from the comparison group. There was a significant Parent Status by Gender interaction effect for self-rated health ($F = 4.65, p < .01$) which indicated that, although there was no mother-father difference in self-rated health in the comparison group or the co-residing IDD group, mothers of grown children with IDD who lived away from home were more likely to perceive that their health was compromised relative to fathers of such children. Also, co-residing parents of adults with IDD had elevated BMI relative to the comparison group (effect size = .35) and relative to parents whose adult child with IDD lived elsewhere (effect size = .34); indeed, the average BMI score of 30 for the group of co-residing parents signifies obesity, placing them at higher risk for poor health.

Aging parents of grown children with IDD did not differ from the comparison group with respect to their likelihood of having cardiovascular problems. However, there was a significant difference in musculoskeletal problems, although the post-hoc test was not significant. Also, the three groups differed significantly with respect to limitations in activities of daily living. Parents of co-residing adult children with DD had more limitations in activities of daily living than the comparison group (effect size = .32). Further, both groups of parents of adult children with IDD had significantly poorer health-related quality

of life than comparison group parents (effect size for co-residing IDD versus comparison group = .40; effect size for not co-residing IDD versus the comparison group = .24).

Discussion

The present study extends our understanding of the life course patterns of attainment, social participation, psychological functioning, and health in parents of individuals with IDD. In our prior analysis of a sub-set of the parents in the present study in which we focused on functioning in midlife (Parish et al., 2004; Seltzer, Greenberg, et al., 2001), we concluded that midlife parents of individuals with IDD were mainly similar to their counterparts who did not have a child with a disability, with largely comparable general patterns of attainment, psychological well-being, and health, and more circumscribed differences in social participation and employment patterns. The present analysis doubles the sample size of WLS parents with a child with IDD (due to better ascertainment), adds another point of measurement approximately twelve years after the midlife assessment, and reveals new difficulties, notably poorer health and functional abilities, that only became evident in early old age.

At the most recent point of data collection, the parents were in their mid-sixties. Counter to our hypotheses, at this stage of life, parents of adult children with IDD continued to manifest normative rates of employment and retirement. However, in line with our predictions, in the early years of old age there was less social involvement among those whose child remained living at home (less frequent contact with friends and relatives) and less emotional support from a confidant among those whose son or daughter lived away from home. Furthermore, although parents of adult children with IDD were just as likely to be married in midlife and the early years of old age as their counterparts whose children do not have disabilities, more fine-grained analyses revealed differences in parental marital stability, with a lower likelihood of being married to the first spouse among those respondents whose adult child no longer lived at home. There were elevated rates of both divorce and widowhood among respondents whose son or daughter lived away from home when the parents were in their mid-sixties.

Although it is not possible to ascertain the causal order of family life events from the present data, one interpretation is that single parenthood due to divorce or widowhood may be a factor propelling the move of the son or daughter with IDD out of the parental home. However, it is certainly possible that, in some instances of divorce where the adult child no longer lived with the parent respondent, he or she was still living with the other biological parent (i.e., the former spouse of the WLS respondent). It is also possible that some parents are willing to consider and pursue divorce only after the child with a disability is being cared for in a setting out of their home. Unfortunately, detailed data on residential arrangements and the relative timing of launching and marital disruption were not available on all cases where the adult lived away from the parent respondent, so these remain questions for future life course research.

Although there was not evidence of divergent mental health patterns in midlife, by the early years of old age parents of co-resident individuals with IDD showed significant elevations in depression symptoms relative to the comparison group. Thus, long-term co-residence may take a toll on parental psychological functioning, evident only after parents reach the early years of old age. Perhaps as parents grapple with the need to plan for their adult child's long-term future, beyond the time when they can be the primary caregivers or overseers of their son or daughter's services and care, and as they struggle with their own functional limitations, they become vulnerable to feelings of depression that were not problematic in midlife.

However, the most prominent profile of life course divergence from the normative pattern was in the domain of parental health. In midlife, parents of coresiding individuals with IDD were more likely to be overweight and had a greater likelihood of cardiovascular impairments, but otherwise they did not appear to be at elevated risk for poorer health. However, by the early years of old age, there was evidence of more pervasive health impacts, indicated by continued likelihood of being overweight, poorer self-rated health (among mothers whose adult child lived away from home, relative to fathers), more musculoskeletal conditions, and more impaired daily functioning and poorer health-related quality of life.

Thus, our earlier conclusion that parents of individuals with IDD showed a pattern of outcomes similar to their counterparts who did not have a child with IDD is an accurate assessment through midlife. However, a decade later, these parents had elevated rates of depression symptoms, divorce, widowhood, poorer physical health, and functional impairments. These findings underscore the need for a life course perspective to fully understand the impacts of parenting a child with IDD. Past research, mainly conducted at earlier stages of the life course, has presented a more dichotomous set of conclusions, either landing on the side of vulnerability (e.g., Ha et al., 2008; Singer, 2006) or resiliency (e.g., Costigan, Floyd, Harter, & McClintock, 1997). However, the present study suggests that the profile is more nuanced, depending on the stage of the life course, the living arrangement of the adult child, and the particular indicator of parental functioning. Indeed, the cumulative effects of parenting may take decades to be manifested. A recent study by Yamaki and colleagues (Yamaki, Hsieh, & Heller, 2009) agrees with this picture. These investigators reported elevated health problems among family caregivers of co-resident adults with IDD both in midlife and in old age, and symptoms worsened from midlife to old age.

The prevalence of co-residence among adults with IDD when the parents were in their sixties was notable (39% still lived at home). Examination of the specific diagnoses of the adults who continued to live at home versus those who did not live with their parents at this stage of life revealed that adults with DS were considerably more likely to live at home than adults with ASD, cerebral palsy, or other IDD conditions. Past research has also shown higher rates of co-residence in adults with DS than adults with ASD (e.g., Esbensen, Bishop, Seltzer, Greenberg, & Taylor, 2010), and our findings are consistent in this respect.

Some researchers have attributed this difference in co-residence to the lower level of parenting stress experienced by parents of children with DS than ASD (Esbensen & Seltzer, 2011). However, our findings do not suggest that parents of co-residing adult children had less distress in their lives. Although those whose adult son or daughter lived elsewhere had lower levels of marital stability, the profile of vulnerability among parents whose adult child continued to live at home was pronounced; they had significantly more depression, less frequent visits with friends and family, greater obesity, greater functional impairments, and poorer health-related quality of life. Thus, the preponderance of adults with DS among those who continued to live at home versus those who lived elsewhere probably does not account for the differences in parents' profiles of vulnerability in the early years of old age; continued co-residence and daily caregiving may be a more parsimonious explanation.

The present pattern of findings regarding poorer health profiles of parents of adult children with IDD points to the need for future research that can investigate the mechanisms by which these divergent health profiles arise. There are many possible psychological and physiological mechanisms that warrant investigation. One possible mechanism, based on findings from other studies of midlife parents of adults with disabilities, is dysregulated cortisol levels (Hartley et al., in press; Seltzer et al., 2009; Seltzer et al., 2010). It is possible that biomarkers of stress, such as salivary cortisol, are early indicators of the impact of

parenting a child with IDD, but it may take until the early years of old age for such biomarkers to manifest in health problems and functional limitations. Of course, other mechanisms warrant investigation in future research, as we seek to understand the elevated risk of mental health, physical health, and functional impairments of parents of adults with IDD in the early years of old age.

The public health implications of these findings suggest the need for more services including in-home family support and out-of-home respite care for individuals with IDD. The fact that more than one-third of adults with IDD continue to live with their parents through the time when the parents are in their mid-sixties underscores the high probability of continued co-residence. It is possible that earlier investment in services and supports might extend the capacity of older parents to continue to provide care without a negative effect on their own health, marital functioning, and mental health. Yet calls for such services and supports truly imply the need for research on how best to meet the needs of families across the life course; very little experimental intervention research has been conducted that can point to specific services that might result in less of a deleterious outcome for parents over the long run. The parents in the present study are from the first generation to reach old age during the era following the elimination of institution-based services and hence they may provide a benchmark against which to measure the impacts of subsequent expansions and contractions of the service system.

An unexpected finding of the present study was the lack of differential effects for mothers and fathers of individuals with IDD; there were only two significant Parent Status x Gender interaction effects. Most past research has focused on mothers, and it has generally been assumed that the effects of non-normative parenting are stronger for mothers than for fathers. However, in the present population-based sample, there do not appear to be substantial differential gender differences, at least not in midlife or in old age. It is possible that this lack of difference may be the result of the more representative sampling used in the present study than in past research, or possibly due to the long duration of caregiving; over time, the differential effects on mothers and fathers may diminish. This is an important question for future research.

The present study suffered from some methodological limitations, notably the lack of racial and ethnic diversity in the sample of Wisconsin parents. Also, parents who died before midlife were not included in this sample, nor were the parents of children who died before the 2004/06 point of data collection. Ascertainment of respondents whose children had IDD conditions was based on parent-report. However, the series of branching questions that identified a child as having an IDD condition was extensive, encompassing a total of 31 possible questions. We believe that the probability of false positives (i.e., a parent indicating that the child had IDD when he or she did not have an IDD condition) was very small, although false negatives remain a possibility. Yet the prevalence of IDD in the generation of children of WLS respondents was nearly 1%, which is consistent with population estimates and which bolsters confidence in the ascertainment of IDD.

Among the strengths of the study are the long duration of the follow-up period, longer than any previous study, the broad range of measures across multiple life domains, and importantly, the use of population-level data. The study's findings indicate that in the early years of old age, the pattern of parental resilience that was evident through midlife was replaced by a more mixed profile of resilience and vulnerability. Resilience was evident with respect to participation in organizations, a measure of positive psychological well-being, and similar patterns as their age-peers who did not have an adult child with a disability with respect to cardiovascular impairments. Vulnerability was evident in greater marital disruptions, lower frequency of contact with friends and family, and greater

likelihood of depression, obesity, musculoskeletal problems, and poorer health-related quality of life. The pattern of findings differs to some extent for parents whose adult child still lives with them and those whose adult child lives elsewhere, but both groups manifest substantial aspects of vulnerability. Ultimately, more research is needed about parenting a child with IDD during old age. The findings of the present study call for services and supports to extend the pattern of resilience in aging parents of adults with IDD.

Acknowledgments

Support for this research was provided by the National Institute on Aging (R01 AG20558, M. M. Seltzer, PI; P01 AG20179, R.M. Hauser, PI) and the National Institute of Child Health and Human Development (P30 HD03352, M.M. Seltzer, PI).

References

- Baker BL, McIntyre LL, Blacher J, Crnic K, Edelbrock C, Low C. Pre-school children with and without developmental delay: Behavior problems and parenting stress over time. *Journal of Intellectual Disability Research*. 2003; 4–5:217–230.
- Baldwin, S.; Glendinning, C. Employed women and their disabled children. In: Finch, J.; Groves, D., editors. *A labour of live: Women, work, and caring*. London: Routledge & Kegan Paul; 1983. p. 53-71.
- Boyle MH, Furlong W, Feeny D, Torrance GW, Hatcher J. Reliability of the Health Utilities Index—Mark III used in the 1991 cycle 6 Canadian General Social Survey Health Questionnaire. *Quality of Life Research*. 1995; 4:249–257. [PubMed: 7613535]
- Bristol MM, Gallagher JJ, Schopler E. Mothers and fathers of young developmentally disabled and nondisabled boys: Adaptation and spousal support. *Developmental Psychology*. 1988; 24:441–451.
- Clark MS, Bond MJ, Hecker JR. Environmental stress, psychological stress, and allostatic load. *Psychology, Health, and Medicine*. 2007; 12:18–30.
- Cohen J. A power primer. *Psychological Bulletin*. 1992; 112:155–159. [PubMed: 19565683]
- Costigan CL, Floyd FJ, Harter KSM, McClintock JC. Family process and adaptation to children with mental retardation: Disruption and resilience in family problem-solving interactions. *Journal of Family Psychology*. 1997; 11:515–529.
- Crnic, K.; Low, C. Everyday stress and parenting. In: Bornstein, MH., editor. *Handbook of parenting*. Vol. 5: Practical issues in parenting. 2. Mahwah, NJ: Lawrence Erlbaum Associates Publishers; 2002. p. 243-267.
- Crnic K, Arbona APY, Baker B, Blacher J. Mothers and fathers together: Contrasts in parenting across preschool to early school age in children with developmental delays. *International Review of Research in Mental Retardation*. 2009; 37:3–30. [PubMed: 20224748]
- Esbensen AJ, Bishop S, Seltzer MM, Greenberg JS, Taylor JL. Comparisons between individuals with autism spectrum disorders and individuals with Down syndrome in adulthood. *American Journal of Intellectual and Developmental Disabilities*. 2010; 115:277–290.
- Esbensen AJ, Seltzer MM. Accounting for the “Down Syndrome Advantage. *American Journal of Intellectual and Developmental Disabilities*. 2011; 116:3–15.
- Essex EL, Seltzer MM, Krauss MW. Differences in coping effective and well-being among aging mothers and fathers of adults with mental retardation. *American Journal on Mental Retardation*. 1999; 104:545–563. [PubMed: 10587735]
- Feeny D, Furlong W, Torrance GW, Goldsmith CH, Zhu Z, DePauw S, et al. Multiattribute and single-attribute utility functions for the Health Utilities Index Mark 3 System. *Medical Care*. 2002; 40:113–128. [PubMed: 11802084]
- Feeny D, Huguet N, McFarland BH, Kaplan MS. The construct validity of the Health Utilities Index Mark 3 in assessing mental health in population health surveys. *Quality of Life Research*. 2009; 18:519–526. [PubMed: 19277898]
- Feeny D, Furlong W, Boyle M, Torrance GW. Multiattribute health-status classification systems: Health Utilities Index. *Pharmacoeconomics*. 1995; 7:490–502. [PubMed: 10155335]

- Fidler DJ, Hodapp RM, Dykens EM. Stress in families of young children with Down syndrome, Williams syndrome, and Smith-Magenis syndrome. *Early Education and Development*. 2000; 11:395–406.
- Floyd FJ, Costigan CL, Phillippe KA. Developmental change and consistency in parental interactions with school-age children who have mental retardation. *American Journal on Mental Retardation*. 1997; 101:579–594. [PubMed: 9152474]
- Floyd FJ, Gallagher EM. Parental stress, care demands, and use of support services for school-age children with disabilities and behavior problems. *Family Relations*. 1997; 46:359–371.
- Fryback DG, Dunham NC, Palta M, Hanmer J, Buechner J, Cherepanov D, et al. US norms for six generic health-related quality-of-life indexes from the national health measurement study. *Medical Care*. 2007; 45:1162–1170. [PubMed: 18007166]
- Gatz M, Hurwic M. Are old people more depressed? Cross-sectional data on Center for Epidemiological Studies Depression Scale factors. *Psychology and Aging*. 1990; 5:284–290. [PubMed: 2378694]
- Grant G. Older carers, interdependence, and the care of mentally handicapped adults. *Aging and Society*. 1986; 6:331–351.
- Ha JH, Hong J, Seltzer MM, Greenberg JS. Age and gender differences in the well-being of midlife and aging parents with children with mental health or developmental problems: Report of a national study. *Journal of Health and Social Behavior*. 2008; 49:301–316. [PubMed: 18771065]
- Hauser, Sheridan; Warren. Socioeconomic achievements of siblings in the life course – New findings from the Wisconsin Longitudinal Study. *Research on Aging*. 1998; 21:338–378.
- Hartley S, Barker E, Seltzer MM, Floyd F, Greenberg J, Orsmond G, Bolt D. The relative risk and timing of divorce in families of children with an autism spectrum disorder. *Journal of Family Psychology*. 2010; 24:449–457. [PubMed: 20731491]
- Hirst M. Young adults with disabilities: Health, employment and financial costs for family carers. *Child Care, Health & Development*. 1985; 11:291–307.
- Horsman J, Furlong W, Feeny D, Torrance G. The health utilities index (HUI): Concepts, measurement properties and application. *Health and Quality of Life Outcomes*. 2003; 1:54. [PubMed: 14613568]
- Kaplan MS, Huguet N, Orpana H, Feeny D, McFarland BH, Ross N. Prevalence and factors associated with thriving in older adulthood: A 10-year population-based study. *Journal of Gerontology: Medical Sciences*. 2008; 63:M1097–M1104.
- Lloyd TK, Hastings R. Hope as a psychological resilience factor in mothers and fathers of children with intellectual disabilities. *Journal of Intellectual Disability Research*. 2009; 53:957–968. [PubMed: 19744261]
- Maddigan SL, Feeny DH, Majumdar SR, Farris KB, Johnson JA. Health Utilities Index Mark 3 demonstrated construct validity in a population-based sample with type 2 diabetes. *Journal of Clinical Epidemiology*. 2006; 59:472–477. [PubMed: 16632135]
- Miodrag N, Hodapp RM. Chronic stress and health among parents of children with intellectual and developmental disabilities. *Current Opinion in Psychiatry*. 2010; 23:407–411. [PubMed: 20592593]
- Parish SL, Seltzer MM, Greenberg JS, Floyd FJ. Economic implications of caregiving at midlife: Comparing parents with and without children who had developmental disabilities. *Mental Retardation*. 2004; 42:413–426. [PubMed: 15516174]
- Pudrovska T. Parenthood, stress, and mental health in late midlife and early old age. *International Journal of Aging and Human Development*. 2009; 68:127–147. [PubMed: 19445346]
- Radloff LS. The CES-D Scale: A self-rated depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Risdal D, Singer GHS. Marital adjustment in parents of children with disabilities: A historical review and meta-analysis. *Research and Practice for Persons with Severe Disabilities*. 2004; 29:95–103.
- Robert SA, Cherepanov D, Palta M, Dunham NC, Feeny D, Fryback G. Socioeconomic status and age variations in health-related quality of life: Results from the National Health Measurement Study. *Journal of Gerontology: Social Sciences*. 2009; 64:378–389.

- Rogers CH, Floyd FJ, Seltzer MM, Greenberg J, Hong JK. Long-term effects of the death of a child on parents' adjustment in midlife. *Journal of Family Psychology*. 2008; 22:203–211. [PubMed: 18410207]
- Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*. 1989; 57:1069–1081.
- Seltzer MM, Almeida DM, Greenberg JS, Savla J, Stawski RS, Hong J, Taylor JL, et al. Psychological and biological markers of daily lives of midlife parents of children with disabilities. *Journal of Health and Social Behavior*. 2009; 50:1–15. [PubMed: 19413131]
- Seltzer MM, Greenberg JS, Floyd FJ, Pettee Y, Hong J. Life course impacts of parenting child with a disability. *American Journal on Mental Retardation*. 2001; 106:265–286. [PubMed: 11389667]
- Seltzer MM, Greenberg JS, Hong J, Smith LE, Almeida DM, Coe C, Stawski RS. Maternal cortisol levels and behavior problems in adolescents and adults with ASD. *Journal of Autism and Developmental Disorders*. 2010; 40:457–469. [PubMed: 19890706]
- Seltzer MM, Krauss MW. Quality of life of adults with mental retardation/ developmental disabilities who live with family. *Mental Retardation and Developmental Disabilities Research Reviews*. 2001; 7:105–114. [PubMed: 11389565]
- Seltzer MM, Krauss MW, Hong J, Orsmond GI. Continuity or discontinuity of family involvement following residential transitions of adults with mental retardation. *Mental Retardation*. 2001; 39:181–194. [PubMed: 11419997]
- Singer GHS. Meta-analysis of comparative studies of depression in mothers of children with and without developmental disabilities. *American Journal on Mental Retardation*. 2006; 111:155–169. [PubMed: 16597183]
- Stevens G, Featherman DL. A revised socioeconomic index of occupational status. *Social Science Research*. 1981; 10:364–395.
- von Kanel R, Dimsdale JE, Patterson TL, Grant I. Acute procoagulant stress response as a dynamic measure of allostatic load in Alzheimer caregivers. *Annals of Behavioral Medicine*. 2003; 26:42–48. [PubMed: 12867353]
- Warren JR, Hoonakker P, Carayon P, Brand J. Job characteristics as mediators in SES-health relationships. *Social Science and Medicine*. 2004; 59:1367–1378. [PubMed: 15246167]
- Yamaki K, Hsieh K, Heller T. Health profile of aging family caregivers supporting adults with intellectual and developmental disabilities at home. *Intellectual and Developmental Disabilities*. 2009; 47:425–435. [PubMed: 20020798]

Table 1

Analysis of Covariance of Family-of-Origin Background Characteristics at Age 18 (1957)

	IDD			Comparison group			Parent Status <i>F</i>	Gender <i>F</i>
	Men	Women	Total	Men	Women	Total		
	N=112	N=108	N=220	N=533	N=509	N=1042		
Father's years of Education	10.2 (3.6)	10.1 (3.5)	10.2 (3.5)	9.9 (3.4)	9.7 (3.3)	9.8 (3.3)	3.72	1.06
Father's occupational SES	35.9 (24.9)	35.9 (24.0)	35.9 (24.4)	36.1 (23.9)	33.5 (23.0)	34.8 (23.5)	1.38	2.63
Family income	5,200	6,200	5,700	5,600	5,400	5,500	0.01	0.85
Community population size	47295 (68730)	58231 (76146)	52663 (72506)	44050 (65389)	40214 (63583)	42176 (64511)	4.48*	0.07
N of siblings	3.8 (2.3)	4.1 (2.2)	3.9 (2.3)	4.2 (2.1)	4.1 (2.2)	4.1 (2.2)	1.81	1.48
IQ	105.5 (14.7)	100.2 (15.5)	102.9 (15.3)	104.2 (14.8)	103.0 (14.2)	103.6 (14.5)	0.00	5.80*

Note: The covariate was the age of the respondent. Means are presented with SD in parentheses.

Means for dichotomous variables are proportions. The median incomes are reported in the table, although the *F*-ratios were based on the natural log of mean income. For the group differences, *F* was presented for continuous variables and χ^2 was presented for dichotomous variables.

* $p < .05$.

Table 2

Patterns of Attainment in Midlife (1992/1994)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status <i>F/χ²</i>	Gender <i>F/χ²</i>
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
	N=54	N=59	N=113	N=58	N=49	N=107	N=533	N=509	N=1042		
Years of education	14.6 (3.0)	13.0 (1.6)	13.8 (2.5)	14.5 (2.8)	13.6 (2.6)	14.1 (2.8)	14.2 (2.6)	13.4 (2.1)	13.8 (2.4)	1.51	39.39***
Employment status (1 = employed)	.92 (.27)	.69 (.47)	.81 (.39)	.91 (.29)	.79 (.41)	.85 (.36)	.91 (.29)	.78 (.42)	.85 (.36)	2.42	57.75***
Occupational SES	54.2 (24.6)	42.8 (21.0)	48.9 (23.5)	61.6 (21.5)	50.3 (23.6)	57.2 (23.0)	52.6 (24.5)	49.3 (21.1)	51.0 (23.0)	4.58* <i>b,c</i>	13.24***
Years in present job	14.1 (10.3)	11.2 (9.1)	12.6 (9.8)	14.0 (10.6)	10.2 (8.4)	12.2 (9.9)	15.3 (11.1)	9.9 (8.2)	12.8 (10.2)	0.29	77.25***
Income	58,700	33,000	44,435	62,000	41,200	50,000	55,200	47,900	52,000	3.97* <i>a</i>	36.83***
Marital status (1 = married)	.96 (.19)	.82 (.39)	.89 (.31)	.89 (.31)	.71 (.46)	.81 (.39)	.90 (.29)	.82 (.38)	.86 (.34)	2.79	24.70***
Still married to the first spouse (1 = yes)	.85 (.36)	.69 (.47)	.78 (.42)	.64 (.49)	.53 (.50)	.59 (.49)	.75 (.43)	.73 (.44)	.74 (.44)	11.39*** <i>b,c</i>	1.63

Note: The covariate was age of the respondent. Means are presented with SD in parentheses. Means for dichotomous variables are proportions. The median incomes are reported in the table, although the *F*-ratios were based on the natural log of mean income. For the group differences, *F* was presented for continuous variables and χ^2 was presented for dichotomous variables.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Significant difference between the co-residing IDD and comparison groups.

^b Significant difference between the not co-residing IDD and comparison groups.

^c Significant difference between the co-residing IDD and not co-residing IDD groups.

Table 3

Patterns of Attainment during the Early Years of Old Age (2004/2006)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status F/χ^2	Gender F/χ^2
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
Employment status (1 = employed)	$N=40$.55 (.50)	$N=45$.38 (.49)	$N=85$.46 (.50)	$N=72$.57 (.50)	$N=63$.40 (.49)	$N=135$.49 (.50)	$N=533$.51 (.50)	$N=509$.41 (.49)	$N=1042$.46 (.50)	1.46	19.89***
Income	75,300 .98 (.16)	25,400 .76 (.43)	50,770 .86 (.35)	64,000 .85 (.36)	31,784 .65 (.48)	50,700 .76 (.43)	61,000 .88 (.33)	35,000 .74 (.44)	48,936 .81 (.39)	0.77	69.60***
Marital status (1 = married)										3.66	45.23***
Still married to the first spouse (1 = yes)	.85 (.36)	.67 (.48)	.75 (.43)	.58 (.50)	.49 (.50)	.54 (.50)	.69 (.46)	.65 (.48)	.67 (.47)	11.30** ^{b,c}	4.15*

Note: The covariate was age of the respondent. Means are presented with SD in parentheses. Means for dichotomous variables are proportions. The median incomes are reported in the table, although the F -ratios were based on the natural log of mean income. For the group differences, F was presented for continuous variables and χ^2 was presented for dichotomous variables.

^b Significant difference between the not co-residing IDD and comparison groups.

^c Significant difference between the co-residing IDD and not co-residing IDD groups.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4

Patterns of Social Participation in Midlife (1992/1994)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status F/χ^2	Gender F/χ^2
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
N organizations	$N = 54$ 4.0 (2.4)	$N = 59$ 4.0 (3.1)	$N = 113$ 4.0 (2.8)	$N = 58$ 4.8 (2.8)	$N = 49$ 3.4 (2.4)	$N = 107$ 4.1 (2.6)	$N = 533$ 4.1 (3.0)	$N = 509$ 2.8 (2.4)	$N = 1042$ 3.5 (2.8)	2.89	53.91***
N of visits with friends and relatives/4 weeks	5.6 (4.9)	7.3 (4.6)	6.4 (4.8)	5.4 (3.5)	7.4 (7.4)	6.5 (5.8)	6.7 (5.8)	7.7 (6.4)	7.2 (6.1)	1.16	11.08**
Having confidant (1 = yes)	.61 (.49)	.76 (.43)	.68 (.47)	.70 (.46)	.88 (.33)	.80 (.41)	.70 (.46)	.84 (.36)	.77 (.42)	4.58	34.54***

Note: The covariate was age of the respondents. Means are presented with SD in parentheses. Means for dichotomous variables are proportions. For the group differences, F was presented for continuous variables and χ^2 was presented for dichotomous variables.

*** $p < .01$.

*** $p < .001$.

Table 5

Patterns of Social Participation during the Early Years of Old Age (2004/2006)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status F/χ^2	Gender F/χ^2
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
N organizations	$N=40$ 3.6 (2.5)	$N=45$ 2.7 (2.7)	$N=85$ 3.1 (2.6)	$N=72$ 3.3 (2.9)	$N=63$ 2.1 (2.0)	$N=135$ 2.7 (2.6)	$N=533$ 3.6 (2.9)	$N=509$ 2.7 (2.4)	$N=1042$ 3.2 (2.7)	1.31	39.94***
N of visits with friends and relatives/4 weeks	3.9 (3.4)	4.9 (2.6)	4.3 (3.1)	5.7 (4.4)	6.6 (5.3)	6.1 (4.8)	6.1 (4.9)	7.1 (5.7)	6.6 (5.3)	5.77*** ^a	10.43**
Having a confidant (1 = yes)	.65 (.48)	.84 (.37)	.74 (.44)	.47 (.50)	.71 (.46)	.58 (.50)	.62 (.49)	.80 (.40)	.71 (.45)	6.85* ^{b,c}	52.15***

Note: The covariate was age of the respondents. Means are presented with SD in parentheses. Means for dichotomous variables are proportions. For the group differences, F was presented for continuous variables and χ^2 was presented for dichotomous variables.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Significant difference between the co-residing IDD and comparison groups.

^b Significant difference between the not co-residing IDD and comparison groups.

^c Significant difference between the co-residing IDD and not co-residing IDD groups.

Table 6

Patterns of Psychological Functioning and Health Outcomes in Midlife (1992/1994)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status <i>F</i>	Gender <i>F</i>
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
Depression symptoms	<i>N</i> =54 7.2 (6.3)	<i>N</i> =59 9.6 (8.8)	<i>N</i> =113 8.1 (7.6)	<i>N</i> =58 8.8 (8.2)	<i>N</i> =49 9.5 (7.6)	<i>N</i> =107 9.2 (7.8)	<i>N</i> =533 7.7 (6.7)	<i>N</i> =509 8.5 (7.4)	<i>N</i> =1042 8.1 (7.1)	1.10	4.81*
Psychological well-being	29.1 (4.1)	29.0 (4.3)	29.2 (4.2)	29.3 (4.0)	29.5 (4.2)	29.3 (4.1)	29.0 (4.2)	29.4 (4.2)	29.2 (4.2)	0.02	2.86
Self-rated health	4.1 (.68)	4.0 (.66)	4.1 (.68)	4.3 (.59)	4.1 (.52)	4.2 (.57)	4.2 (.63)	4.2 (.64)	4.2 (.64)	0.36	0.26
BMI <i>d</i>	27.7 (4.8)	28.3 (6.1)	27.9 (5.4)	27.1 (3.4)	26.6 (4.3)	26.8 (3.8)	27.5 (3.9)	25.8 (4.9)	26.7 (4.5)	3.44* ^a	27.82****
Musculoskeletal condition (0-4)	.78 (.98)	.89 (1.1)	.81 (1.0)	.49 (.88)	1.0 (1.2)	.73 (1.1)	.59 (.94)	.69 (1.0)	.64 (.99)	1.97	5.39*
Cardiovascular impairment (0-2)	.13 (.44)	.18 (.50)	.15 (.46)	.13 (.33)	.13 (.33)	.12 (.33)	.07 (.30)	.06 (.25)	.06 (.27)	5.19** ^a	0.12

Note: The covariate was age of the respondents. Means are presented with SD in parentheses.

* $p < .05$.** $p < .01$.*** $p < .001$.^a Significant difference between the co-residing IDD and comparison groups.^d Significant Parent Status \times Gender interaction effect ($F = 3.50, p < .05$).

Table 7
 Patterns of Psychological Functioning and Health Outcomes during the Early years of Old Age (2004/2006)

	IDD Co-residing			IDD Not co-residing			Comparison group			Parent Status <i>F</i>	Gender <i>F</i>
	Men	Women	Total	Men	Women	Total	Men	Women	Total		
Depression symptoms	N=40 7.5 (7.3)	N=45 10.2 (10.2)	N=85 8.8 (8.8)	N=72 6.3 (6.1)	N=63 9.3 (8.3)	N=135 7.7 (7.3)	N=533 6.0 (6.2)	N=509 7.0 (7.0)	N=1042 6.5 (6.6)	4.66** <i>a</i>	10.50**
Psychological well-being	27.9 (4.0)	27.6 (4.9)	27.7 (4.4)	28.8 (3.3)	28.8 (4.6)	28.8 (3.9)	28.6 (3.8)	28.9 (4.2)	28.8 (4.0)	2.16	1.15
Self-rated health d	3.8 (.70)	3.7 (.93)	3.8 (.83)	4.1 (.88)	3.6 (.97)	3.8 (.95)	3.9 (.85)	3.9 (.86)	3.9 (.85)	0.77	0.32
BMI	29.6 (6.1)	30.4 (8.1)	29.9 (7.0)	28.3 (4.5)	27.5 (4.4)	27.9 (4.4)	28.5 (4.3)	27.1 (5.6)	27.8 (5.0)	5.21** <i>a,c</i>	18.19****
Musculoskeletal condition (0-4)	2.0 (1.2)	2.3 (1.1)	2.1 (1.1)	1.7 (1.0)	2.2 (1.2)	1.9 (1.1)	1.8 (1.1)	1.8 (1.1)	1.8 (1.1)	3.22*	4.40**
Cardiovascular impairment (0-2)	.50 (.65)	.43 (.74)	.47 (.69)	.42 (.67)	.40 (.60)	.41 (.64)	.40 (.64)	.30 (.57)	.35 (.61)	1.49	7.12**
ADL limitations (1-6)	2.4 (1.9)	2.8 (1.9)	2.6 (1.9)	1.9 (1.8)	2.8 (2.0)	2.3 (1.9)	1.9 (1.7)	2.1 (1.9)	2.0 (1.8)	4.40* <i>a</i>	9.19**
Health-related quality of life	.78 (.24)	.72 (.28)	.75 (.26)	.80 (.22)	.77 (.25)	.79 (.23)	.84 (.19)	.84 (.20)	.84 (.19)	10.72**** <i>a,b</i>	0.96

Note: The covariate was age of the respondents. Means are presented with SD in parentheses.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Significant difference between the co-residing IDD and comparison groups.

^b Significant difference between the not co-residing IDD and comparison groups.

^c Significant difference between the co-residing IDD and not co-residing IDD groups.

^d Significant Parent Status × Gender interaction effect ($F = 4.65, p < .01$).