THE ROLE OF ADLS/IADLS ON RELATIONSHIP QUALITY IN FIRST MARRIAGES VERSUS REMARRIAGES

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ABSTRACT

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Roughly 30 percent of those 63 and older who are married are in a remarriage (Lin, Brown, and Hammersmith 2017). Past research has established that first marriages and remarriages operate differently and have different health and relationship quality outcomes. These health and relationship quality outcomes can be affected by functional limitations such as Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). However, the effects of ADLs/IADLs on relationship quality between remarried and continuously married aging individuals is unknown. Using two waves of data from the Health and Retirement Study's Psychosocial survey, I examined potential relationship quality differences between continuously married and remarried individuals with and without ADLs/IADLs. Contrary to my expectation that continuously married individuals with an ADL/IADL would have higher positive relationship quality and lower negative relationship quality than remarried individuals with an ADL/IADL, the bivariate results showed continuously married and remarrieds had similar positive and negative relationship quality. OLS regression results also did not support the proposed hypotheses. Instead, first marriages and remarriages for older adults with and without ADL/IADL onset do not differ in terms of positive and negative relationship quality. These findings highlight that marriage operates similarly for older adults regardless of ADL/IADL onset for those who are either continuously married or remarried.

I dedicated this thesis to 2018 Alyssa, you did it.

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INTRODUCTION

Overall, 27 percent of new marriages in the United States are remarriages, which has increased 15 percent from 1960 (Payne 2018; Livingston 2014). In 2013, 40 percent of all marriages that occurred in the past 12 months were remarriages, with half of those to couples who had both been married previously and half to couples where only one member was married previously (Livingston 2014). Although overall marriage rates are down, the proportion of men aged 60 and older, and women aged 50 and older, who have had a second or third marriage has increased between 1996 and 2008-2012 (Lewis and Kreider 2015). Lin, Brown and Hammersmith (2017) find that 30 percent of those 63 and older who are married are in a remarriage. As the aging population continues to grow in the United States, many older individuals who have experienced a union dissolution in their past or experience a union dissolution in their older age have the opportunity to repartner.

Although marriage is positively associated with health, it seems that remarrieds enjoy fewer health benefits than those who are continuously married. The link between marriage and positive health outcomes has been established as continuously married individuals typically have better health outcomes than their remarried counterparts, one reason being lower marital quality in remarriage (Ross, Mirowsky and Goldsteen 1990; Goldman, Korenman, and Weinstein 1995). Poorer relationship quality can be exacerbated by a health decline such as that indicated by the onset of Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs). ADLs can be defined as "both essential and routine aspects of self-care" (Edemekong, Bomgaars and Levy 2019). Dressing one's self, walking across a room, eating independently, getting in or out of bed, bathing, and using the toilet are the six main ADLs. IADLs categorize another aspect of an individual's ability "to live independently" (Edemekong, Bomgaars and Levy 2019).

IADLs are activities such as using the phone, taking medication, managing money, preparing meals, and grocery shopping. In 2017, 15 percent of adults ages 65 and older required help performing an ADL, while 26 percent required help performing an IADL (Center for Disease Control and Prevention 2017).

Relationship quality may suffer as a result of ADLs/IADLs, although this may play out differently for those who are remarried versus those in first marriage. In general, those with ADLs/IADLs may have higher negative relationship quality, while those without ADLs/IADLs may have higher positive relationship quality. However, marital quality may be lower for remarrieds than those in first marriages more generally and thus the stresses of caring for a disabled spouse may be larger for remarrieds. Remarriages have higher divorce rates than first marriages, with 60 percent of remarriages ending in divorce, while just less than half of first marriages end in divorce (Copen, Daniels, Vespa, & Mosher, 2012).

Past research has established that diminishing health can have a negative effect on relationship quality, however the effects of ADLs and IADLs have not specifically been examined, especially between continuously marrieds and remarrieds (Korporall van Groenou and van Tillburg 2013; Miller, Hollist, Olsen and Law 2013). No study to date has differentiated between those who are continuously married and those in remarriages. Understanding the impact functional/mobility limitations can have on both negative and positive relationship quality in older age is important as individuals live longer and experience different union forms than traditional lifelong marriages. I anticipate that those who are continuously married and have ADLs/IADLs will have higher positive relationship quality and lower negative relationship quality than those who have remarried and have ADLs/IADLs.

In this thesis, I examine the effects of ADLs/IADLs on relationship quality between married and remarried respondents using the 2008, 2010, 2012, and 2014 Health and Retirement Study Psychosocial Questionnaire. A random half of the respondents were asked to participate in the Psychosocial Questionnaire every other wave, so those asked in 2008 (2010) are asked again in 2012 (2014). The 2008/2012 sample and 2010/2014 sample are combined to make a full sample with two waves of data. This research only looks at respondents who do not have an ADL/IADL at baseline to examine the onset of an ADL/IADL. Respondents' baseline relationship quality is measured at the 2008 and 2010 waves, for respondents who do not have any ADLs or IADLs in these waves. By controlling for prior relationship quality, relationship quality between respondents who transition to an ADL/IADL are compared to those who do not transition to an ADLs/IADLs. Remarrieds may also have a lower relationship quality at baseline so it is important to control for this effect.

I hypothesize that for both continuously married and remarried individuals who do not experience the onset of ADLs/IADLs, they will have better relationship quality than those who do experience ADLs/IADLs onset. Also, continuously married respondents with ADLs/IADLs will have higher relationship quality than remarried individuals with ADLs/IADLs. Additionally, longer marriage duration will act as a buffer to ADLs/IADLs and lead to higher relationship quality. Overall, this study adds to the existing literature about relationship differences between continuously married and remarried aging individuals. The HRS provides multiple dimensions of relationship quality to further gauge these differences. As a growing share of older adults are in remarriages, understanding the effects ADLs/IADLs can have on a relationship is important within aging relationships.

BACKGROUND

Relationship Quality of First Marriage versus Remarriage

Past research is mixed on relationship quality differences between continuously marrieds and those in remarriages (Vemer, Coleman, Ganong, and Cooper 1989; Skinner, Bahr, Crane and Call 2002; Kaufman & Taniguchi 2006; Amato, Booth, Johnson and Rogers 2007; Shafer, Jensen, and Larson 2012). In general, those in first marriages report higher marital quality compared to those in remarriages, yet the differences are very small (Vemer et al. 1989; Kaufman & Taniguchi 2006). In a meta-analysis of 16 studies, Vemer et al. (1989) found the difference between marrieds and remarrieds not to be substantive. Remarried couples fare worse on happiness, communication, fairness, and disagreement measures of relationship quality compared to those who are continuously married (Skinner et al. 2002). However, if prior cohabitation is considered, then remarried couples have similar measures of relationship quality to marrieds. Amato et al. (2007) finds relationship quality does not differ by marriage order but rather, remarrieds have lower relationship stability. Second marriages may function differently depending on family forms from the prior marriage(s) (e.g., stepchildren, co-parenting). Those in remarriages have the added life stresses of ex-spouse(s), co-parenting, becoming a stepparent, and financial changes due to union dissolution (Falke & Larson 2007).

Remarried couples' relationship quality may be diminished due to lack of willingness or ability to put forth effort into the relationship. Continuously married couples exhibit higher levels of effort compared to remarried couples, meaning those who are continuously married more often attempt to positively change their behavior to help the overall relationship or accommodate their partner (Shafer, Jensen, and Larson 2012). Pace, Shafer, Jensen, and Larson (2015) find remarriage unions that involve step-parenting, where communication is not considered open and

easily understood to have a negative effect on relationship stability and relationship quality. White and Booth (1985) found remarrieds have lower relationship quality than marrieds in relationships where stepchildren are present. Women in remarriages with negative perceptions of stepchildren report less marital happiness (Knox and Zusman 2001). Remarriage can present more complex family forms, such as the presence of step-kin, that hinder couple's relationship quality and stability.

Emotional health

Remarried men and women are more likely to experience emotional loneliness than marrieds, although remarried women are lonelier than remarried men (de Jong Gierveld, van Groenou, Hoogendoorn and Smit 2009). Remarried women may have a harder time maintaining relationships with their children and friendships from their first marriage. Comparatively, men who remarry later in life experience an increase in their life satisfaction, yet this is not the case for women who remarry (Chipperfield and Havens 2001). In remarriages, relationship duration is likely to be shorter than continuously marrieds, which may lead to poorer relationship quality for those in remarriages.

Within continuously married couples who have been married for 20 or more years, changes in a husband's life satisfaction was predicted by wives' life satisfaction (King, Canham, Cobb and O'Rourke 2018). As marital duration increases wives' depressive symptoms also are positively associated with their husband's depressive symptoms. Yet husbands' depressive symptoms and life satisfaction are unrelated to their wives' depressive symptoms and life satisfaction. Older men may be more dependent on their wives for care and socialization than their wives are on them which may explain the gender differences. Carr, Freedman, Cornman and Schwarz (2014) find that men who have an unfavorable view of their marriage can still have

a high life satisfaction if their wife has a high appraisal of their marriage. This may also reflect men receiving higher levels of support from their wives, leading to overall better well-being than wives (Boerner, Jopp, Carr, Sosinsky and Kim 2014). Freedman, Cornman, and Carr (2014) find that wives providing care for their husbands report higher levels of marital happiness, although for husbands, helping their wives is unrelated to their marital happiness. Positive and negative indicators of marital quality operate independently as individuals often report both high positive and high negative quality (Johnson et al., 1986). Spouses may have high relationship happiness and high conflict. Positive relationship quality is not the opposite of negative relationship quality but rather each are their own dimensions of relationship quality.

Health and Relationship Quality

As people age, they are also more likely to face health challenges, which can affect their marital quality. In terms of physical health, individuals in marriages with higher relationship quality fare better on their overall physical well-being (Margelisch, Schneewind, Violette and Perrig-Chiello 2017; Robles, Slatcher, Trombello and McGinn 2014; Miller, Hollist, Olsen and Law 2013). In both cross sectional and longitudinal analyses, marital happiness and physical health are positively related (Miller et al. 2013). Similarly, individuals are twice as likely to have lower levels of health if they also report reduced levels of emotional and social support, resulting in worse relationship quality (Miller et al. 2013). Examining continuously married individuals over 20 years, Proulx and Snyder-Rivas (2013) found that higher levels of marital happiness were associated with better self-rated health over time.

Margelisch et al. (2017) examined continuously married couples and found a positive relationship between marital satisfaction and health over time, however one's psychological resilience and marital strain are important predictors. Marital strain was found to be a chronic

stressor that negatively affected health over time more so than marital quality. Miller et al. (2013) using two cohorts of married individuals, including early life (ages ranging from 18 to 39) and mid-life (ages ranging from 40 to 55), found that better physical health for those in mid-life was associated with fewer marital problems. In early life, individual's worse physical health was associated with lower marital happiness.

There is little evidence that gender is a moderating variable between marital quality and general health, however research has shown that when a wife already has relatively good health, having a spouse with health problems leads to lower marital satisfaction (Robles, Slatcher, Trombello and McGinn 2014; Korporaal, van Groenou and van Tilburg 2013). However, for husbands, regardless of their health or their wife's health, there was no relationship with marital satisfaction (Korporaal, van Groenou and van Tilburg 2013). Couples in which both members reported more negative marital quality was associated with increased blood pressure (Birditt, Newton, Cranford, and Ryan 2016). Past research examining the impact of positive and negative marital quality and diabetes found that men with lower positive and higher negative marital quality had higher rates of diabetes (Whisman, Li, Sbarra, and Raison 2014).

ADLs/IADLs and Relationship Quality

Very few studies have specifically examined the impact ADLs and IADLs can have on marital quality. Choi, Yorgason and Johnson (2016), using the Health and Retirement Study, found functional limitations are lower among individuals with a higher perceived positive marital quality. Individuals with partners who were perceived as supportive and available to help aided in the respondent's overall health. In terms of positive marital quality and ADLs/IADLs there were no gender differences. Yorgason, Booth, and Johnson (2008) found that as older couples experienced an increase in disabilities there was an increase in marital quality, that is when

respondents reported on their own disabilities and marital quality. When wives reported their husband's disabilities, wives did not have higher marital quality. Yet when husbands reported their wives' disabilities, husbands reported higher marital quality (Yorgason, Booth and Johnson 2008). These differences may be due to evolving gendered relations or changes in gendered responsibilities within these unions. Gender responsibilities may include household duties such as cleaning, laundry or decision making.

Gender

Past research has found that ADLs/IADLs may operate differently for men and women which may also reflect gender differences in family responsibilities. Sheehan and Tucker-Drob (2019) find that women report more IADL limitations due to their poorer health status than men. Men are less likely to report IADL limitations to their health, but this may partially reflect expectations of gendered household activities. For example, if men do not participate in the grocery shopping then regardless of health limitations, they would not consider grocery shopping an IADL limitation. Although marriage may be beneficial for one's health, men tend to derive greater benefits than women (Goldman 1993; Waite 1995; Hughes and Waite 2009). Teachman (2010) finds that marriage is associated with increases in women's health limitations, but for men marriage is associated with decreases in health limitations. Women are more likely than men to take on the role of a caregiver throughout a couple's marriage. These gendered roles of increased caregiving and household chores can add more stress on the wife than the husband (Bernard 1982). Caregiving responsibilities while potentially beneficial to marital quality can also take a toll on one's physical and mental health (Spitze and Ward 2000; Lum et al. 2017).

Marriage and Health

Continuously married individuals, compared to those who have never been married, have divorced, or become widowed have better overall well-being. Past research has found married individuals engage in positive health related behaviors more than single individuals (Wood, Goesling and Avellar 2007; Duncan, Wilkerson, and England 2006; Goldman, Koreman and Weinstein 1995; Umberson 1987). These positive health behaviors include eating more nutritious meals, attending doctors' visits regularly, consuming less alcohol, and less usage of marijuana (Duncan et al. 2006; Umberson 1987). Similarly, in terms of physical health continuously married individuals fare better than other groups, on average. Married persons have lower rates of mortality compared to those who never marry or experience a marital dissolution (Kaplan and Kronick 2006).

Mental health is another area in which married individuals have better health outcomes. In terms of depression, men and women who are continuously married experience less depression than those who never marry (Sasson and Umberson 2013). For those who experience widowhood or divorce there is typically a period of increased depression before their mental health recovers (Meadows, Mclanahan and Brooks-Gunn 2008; Lin, Brown, Wright, and Hammersmith 2019), although some research finds the negative impact of marital dissolution on mental health to be longer lasting (Aseltine and Kessler 1993; Johnson and Wu 2002).

While links between increased well-being and marital status have been established, past research has not been conclusive on how entry into marriage impacts health. Marriage may cause individuals to improve their health or those who are healthier and partake in less risky behavior may select into marriage compared to those with poorer health (Fu and Goldman 1996). Marriage may promote better health through increased economic resources (Fu and Goldman

1996). In either a dual-income or breadwinner marriage, couples may benefit from higher income, higher quality health insurance, ability to purchase more nutritious food, and live in safer neighborhoods (Koball et al. 2010). Never-married men and women are less likely to have health insurance than those who are married (Jovanovic, Chyongchiou, and Chang 2003). Similarly, never-married women have lower family incomes than married women and women who become divorced experience income declines and possibly loss of health care (Holden and Smock 1991).

Lastly, those in marriages may experience social support more often from their spouse, improving their mental and physical health. Social support may limit risky behaviors such as excessive drinking and encourage positive health behaviors such as going to the doctor regularly (Umberson 1987; Koball et al. 2010). These social effects are stronger for men than women as women typically already engage in more healthy practices (Duncan, Wilkerson and England 2006). Meyler, Stimpson and Peek (2007) demonstrate though that marriage may do little to promote positive health behaviors if couples already share similar positive or negative health activities. The notion that couples already share similar behaviors may aid in their selection into marriage.

Individuals with higher incomes and better well-being to start off with may select into marriage more easily than those with poorer health. Unhealthy individuals may have a harder time finding a partner due to risky aspects of their lifestyle or overall poor health (Koball et al. 2010; Goldman, Koreman and Weinstein 1995; Brown and Giesy 1986). If unhealthy individuals have a harder time finding a partner, this may only exaggerate the positive health effects for those who do select into marriage.

Williams and Umberson (2004) note three ways one's marital status and marital transitions can be associated with their self-rated health. First, while there are differences between marital status and health, these differences are more a reflection of the strains marital dissolution puts on an individual rather than the benefits of the marriage. Second, men's health is weakened by marital dissolution, but marital dissolution does not weaken women's health. Lastly, one's life course stage is an important variable in understanding the effects of marital status and transitions on health (Willaims and Umberson 2004). It may appear that marriage is not necessarily protective of health but rather later life marital dissolutions such as divorce or widowhood are detrimental to health just as unhealthy individuals may have a harder time finding a partner than healthier individuals.

Remarriage and Health

Past research has found that remarried individuals have lower self-rated health than those who are continuously married, yet better health than those who remain single after a union dissolution (Zulkarnin and Korenman 2019; Hughes and Waite 2009; Durpre and Meadows 2007). Hughes and Waite (2009), particularly looking at mobility limitations, chronic conditions, self-rated health and depression, found those who remarried had better health outcomes on all measures except on mobility limitations than those who did not remarry. Women who do not remarry after a dissolution and have had three or more union transitions are less likely to be healthy than those who are continuously married or only have one union transition (Dupre and Medows 2007). Men who experience one divorce are also at a higher risk of disease onset compared to those in a stable marriage. Men may be more likely to experience better psychological health after a remarriage than women, as men experience lower depression after remarriage compared to their depression at the baseline of their prior marriage (Zulkarnin and

Korenman 2019). Still, women typically experience a decline in depression after remarriage following a divorce.

However, first marriages may be more beneficial than remarriages due to marital duration. Research has found that with time marriage can mitigate negative health outcomes, for men and women alike. The duration of marriage is negatively associated with the odds of developing a chronic condition (Dupre and Meadows 2007). Likewise, those who have a shorter marital history or longer duration of being unmarried face higher odds of developing chronic conditions and mobility limitations than those who have longer marital durations (Hughes and Waite 2009). Continuously marrieds are more likely to have longer marital durations than remarried couples. Relationship quality is also expected to evolve over the duration of a marriage, which can affect how individuals respond to widowhood or divorce.

CURRENT STUDY

The current study is designed to investigate if relationship quality varies between continuously married and remarried individuals with and without ADLs/IADLs. As individuals age, declines in health are to be expected but no studies have specifically examined the effects of functional limitations on marital quality between first marriages and remarriages. Using a nationally representative sample of adults aged 50 and older, this research extends the current literature on relationship quality differences between continuously married and remarried older adults. As remarriage has become more common among older adults, understanding whether and how they function differently from first marriages is important. Prior research provides mixed evidence that relationship quality differs between continuously marrieds and remarrieds (Vemer et al. 1989; Kaufman & Taniguchi 2006). Few studies have specifically looked at whether and how ADLs/IADLs impact relationship quality with aging adult relationships.

I anticipate that there will be differences between continuously marrieds and remarrieds, although they may be small. Overall, I hypothesize that continuously marrieds will fare better on both positive and negative marital quality measures compared to remarried individuals.

Hypotheses

H_1: Continuously married individuals will have higher positive relationship quality and lower negative relationship quality than remarried individuals.

H_{2a}: Individuals without an ADL/IADL will have higher positive relationship quality and lower negative relationship quality than individuals with an ADL/IADL.

H_{2b}: Men with an ADL/IADL will have higher positive relationship quality and lower negative relationship quality than women with an ADL.

Past research has found that as individuals experience declines in their health, marital quality also declines (Yorgason, Booth and Johnson 2008; Hughes and Waite 2009). We can expect that individuals who do not experience functional limitation declines have better positive and less negative relationship quality than individuals who do experience declines in their functional limitations. Women are more likely to report functional limitations due to their poorer health than men which may lead women to have lower positive and higher negative relationship quality than men (Sheehan and Tucker-Drob 2019).

H_3: Continuously married individuals with an ADL/IADL will have higher positive relationship quality and lower negative relationship quality than remarried individuals with an ADL/IADL.

While differences of marital quality are small between first marriages and remarriages (Vemer et al. 1989; Kaufman & Taniguchi 2006), as health declines, individuals experience reduced levels of marital quality (Miller et al. 2013). Between remarrieds and continuously marrieds, if continuously marrieds initially have a high positive relationship quality their reaction to ADLs/IADLs may have less of an impact on their positive relationship quality than remarrieds. As remarriages have lower levels of relationship stability (Amato et al. 2007), with the presence of ADLs/IADLs, remarrieds' negative relationship quality may be more adversely affected than continuously marrieds' negative relationship quality.

H_4: Individuals with a longer marital duration and who have an ADL/IADL will have higher positive relationship quality and lower negative relationship quality than individuals with a shorter marital duration and who have an ADL/IADL.

Continuously married unions are likely to have a longer duration than remarriages. With a shorter duration there is an increased likelihood of developing a chronic condition and mobility

limitations compared to those in longer duration marriages (Dupre and Meadows 2007; Hughes and Waite 2009).

$H_{5:}$ Remarried individuals with an ADL/IADL whose spouse does not have an ADL/IADL will have higher positive relationship quality and lower negative relationship quality than remarried individuals with an ADL/IADL whose spouse also has an ADL/IADL.

METHOD

The data were obtained from the 2008-2014 waves of the Health and Retirement Study (HRS). The HRS is a nationally representative longitudinal survey of older adults in the United States. The HRS is an interdisciplinary survey researching respondents' health, physical characteristics, social aspects and demographic features. The HRS began collecting data in 1992, with its first cohort born between 1931-1941. Since 1998 the HRS has added a new cohort of adults ages 50-56 every six years (Health and Retirement Study 2008). The target population of the HRS is individuals aged 50 or older living in America. This has been their objective since 1998. Prior to 1998, the AHEAD study surveyed those born before 1923 and the HRS surveyed those born between 1931-1941. These two studies merged in 1998 (Health and Retirement Study 2008). Respondents were reinterviewed every other year. The HRS purposely over sampled individuals who live in Florida, as well as African Americans and Hispanics.

This research utilized measures from the HRS Psychosocial Survey. Piloted in 2004, this survey is a leave-behind, self-administered questionnaire of which a random half of the HRS respondents are asked to participate in the initial Psychosocial Survey in 2004. Respondents are only asked to fill out this section every four years as opposed to every two years, like the main components of the HRS. Given that respondents participate every four years, if they were asked to participate in the 2008 wave they would not have been asked again until the 2012 wave. Therefore, in this study I created two samples that were combined into one: respondents who replied to the leave-behind survey in 2008 and 2012 and those who responded in 2010 and 2014. While the psychosocial measures are only asked every four years, there is a section on relationship quality that gauges multiple aspects of a relationship. The response rates for the

psychosocial survey from 2004-2014 are between 72.7 percent and 87.7 percent (Smith, Ryan, Sonnega and Weir 2017).

Sample Selection

The data were used longitudinally, combining the two samples. From 2008, 2010, 2012 and 2014 there were 18,697 individuals who responded to the Leave Behind questionnaire. The sample was further limited to those who were either continuously married (n=7,380) or remarried (n=4,350) for all their observations and present in the psychosocial survey (n=11,530). The sample was also limited to those who were 50 or older, responded to both waves of the psychosocial survey and had no ADLs/IADLs in their first wave (n=5,518). Lastly the sample was limited to those who were not missing on positive or negative relationship quality at any wave and respondents without a baseline weight of zero, to produce a final sample of 4,506 respondents, of which 3,043 were continuously married and 1,463 were remarried maintain the same marital status throughout the observation period. Mean and mode imputation was utilized as less than three percent of the data were missing.

Measures

Relationship quality

The focal dependent variable for this research was marital *relationship quality.* Relationship quality was measured on two scales gauging perceived social support from one's spouse. The two scales are in reference to negative and positive social support. *Positive relationship quality* is comprised of three questions asking how much one's spouse understands their feelings, how much one can rely on them and how much one can open up to their spouse about their worries. The response options were 4= a lot, 3= some, 2= a little, 1=not at all, these were reverse coded and then the average score was used for the scale (Smith, Ryan, Sonnega and Weir 2017). The

Cronbach alpha for this scale was 0.7794. Negative relationship quality was comprised of four measures. The negative relationship quality questions used were how much their spouse criticizes them, how much they let you down, how often they make too many demands, and how much they get on your nerves. The negative relationship quality measures were recoded in the same manner as the positive relationship quality variables and then averaged. Lower values on all relationship quality scales thus indicate better relationship quality. The Cronbach's alpha for this scale was 0.7810. For both negative and positive relationship quality scores, responses were coded as missing if more than one item for the scale was missing (Smith, Ryan, Sonnega and Weir 2017).

Independent variables

The focal independent variable *relationship status* is a dichotomous variable coded 1=continuously married, 0=remarried. Respondents held the same relationship status at both waves. *Respondent's ADLs and IADLs* were totaled at each wave to create a dummy variable coded 1= has 1 or more ADL/IADL, 0=has no ADLs/IADLs. ADLs consisted of seven measures regarding respondents' difficulty walking, dressing, bathing, eating, getting in and out of bed and toileting by oneself. IADLs consist of five measures asking about the respondents' difficulty using the phone, taking medication, managing money, grocery shopping and preparing meals by oneself. This is a time varying measure to account for the onset of ADLs/IADLs.

Controls

All control variables were measured in 2008/2010 (wave 1), unless otherwise noted. *Gender* is a dichotomous measure coded male=1, female=0. *Age* was a covariate measured in years. *Marital duration* captured respondent's marital duration. *Race-ethnicity* was a time invariant covariate composed of four categories: Black, Hispanic, other race, and white

(reference category). *Education* was a time-invariant ordinal variable. The four categories were less than high school (reference category), high school diploma, some college and college or more. *Income* gauged the respondent's total household income in the prior calendar year. Income was top-coded to the 95th percentile and then the natural log was taken. Those with an income of 0 were coded to 1 prior to taking the natural log.

Whether one's *spouse acted as a caregiver* was measured in 2012/2014 (wave 2) and was coded 1= spouse caregiver, 0= spouse does not provide care. This measure was constructed from a subsection of the HRS that was only asked to those who had a disability, therefore individuals who did not report a disability were not asked and coded as 0. Lastly whether one's spouse had any ADLs/IADLs was created in the same manner as respondents ADLs/IADLs. The spouse's ADL/IADL responses were self-reported and recorded in 2012/2014.

Analytic Strategy

First, descriptive statistics for all variables are reported in 2008/2010, separately by union status. Table 1 displays the weighted means and percentages of all variables in 2008/2010, except for relationship quality, presence of ADLs/IADLs and if the spouse is a caregiver which are presented in 2012/2014. Ordinary least squares regression (OLS) was used for the analysis because the dependent variables, positive and negative relationship quality, were interval-level variables. The first model tested hypothesis 1, proposed that continuously married individuals had higher positive relationship quality and lower negative relationship quality than remarried individuals. I did this by running separate OLS regressions for positive and negative relationship quality with marital status as the independent variable. Model 1 also included control variables. Next, I tested hypothesis 2a that those with ADL/IADL onset had lower positive relationship quality and higher negative relationship quality than those without ADLs/IADLs. This second

model once again involved running separate OLS regressions for positive and negative relationship quality with the dichotomous measure for respondents' ADLs/IADLs, and this model also included control variables. To test hypothesis 2b that men with ADLs/IADLs have better relationship quality than women with ADLs/IADLs I did this by running an interaction between gender and ADL/IADL onset. Models 1 and 2 in Table 4 tested hypothesis 3, examining whether continuously married respondents with ADLs/IADLs had higher positive relationship quality and lower negative relationship quality than remarried individuals with ADLs/IADLs. To test hypothesis 3, I ran separate regressions by relationship quality and tested for an interaction between marital status and presence of ADLs/IADLs.

In addition, models 1 and 2 in Table 5 examined hypothesis 4, proposing that individuals with shorter marital durations and the presence of ADLs/IADLs had lower positive and higher negative relationship quality than those with longer marital durations and ADLs/IADLs. I began testing hypothesis 4 by running separate models by relationship quality with marital status and an interaction between marital duration and the presence of ADLs/IADLs to gauge if duration had a moderating effect on marital quality. Lastly models 1 and 2 in Table 6 tested hypothesis 5, stating that remarried individuals without ADLs/IADLs and whose spouse also did not have ADLs/IADLs had higher positive and lower negative relationship quality than remarried individuals with ADLs/IADLs whose spouse also had ADLs/IADLs. To test hypothesis 5, I ran separate models by relationship quality with marital status, and respondent's presence of ADLs/IADLs, and spouse's presence of ADLs/IADLs. I ran a three-way interaction between marital status, respondent's ADLs/IADLs and spouse's ADLs/IADLs to better understand if spouse ADLs/IADLs had an additive effect on marital quality or a multiplicative effect. Both the bivariate and multivariate analyses used baseline weights.

RESULTS

Table 1 presents the descriptive statistics of the sample by marital status. Continuously marrieds had an average positive relationship quality of 3.54 on a scale ranging from 1 to 4, with 1 being a lower score and 4 being a higher score. Remarrieds did not significantly differ from first marrieds in terms of positive relationship quality with an average score of 3.53. In terms of negative relationship quality, the two union types also did not differ with continuously marrieds and remarrieds each having an average score of 1.88 out of a scale ranging from 1 to 4 with a score of 1 being a lower score and 4 being a higher score. The two unions also had similar onset of ADLs/IADLs as 11.32 percent of continuously marrieds and 11.52 percent of remarrieds experience an ADL/IADL onset. Spouses also experienced a similar level of ADL/IADL onset regardless of marriage order with 20.73 percent of continuously marrieds' and 18.53 percent of remarrieds' spouses having an ADL/IADL onset. Remarrieds were more likely ($p < .05$) to have their spouse act as a caregiver with 5.01 percent, while 3.54 percent of continuously marrieds spouses acted as a caregiver. Continuously marrieds were more likely ($p < .001$) to have a longer marital duration (38.87 years) than remarrieds (22.73 years). Remarrieds were more likely ($p < .01$) to have some college education (28.77 percent) compared to continuously marrieds (24.27 percent) who were more likely ($p < .01$) to hold a college degree or higher (36.51 percent) than remarrieds (30.55 percent).

Models 1 and 2 in Table 2 examined the relationship between positive marital quality and type of marital union. In Model 1 remarriage was not significant. Model 2 added the additional independent variables and control measures. Once again there was no difference between remarrieds and continuously marrieds for positive relationship quality. Spouse's presence of ADLs/IADLs had a negative effect on positive relationship quality meaning those whose spouse

had an ADL/IADL onset had lower positive relationship quality. Blacks individual compared to white individuals also had lower positive relationship quality. Being a male, having a higher income and holding a college degree or higher were positively associated with positive relationship quality. Similarly, in Models 3 and 4 in Table 2 negative relationship quality was not significantly related to marriage order. However, spouse presence of ADLs/IADLs indicated a higher negative relationship quality. As well, Black individuals compared to whites had a higher negative relationship quality. Younger age and men were positively associated with negative relationship quality, meaning they had a lower negative relationship quality compared to older individuals and women. The models presented in Table 2 indicated that continuously married and remarried adults did not differ in terms of either positive or negative relationship quality and thus hypothesis 1 was not supported.

The models presented in Table 3a examined the effect of ADL/IADL onset on positive and negative relationship quality between remarrieds and continuously marrieds. In Model 1 neither marriage order nor onset of ADLs/IADLs were significantly associated with positive relationship quality. In the full model shown in Model 2, spouse presence of ADLs/IADLs and being black were once again negatively related to positive relationship quality, whereas men and those with higher income reported more positive relationship quality, on average, than women and those with lower incomes, respectively. Models 3 and 4 examined negative relationship quality. Onset of ADLs/IADLs and union type were not significantly associated with either positive or negative relationship quality net of marriage order. In Model 4 spouse presence of ADLs/IADLs and being Black were related to higher negative relationship quality. Younger respondents and men had lower negative relationship quality. The models presented in Table 3a

do not support the hypothesis that individuals without an ADL/IADL have higher positive relationship quality and lower negative relationship quality than individuals with an ADL/IADL. Table 3b built on the models presented in Table 3a with an interaction between gender and respondent's onset of ADLs/IADLs. The interaction was not significant in Model 1 for positive relationship quality or Model 2 for negative relationship quality. Hypothesis 2b that men with an ADL/IADL have higher positive relationship quality and lower negative relationship quality than women with an ADL/IADL was not supported.

Table 4 shows the results of hypothesis 3 examining whether those who are continuously married individuals with an ADL/IADL have higher positive relationship quality and lower negative relationship quality than remarried individuals with an ADL/IADL. This interaction between union type and onset of ADLs/IADLs was not significant for either positive or negative relationship quality and thus hypothesis 3 was not supported.

Table 5 displays an interaction between marital duration and respondent's onset of ADLs/IADLs. This interaction was not significant for either positive or negative relationship quality. Hypothesis 4 stating that those with longer duration and onset of an ADL/IADL have better relationship quality was not supported.

Lastly, Table 6 presents hypothesis 5 that remarried individuals with ADLs/IADLs and a spouse with ADLs/IADLs have lower relationship quality than continuously marrieds with ADLs/IADLs and a spouse with ADLs/IADLs. The interactions for both positive and negative relationship quality were not significant, and thus hypothesis 5 was not supported.

DISCUSSION

While past research has established that continuously married and remarried unions function differently, the effects of health, particularly the role of ADLs/IADLs on relationship quality in these two types of marital unions has not been examined. With 30 percent of individuals aged 63 and older in remarriages (Lin, Brown, and Hammersmith 2017), understanding if remarriage continues to function differently for older adults is important. Using two waves of the HRS and its leave-behind Psychosocial Survey I aimed to understand positive and negative relationship quality differences between older adults in first marriages and remarriages. I anticipated that relationship quality differences would be minimal but that continuously married respondents who had an ADL/IADL onset would have better perceived relationship quality than remarried respondents with an ADL/IADL onset.

The first hypothesis that continuously marrieds would have better overall relationship quality than remarrieds was not supported. Both groups had on average high levels of positive relationship quality and low levels of negative relationship quality. While past research has found marital quality differences between these two unions, with continuously marrieds having better relationship quality, the differences found were small (Vemer et al. 1989; Kaufman & Taniguchi 2006). The lack of relationship quality differences may be an effect of the relationship quality measures, as Kaufman and Taniguchi (2006) used a different dimension of relationship quality asking respondents to rate their marital happiness and the studies Vemer et al. (1989) reviewed used measures of marital satisfaction . The relationship quality measures utilized in my research gauge positive and negative relationship quality. Positive and negative relationship quality gauge different dimensions of marital quality than marital happiness or satisfaction.

My second hypothesis that those with an ADL/IADL onset would have lower relationship quality than those without and ADL/IADL onset was not supported. While past research has found that marriages with higher relationship quality also have better health, ADLs/IADLs may only be capturing the onset of minor health declines (Miller et al. 2013). This is potentially why no relationship quality differences between those with ADL/IADL onset versus no onset was found. In addition, there were no gender differences between those with an ADL/IADL onset and relationship quality. Although marriage is more likely to be beneficial for men's health, both men and women may be benefiting from marriage which is why we did not see any gender differences (Goldman 1993, Hughes and Waite 2009).

The third and main hypothesis that continuously married individuals with an ADL/IADL onset would have better relationship quality than remarried individuals with an ADL/IADL onset was not supported. Past research has found that those who remarry have lower rated health than those who are continuously married (Hughes and Waite 2009; Durpre and Meadows 2007). However, those who experience a marital dissolution and do remarry may be selected into remarriage due to better health (Amato 2000). In terms of ADL/IADL onset and relationship quality these two union types were very similar. This finding provides new insight by showing that in older adult unions continuously marrieds and remarriages may function similarly.

In addition, I examined the joint effects of marital duration and respondent's onset of ADLs/IADLs on relationship quality, which were not significant. Although duration is one of the few factors on which there was a difference between continuously marrieds and remarrieds, the fact that this fourth hypothesis was not supported supports that idea that first marriages and remarriages operate similarly in older age. Still, family characteristics such as presence of biological or stepchildren, the number of children, or help provided by other family members

may be characteristics future research should include. Family forms between those in first marriages and remarriages can be distinctive (Falke & Larson 2007) and affect couple's relationship quality as they experience functional limitations.

Lastly, my fifth hypothesis that first marriages in which both the respondent and the spouse have an ADL/IADL would fare worse on marital quality than those in a remarriage was not supported. However, it is important to note spouse's presence of ADLs/IADLs was significant across the models. While the respondent's onset of functional limitations was not associated with their positive or negative relationship quality, their spouse's experience of functional limitations decreased positive relationship quality and increased negative relationship quality for the respondent.

A limitation of this study is that the relationship quality measures are not included in the core HRS survey and only asked to respondents in the leave-behind psychosocial survey. If respondents are asked to participate in this sub survey, they will only be asked every four years as opposed to every two with the core questionnaire. Also, a respondent's spouse may or may not be interviewed in the same wave so using a couple sample is not possible due to sample size limitations. Also, while the HRS does measure spouses' ADLs and IADLs, it does not measure whether anyone is acting as a caregiver for them. Thus, I was not able to control for whether the respondent acts as a caregiver for their spouse.

Still the HRS provides a nationally representative sample of U.S. older adults. While the core survey does not include relationship quality measures, the leave-behind survey does gauge both negative and positive aspects of relationship quality. Measuring both negative and positive relationship quality is important as relationship quality is multi-dimensional. Respondents may

experience both high positive and high negative relationship quality as these variables are measuring different aspects of marriages.

Future research should examine the recovery from older adults' ADLs/IADLs on relationship quality. This research examined the onset of ADLs/IADLs; however, individuals can overcome health issues and instead experience a recovery. While no effects of one's ADL/IADL onset were found, the short-term and long-term effects of ADL/IADL health recovery should be examined. Along these lines, a couple level analysis may provide more insights into how both partners react to the onset or recovery from ADLs/IADLs and the effects on relationship quality. Within each model, spouse's ADLs/IADLs was significantly negatively related to relationship quality. Focusing more on the spouse's functional limitations onset may provide better insight into aging couples' relationship quality. Future research may also want to examine the individual measures of relationship quality scales to understand more specific aspects of positive and negative relationship quality.

The proportion of older adults in remarriages has increases in recent decades, with currently about 30 percent of older adults in a remarriage (Lin, Brown, and Hammersmith 2017). With this increase it is important to understand whether and how remarriage functions differently in older age than first marriages, particularly looking at the effect of health declines. As one's health declines, 15 percent aging adults required help performing an ADL while 26 percent require help performing an IADL (Center for Disease Control and Prevention 2017). Understanding if relationship quality is affected by these declines is important for the aging population. While respondents' ADL/IADL onset did not affect relationship quality, spouses' ADLs/IADLs did diminish positive relationship quality and exacerbate negative relationship quality for individuals in both first marriages and remarriages. No relationship quality

differences were found for those with an ADL/IADL onset according to marriage order, and thus this research helps to show that these unions operate similarly in older age.

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APPENDIX A. TABLES

Table 1. Weighted Means or Percentages of Respondents' Characteristics by Marital Status, N=4,506

	Continuously Married	Remarried	
At Second Wave (2012/2014)			
Positive relationship quality range (1-4)	3.54 (0.57)	3.53 (0.58)	
Negative relationship quality (1-4)	1.88 (0.63)	1.88 (0.62)	
Presence of ADLs/IADLs	11.32	11.52	
Spouse presence of ADLs/IADLs	20.73	18.53	
Spouse caregiver	3.54	5.01	*
At First Wave (2008/2010)			
Marital Biography			
Marital duration (in years)	38.87 (10.96)	22.73 (12.96)	***
Demographics			
Male	47.68	50.93	*
Age	63.17 (7.96)	62.98 (8.26)	
Race			
White	87.18	87.39	
Black	4.28	5.59	
Hispanic	5.73	5.29	
Other	2.59	1.93	
Economic Resources			
Income	103,350	108,851	
Education			
Less than high school	6.26	6.93	
High school	32.94	33.71	
Some college	24.27	28.77	**
College or more	36.51	30.55	**
Weighted percent	67.12	32.87	
Unweighted number of persons	3,043	1,463	

*p<.05 **p<.01 ***p<.00

Table 2. OLS Model Regressing Relationship Quality onto Relationship Status and predictors

	Positive Relationship Quality						Negative Relationship Quality					
	Model 1			Model 2			Model 3			Model 4		
	b	SE		b	SE		b	SE		B	SE	
Remarried	.004	.022		.006	.028		-.019	.023		.013	.032	
Spouse provides help				.054	.043					.016	.046	
Spouse presence of ADLs/IADLs				-.136	.026	***				.124	.027	***
Marital duration (in years)				.001	.001					.001	.001	
Sociodemographic characteristics												
Age				.002	.002					-.004	.002	*
Male				.173	.019	***				-.051	.018	**
Income				.027	.011	*				-.025	.015	
Black				-.173	.056	**				.199	.051	***
Hispanic				.018	.042					.053	.054	
Other race				.021	.051					.093	.060	
High school				.029	.036					-.019	.053	
Some college				.037	.037					-.055	.052	
College or higher				.103	.041	*				-.040	.049	
Intercept	3.544	.017	***	2.938	.171	***	1.905	.013	***	2.444	.210	***
Model Statistics												
F		.04			12.57***			.74			6.00***	
R^2		.000			.052			.000			.021	

*p<.05 **p<.01 ***p<.001

Table 3a. OLS Model Regressing Relationship Quality onto Respondents ADL/IADL onset and predictors

	Positive Relationship Quality						Negative Relationship Quality					
	Model 1			Model 2			Model 3			Model 4		
	b	SE		b	SE		b	SE		B	SE	
Remarried	.004	.022		.006	.028		-.020	.023		.013	.032	
Respondent's ADL/IADL	-.006	.032		-.047	.045		.028	.032		.062	.043	
Spouse provides help				.095	.063					-.038	.062	
Spouse presence of ADLs/IADLs				-.137	.026	***				.125	.027	***
Marital duration (in years)				.001	.001					.001	.001	
Sociodemographic characteristics												
Age				.002	.002					-.004	.002	*
Male				.175	.018	***				-.053	.018	**
Income				.027	.011	*				-.024	.014	
Black				-.171	.056	**				.197	.051	***
Hispanic				.018	.043					.052	.054	
Other race				.022	.051					.092	.060	
High school				.026	.036					-.016	.052	
Some college				.033	.038					-.050	.052	
College or higher				.098	.042	*				-.034	.048	
Intercept	3.544	.011	***	2.934	.169	***	1.904	.012	***	2.450	.213	***
Model Statistics												
F		.04			14.52***			.62			5.80***	
R^2		.000			.052			.000			.021	

*p<.05 **p<.01 ***p<.001

Table 3b. OLS Model Regressing Relationship Quality onto Respondents ADL/IADL onset, gender, and predictors

	Positive Relationship Quality			Negative Relationship Quality		
	Model 1			Model 2		
	Coefficient	SE		Coefficient	SE	
Remarried	.006	.028		.013	.032	
Respondent's ADL/IADL	-.065	.062		.105	.062	
Spouse provides help	.095	.063		-.038	.061	
Spouse presence of ADLs/IADLs	-.137	.026	***	.124	.027	***
Marital duration (in years)	.001	.001		.001	.001	
Sociodemographic characteristics						
Age	.002	.002		-.004	.002	*
Male	.172	.020	***	-.045	.021	*
Income	.027	.011	*	-.024	.014	
Black	-.171	.056	**	.196	.051	***
Hispanic	.018	.042		.052	.054	
Other race	.022	.051		.091	.059	
High school	.027	.036		-.018	.052	
Some college	.034	.038		-.053	.052	
College or higher	.099	.042		-.037	.048	
Respondent's ADL/IADL x male	.029	.063		-.072	.071	
Intercept	2.934	.169	***	2.449	.210	***
Model Statistics						
F		13.31***			5.34***	
R^2		.052			.022	

*p<.05 **p<.01 ***p<.001

Table 4. OLS Model Regressing Relationship Quality onto Respondents ADL/IADL onset, marital status, and predictors

	Positive Relationship Quality			Negative Relationship Quality		
	Model 1			Model 2		
	Coefficient	SE		Coefficient	SE	
Remarried	.015	.030		.012	.034	
Respondents ADL/IADL	-.023	.048		.055	.043	
Spouse provides help	.104	.062		-.041	.062	
Spouse presence of ADLs/IADLs	-.136	.026	***	.124	.027	***
Marital duration (in years)	.001	.001		.001	.001	
Sociodemographic characteristics						
Age	.002	.002		-.005	.002	*
Male	.175	.018	***	-.053	.018	**
Income	.027	.011	*	-.024	.014	
Black	-.173	.055	**	.198	.051	***
Hispanic	.019	.043		.052	.054	
Other race	.021	.052		.092	.060	
High school	.027	.036		-.016	.052	
Some college	.034	.038		-.050	.052	
College or higher	.098	.042	*	-.034	.049	
Remarried x respondent's ADL/IADL	-.081	.064		.024	.060	
Intercept	2.930	.169	***	2.451	.211	***
Model Statistics						
F		13.25***			5.47***	
R^2		.053			.021	

*p<.05 **p<.01 ***p<.001

Table 5. OLS Model Regressing Relationship Quality onto Respondents ADL/IADL onset, marital duration, and predictors

	Positive Relationship Quality			Negative Relationship Quality		
	Model 1			Model 2		
	Coefficient	SE		Coefficient	SE	
Remarried	.005	.028		.014	.032	
Respondent's ADL/IADL	-.097	.098		.074	.115	
Marital duration (in years)	.001	.001		.001	.001	
Spouse provides help	.096	.063		-.038	.062	
Spouse presence of ADLs/IADLs	-.137	.026	***	.125	.027	***
Sociodemographic characteristics						
Age	.002	.002		-.005	.002	*
Male	.175	.018	***	-.053	.018	**
Income	.027	.012	*	-.024	.014	
Black	-.172	.056	**	.198	.051	***
Hispanic	.019	.043		.052	.054	
Other race	.022	.051		.092	.060	
High school	.026	.036		-.015	.052	
Some college	.033	.038		-.050	.052	
College or higher	.097	.042	*	-.034	.048	
Respondent's ADL/IADL x marital duration (in years)	.001	.002		-.001	.002	
Intercept	2.940	.172	***	2.448	.215	***
Model Statistics						
F		14.00***			5.34***	
R^2		.052			.021	

*p<.05 **p<.01 ***p<.001

Table 6. OLS Model Regressing Relationship Quality onto Respondents ADL/IADL onset, spouse presence of ADLs/IADLs and predictors

	Positive Relationship Quality			Negative Relationship Quality		
	Model 1			Model 2		
	Coefficient	SE		Coefficient	SE	
Remarried	.027	.034		.009	.036	
Respondent's ADL/IADL	-.033	.053		.041	.047	
Spouse presence of ADLs/IADLs	-.118	.032	**	.121	.031	***
Marital duration (in years)	.001	.001		.001	.001	
Spouse provides help	.105	.063		-.039	.062	
Sociodemographic characteristics						
Age	.002	.002		-.005	.002	*
Male	.175	.018	***	-.053	.018	**
Income	.027	.011	*	-.024	.014	
Black	-.175	.056	**	.195	.051	
Hispanic	.020	.043		.052	.054	***
Other race	.021	.051		.092	.061	
High school	.026	.036		-.015	.052	
Some college	.035	.038		-.050	.052	
College or higher	.099	.042	*	-034	.049	
Remarried x respondent's ADL/IADL	-.067	.067		.071	.077	
Remarried x spouse presence of ADLs/IADLs	-.071	.078		.012	.058	
Respondent's ADL/IADL x spouse presence of ADLs/IADLs	.055	.081		.073	.088	
Remarried x respondent's ADL/IADL x spouse presence of ADLs/IADLs	-.045	.180		-.191	.148	
Intercept	2.924	.169	***	2.450	.210	***
Model Statistics						
F		13.96***			4.37***	
R^2		.054			.022	

*p<.05 **p<.01 ***p<.001