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Longitudinal Associations Between Chronic Condition Discordance and Perceived Control Among Older Couples

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Abstract

Chronic health conditions among individuals and their partners may diminish perceived control, particularly when these conditions are highly complex. We considered how chronic condition discordance (i.e., the extent that two or more conditions have non-overlapping self-management requirements) at the individual level and the couple level (i.e., between spouses) was linked to health-related control and personal mastery across an 8-year period, and whether these links varied by age. The U.S. sample included 879 wives (M = 53.81 years) and husbands (M = 57.19 years) from three waves (2006, 2010, and 2014) of the Health and Retirement Study. Dyadic growth curve models controlled for age, minority status, education, own and partner baseline negative marital quality, and own and partner time-varying depressive symptoms and number of chronic health conditions. Overall, both individual-level and couple-level degrees of chronic condition discordance were associated with initial levels of and rates of change in perceived control. When wives had greater individual-level discordance, they reported lower initial personal mastery. When husbands had greater individual-level discordance, they reported lower initial health-related control and faster declines in health-related control and personal mastery, and their wives reported faster declines in personal mastery. When there was greater couple-level discordance, wives reported lower initial health-related control. Age moderated the associations between wives' individual-level discordance and their own initial level of health-related control and rate of change in personal mastery. Interventions to improve later-life well-being may be enhanced by targeting increases in perceived control among individuals and couples managing complex patterns of chronic conditions.

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The de-identified data on which the study conclusions are based are publicly available: https://hrsdata.isr.umich.edu/data-products/researcher-contributions

The surveys used in this study are publicly available: https://hrs.isr.umich.edu/documentation/questionnaires

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Keywords

control beliefs; comorbidity; multimorbidity; spouses

Nearly half (42%) of adults in the United States are estimated to have two or more chronic health conditions (Buttorff et al., 2017). Multimorbidity is associated with poorer psychological well-being (Calderón-Larrañaga et al., 2019; Marengoni et al., 2011; Read et al., 2017), and may reduce feelings of control over one's health and other life domains (Bayliss et al., 2009; Drewelies et al., 2017; Schüz et al., 2012). Although most research on multimorbidity focuses on individuals, older people with chronic conditions often have a spouse or partner with chronic health problems that further complicate self-care (Piette et al., 2010). A higher degree of chronic condition discordance (i.e., the extent to which two or more conditions have non-overlapping self-management requirements) within couples increases care complexity and may erode both health-related and global perceptions of control. Little is known, however, about the long-term implications of chronic condition discordance at the individual level (i.e., within individuals) and the couple level (i.e., between spouses) for perceived control. Perceived control is a critical psychosocial resource that preserves physical health, psychological well-being, and cognitive function as people age (Infurna & Gerstorf, 2013; Infurna et al., 2011; Kunzmann et al., 2002; Lachman et al., 2008). Hence, it is important to understand the potential role of chronic condition discordance within couples in predicting perceived control over time. In this study, we evaluated how the degrees of individual-level and couple-level chronic condition discordance are linked to levels of and changes in health-related control and personal mastery across an 8-year period.

Perceived control is broadly defined as one's perceptions of the likelihood that one's own actions can contribute to desired outcomes (Robinson & Lachman, 2017). Perceived control is multidimensional and encompasses domain-specific beliefs as well as more global beliefs such as personal mastery, perceived constraints, and self-efficacy (Robinson & Lachman, 2017). Health-related control (i.e., feelings of control over one's health) is a key domain-specific measure of control when considering chronic health conditions because it is associated with psychological well-being and adaptation to illness (Eccles & Simpson, 2011; Wrosch et al., 2002). Similarly, personal mastery (i.e., a global sense of control or beliefs that one has control over life circumstances) is an important global measure of control among individuals with chronic illness because it has been shown to mitigate physiological responses to stress, promote better cardiometabolic health, and reduce risk of disease and mortality (Roepke & Grant, 2011; Roepke et al., 2008). Health-related and global control beliefs are positively associated but conceptually distinct (Pudrovska, 2015; Wallston et al., 1976; Wu et al., 2004). In the assessment of perceived control among individuals and couples living with chronic conditions, examining both personal mastery and health-related control facilitates more nuanced knowledge of how perceived control is influenced by chronic conditions. For instance, chronic conditions may have negative implications for health-related control if individuals and couples encounter greater difficulty in managing their conditions and related symptoms (e.g., pain). At the same time, living

with chronic conditions may also negatively impact broader perceptions of control over one's life, including personal mastery.

The concordant-discordant model of comorbidities proposes that multiple chronic conditions are more challenging when they are discordant, meaning that they require self-management goals and treatments with little or no direct overlap (Piette & Kerr, 2006). Among people who manage diabetes, for example, concordant chronic conditions such as heart disease share the goal of lowering cardiovascular risk factors (e.g., blood pressure and cholesterol levels), whereas discordant chronic conditions such as arthritis involve a different self-management focus (e.g., minimizing pain and stiffness). Discordant conditions complicate decisions about prioritizing self-management activities, strain limited resources, and are linked to adverse health outcomes including worse illness self-management and increased rates of emergency department visits, hospitalization, and death (Bowling et al., 2017; Boyd & Fortin, 2010; Lagu et al., 2008; Piette & Kerr. 2006). Greater discordance in chronic conditions may reduce one's ability to effectively manage health problems. Consequently, chronic condition discordance might have detrimental implications for perceived health-related control and personal mastery over time.

According to interdependence theory, spouses influence one another's thoughts, feelings, and behaviors (Rusbult & Van Lange, 2008). Indeed, spousal associations have been found for essential health behaviors such as physical activity and sleep (Monin et al., 2016; Revenson et al., 2016), along with various indicators of psychological well-being including perceived control (Anderson et al., 2016; Howland et al., 2016; Lee et al., 2020; Windsor et al, 2009). It is imperative to evaluate dyadic processes that shape perceived control in the context of chronic illness because spouses' control beliefs are linked to life satisfaction and depressive symptoms (Windsor et al., 2009), as well as physical activity intentions (Howland et al., 2016) and dietary and exercise adherence (Anderson et al., 2016), over and above one's own control beliefs. Moreover, prior research has shown that beyond the effects of one's own personal mastery, having a partner with higher levels of personal mastery is linked to fewer functional limitations, better self-rated health, and more physical activity (Drewelies et al., 2018). Important questions remain about aspects of health-related management (e.g., chronic condition discordance) within individuals and between spouses that may influence perceived control over time.

Our proposed dyadic concordance model of multimorbidity posits that chronic condition discordance at both individual and couple levels has adverse implications for psychological well-being and self-management. In support of this model, our previous research shows that the presence of one or more discordant conditions within individuals or between spouses is associated with elevated depressive symptoms and higher levels of functional disability (Polenick, Birditt, Turkelson, Bugajski, & Kales, 2021; Polenick et al., 2020). We also found that greater degrees of both own and partner individual-level condition discordance are linked to lower levels of physical activity over time (Polenick, Birditt, Turkelson, & Kales, 2021). When discordant chronic conditions occur among individuals and/or couples, this may diminish their ability to manage chronic conditions, which might in turn contribute to faster illness progression and more severe symptoms that further reduce perceived control. As a whole, prior work suggests that both individual-level and

couple-level chronic condition discordance may impact perceptions of health-related control and personal mastery over time.

There may be age differences in the associations between chronic condition discordance within couples and perceived control. In general, perceived control tends to peak in midlife and decline into older adulthood due to obstacles and limitations (e.g., health problems, financial difficulties, bereavement) that increase with age (Robinson & Lachman, 2017). Reductions in perceived control can lead to less frequent engagement in health-promoting behaviors (e.g., exercise, preventative doctor's appointments), worse emotion regulation, and greater reactivity to stress (Diehl & Hay, 2010; Lachman, 2006; Lachman & Firth, 2004; Lang & Heckhausen, 2001; White et al., 2010; Windsor & Anstey, 2010), all of which may negatively impact health and well-being. Older adults are also more likely than younger adults to attribute cognitive and physical problems to their age, which may erode feelings of control over one's health, reduce adherence to health behavior changes, and have a negative impact on functioning (Gump et al., 2001; Levy et al., 2009). This research suggests that individual-level and couple-level chronic condition discordance may be more strongly associated with accelerated declines in perceived control over time among older adults than midlife adults. Alternatively, it is plausible that older adults may have increased resources that are protective against these declines in perceived control. In line with socioemotional selectivity theory and the strength and vulnerability integration (SAVI) model, many older individuals experience more positive emotions, perceive less stress, and use more effective emotion regulation and coping strategies relative to younger individuals; stated another way, older adults often develop resilience (Charles, 2010; Charles & Carstensen, 2010). Older adults also tend to appraise stressful situations more positively than younger adults, which may promote adaptive coping (Diehl et al., 1996). In addition, older adults may be more likely to engage in collaborative coping strategies with their partners (e.g., working together to make treatment decisions and plan for long-term illness management) to manage chronic conditions than younger adults (Berg & Upchurch, 2007). Further, chronic conditions may be viewed by couples as more expected and normative in later life (Berg & Upchurch, 2007), which might lead to better coping and less decline in perceived control among older adults experiencing greater individual-level and couple-level chronic condition discordance.

There may also be gender differences in the ways that chronic condition discordance at the individual and couple levels are associated with perceptions of health-related control and personal mastery. Relative to men, prior research indicates that women report higher levels of health-related control (Pudrovska, 2015), which may be attributed to women's greater focus on health-promoting behaviors and resources (Courtenay, 2000). Some studies have found that women report lower levels of personal mastery than men on average (e.g., Cassidy & Davies, 2003; Pudrovska, 2015), but other work indicates that chronic illness is associated with greater declines in personal mastery among men (Pudrovska & Anishkin, 2020), perhaps partly as a result of increase feelings of dependency and vulnerability that are inconsistent with normative perceptions of masculinity (Courtenay, 2000; Pudrovska, 2010). This research suggests that husbands with a greater degree of their own individual-level chronic condition discordance may report lower initial levels of and faster declines in health-related control and personal mastery.

With regard to partners' individual-level chronic condition discordance and couple-level chronic condition discordance, compared with men, women typically spend more time and energy managing their partners' health along with their own health (Monin & Clark, 2011; Thomeer et al., 2015). Women also generally report more emotional distress related to providing health-related support and caregiving to their partners (Pinquart & Sörensen, 2006; Swinkels et al., 2019). Thus, when husbands have greater individual-level chronic condition discordance and there is greater couple-level chronic condition discordance, health-related control and personal mastery may be more negatively impacted among wives than husbands.

The Present Study

Drawing from a nationally representative sample of U.S. couples, we determined how the degrees of individual-level and couple-level chronic condition discordance are associated with initial levels of and rates of change in health-related control and personal mastery. This study extends the literature on associations between health and perceived control by examining the implications of partner and couple-level health over and above one's own health. We also consider age and gender differences in these dyadic associations, which are important in gaining a more nuanced understanding of how such processes unfold within couples. Controlling for sociodemographic characteristics (Bailis et al., 2010; Cassidy & Davies, 2003; Elder et al., 2013; Mirowsky & Ross, 2007), marital quality (Cotton et al., 2003; Gerstorf et al., 2011; Hohl et al., 2019), own and partner time-varying depressive symptoms (Assari & Lankarani, 2017; Windsor et al., 2007), and own and partner time-varying number of chronic conditions (Drewelies et al., 2018; Drewelies et al., 2017) as potential confounding variables that are associated with perceived control, we tested the following hypotheses:

1. When wives and husbands have a greater degree of individual-level chronic condition discordance at baseline, they will report lower initial levels and faster rates of decline in health-related control and personal mastery.
2. Over and above wives' and husbands' own chronic condition discordance, when their partners have a greater degree of individual-level chronic condition discordance at baseline, individuals will report lower initial levels and faster rates of decline in health-related control and personal mastery.
3. Beyond individual-level chronic condition discordance, when there is a greater degree of couple-level chronic condition discordance, wives and husbands will report lower initial levels and faster rates of decline in health-related control and personal mastery.
4. These associations will become stronger with older age.
5. One's own individual-level chronic condition discordance will be more strongly associated with health-related control and personal mastery among husbands than wives.

6. Partners' individual-level chronic condition discordance and couple-level chronic condition discordance will be more strongly associated with health-related control and personal mastery among wives than husbands.

Method

Transparency and Openness

The study design, hypotheses, and analytic plan for this article were not preregistered. The de-identified data on which the study conclusions are based, analytic code, and surveys used in this study can be accessed via the links provided in the Author Note of this paper.

Sample and Procedures

The U.S. sample included 879 heterosexual married or cohabiting couples who were drawn from three waves (2006, 2010, and 2014) of the nationally representative HRS. The HRS has collected data biennially starting in 1992 with response rates consistently over 80%. Before each interview, participants receive study information by mail. Participants are read a confidentiality statement and provide oral consent immediately prior to each of their interviews. From 2006 onward, an enhanced face-to-face interview has also been conducted biennially with half of the panel respondents. This interview is followed by a self-administered psychosocial questionnaire (SAQ) with questions including perceived marital quality, health-related control, and personal mastery. Ethical approval was not required for the present paper because the HRS data are publicly available without individual identifiers.

In 2006, phone interviews and SAQs were conducted with a total of 7,635 participants. Of these participants, 4,936 (65%) were married and 256 (3%) had a cohabiting partner. A total of 4,692 (90%) individuals had a participating partner who also completed a phone interview and SAQ in 2006. We removed twenty participants in same-sex couples because this small sample did not allow for comparisons with opposite sex couples. Of the 2,336 heterosexual couples (4,672 individuals) who participated in 2006, we removed couples from the analytic sample for the following reasons: non-response (i.e., interview was not completed) by one or both spouses in follow-up waves (86 in 2010, 105 in 2014), the death of one or both spouses in follow-up waves (361 in 2010, 366 in 2014), separation/divorce (56 in 2010, 14 in 2014), or one or both spouses were living in a nursing home (7 in 2010, 11 in 2014). Another 220 participants in 110 couples were removed for having missing data on study variables in 2006. In total, 56 couples participated with their spouses and completed the SAQ only in 2006, 154 couples participated with their spouses and completed the SAQ in 2006 and in one other wave (2010 or 2014), and 1,010 couples participated with their spouses and completed the SAQ in all three waves (2006, 2010, and 2014).

Of the 2,020 participants in 1,010 couples who participated with their spouses and completed the SAQ in all three waves (2006, 2010, and 2014), 262 participants in 131 couples were removed because of missing data in 2010 and/or 2014 on one or more of the following study variables: health-related control, personal mastery, and depressive symptoms. This resulted in an analytic sample of 1,758 individuals in 879 couples who participated in 2006, 2010, and 2014 and had complete data on study variables (see

Table 1 for baseline characteristics and scores on study variables). Compared with the 262 individuals in 131 couples that were excluded because of missing data in 2010 and/or 2014, the 1,758 participants in 879 couples who participated in this study were younger (wives: $t = -3.50$, $p < .001$; husbands: $t = -3.35$, $p = .001$), were less likely to be a minority (husbands only: $\chi^2 = 4.91$, $p = .027$), had more education (wives: $t = 2.57$, $p = .011$; husbands: $t = 4.24$, $p < .001$), had lower negative marital quality (wives: $t = -2.33$, $p = .021$; husbands: $t = -2.94$, $p = .004$), had fewer chronic conditions (wives only: $t = -2.38$, $p = .018$), and had higher health-related control (wives only: $t = 2.09$, $p = .038$). There were no significant differences in individual-level or couple-level degree of chronic condition discordance, personal mastery, or depressive symptoms. Most couples in this study (97%) were married at baseline. Relative to married participants, cohabiting participants were younger (wives: $t = -2.67$, $p = .012$; husbands: $t = -2.47$, $p = .019$), had less education (husbands only: $t = -2.41$, $p = .023$), and reported lower health-related control (husbands only: $t = -3.38$, $p < .001$), but did not differ significantly on other study variables.

The gender and racial distributions of the sample as a function of age were as follows: participants under age 40 ($n = 41$; range = 22 to 39) were 4.9% women, 95.1% men, 78.0% White, 12.2% Black or African American, and 9.8% other); participants aged 40 to 64 ($n = 1,454$) were 50.8% women, 49.2% men, 90.0% White, 6.6% Black or African American, and 3.4% other); and participants aged 65 to 79 ($n = 263$) were 38.8% women, 61.2% men, 95.4% White, 2.7% Black or African American, and 1.9% other).

We conducted a power analysis with G*Power 3.1.9.2. There were a total of 5,274 observations (1,758 individuals × 3 waves of data). With a design effect of 2.41 calculated using the intraclass correlation coefficient from the data, the effective sample size was 2,188 (5,274 observations divided by 2.41). The power to detect significant associations between chronic condition discordance and control beliefs was .95 with an effect as small as .02 and a maximum of 40 predictors/covariates. As such, our sample size for this study was sufficient.

We next tested whether the 879 couples in this study were significantly different from the 1,213 couples who were married/cohabiting in 2006 and had complete data but did not have both partners participate in 2010 and/or 2014, or were no longer married/cohabiting in 2010 and/or 2014. Participants in this study were younger (wives: $t = -11.55$, $p < .001$; husbands: $t = -12.13$, $p < .001$), were less likely to be a minority (wives: $\chi^2 = 9.26$, $p = .002$; husbands: $\chi^2 = 6.92$, $p = .009$), had more education (wives: $t = 6.92$, $p < .001$; husbands: $t = 6.83$, $p < .001$), reported lower negative marital quality (wives: $t = -5.77$, $p < .001$; husbands: $t = -3.99$, $p < .001$), reported lower depressive symptoms (wives: $t = -5.62$, $p < .001$; husbands: $t = -4.60$, $p < .001$), reported fewer chronic conditions (wives: $t = -7.14$, $p < .001$; husbands: $t = -6.52$, $p < .001$), had a lower degree of individual-level discordance (wives: $t = -4.15$, $p < .001$; husbands: $t = -4.05$, $p < .001$), had a lower degree of couple-level discordance ($t = -3.46$, $p < .001$), reported higher health-related control (wives: $t = 4.56$, $p < .001$; husbands: $t = 4.97$, $p < .001$), and reported higher personal mastery (wives: $t = 4.37$, $p < .001$; husbands: $t = 2.91$, $p = .004$). As a result, the findings from the present study may not generalize to samples that are less positively selected.

Measures

Health-related control.—Health-related control was measured at each wave with a single item. Participants were asked: “Using a 0 to 10 scale where 0 means ‘no control at all’ and 10 means ‘very much control,’ how would you rate the amount of control you have over your health these days?” (Lachman & Weaver, 1998a).

Personal mastery.—Personal mastery was assessed at each wave with five frequently used and validated items (Lachman & Weaver, 1998b; Pearlin et al., 2007; Pearlin & Schooler, 1978) asking how much participants agree or disagree with the following statements from 1 (*strongly disagree*) to 6 (*strongly agree*): “I can do just about anything I really set my mind to.”; “When I really want to do something, I usually find a way to succeed at it.”; “Whether or not I am able to get what I want is in my own hands.”; “What happens to me in the future mostly depends on me.”; and “I can do the things that I want to do.” We created mean scores (wives: α range = .89 to .91; husbands: α range = .90 to .92).

Time.—Time (year centered at baseline in 2006) was considered as a predictor to determine rates of change in health-related control and personal mastery across the 8-year period. This variable was scaled in waves, with four years in between each wave for the present study.

Individual-level and couple-level degree of chronic condition discordance.—Participants reported whether they had been diagnosed by a physician with seven major chronic health conditions at each wave: arthritis, cancer, diabetes, heart disease, hypertension, lung disease, and stroke. These conditions were selected because they are prevalent among older adults and are associated with morbidity and mortality (Fisher et al., 2005). In total, there were 21 possible chronic condition pairs. Twelve board-certified geriatricians from eight academic institutions (Harvard University, Indiana University, New York University, University of Colorado, University of Massachusetts, University of Michigan, University of Minnesota, and University of Pennsylvania) rated their perceptions of the concordance of each chronic condition pair using Piette and Kerr’s (2006) definition of concordant conditions as those that represent parts of the same overall pathophysiologic risk profile and generally have similar treatment goals and management strategies. Rather than categorize condition pairs as concordant or discordant, raters were asked to report their perceptions of the degree of concordance for each pair of conditions (1 = *not at all*, 2 = *a little*, 3 = *somewhat*, 4 = *quite a bit*, 5 = *a great deal*). The raters were informed that our primary interest was in the degree to which each pair of chronic conditions has similar treatment goals and self-management strategies. The 12 raters had excellent inter-rater reliability on average (ICC = 0.97).

We averaged the raters’ individual scores to create mean degree of concordance scores for each pair of chronic conditions. We calculated scores at both the individual level (i.e., pairs of conditions occurring within individuals, such as a wife having both arthritis and diabetes) and the couple level (i.e., pairs of conditions occurring between spouses, such as a wife with arthritis and a husband with diabetes). In cases where spouses had the same condition, the couple-level discordance score for this pair was coded as a 5 to reflect the highest level of concordance. To test our hypothesis that greater degrees of individual-level and

couple-level chronic condition discordance are associated with lower health-related control and personal mastery, we reverse coded the scores such that higher scores represented greater discordance. When participants had no conditions or one condition, the individual-level discordance score was coded as zero. When both spouses had no conditions or when one spouse had one condition and the other spouse had no conditions, the couple-level discordance score was coded as zero. We averaged the mean scores for each pair of chronic conditions within individuals and between spouses to calculate the total mean degrees of chronic condition discordance at the individual level and the couple level. For example, an individual reporting arthritis, hypertension, and lung disease would receive an individual-level discordance score that averaged the discordance scores of all possible condition pairs within the individual (i.e., arthritis-hypertension, arthritis-lung disease, hypertension-lung disease). Likewise, for one spouse reporting arthritis and the other spouse reporting hypertension and lung disease, the couple-level discordance score averaged the discordance scores of all possible condition pairs between the spouses (i.e., arthritis-hypertension, arthritis-lung disease). Table 2 shows the 21 pairs of chronic conditions, their mean degree of discordance scores, and their baseline prevalence at the individual and couple levels.

Age.—We assessed participants' self-reported age in years.

Covariates.—Baseline covariates included minority status (1 = *racial minority*, −1 = *White*), education in years, and own and partner reports of baseline negative marital quality. Negative marital quality was measured at baseline with four commonly used items (Schuster et al., 1990; Walen & Lachman, 2000). Participants reported how often their spouse makes too many demands on them; criticizes them; lets them down when counted upon; and gets on their nerves from 1 (*a lot*) to 4 (*not at all*). We reverse coded and averaged these items (wives: α = .78; husbands: α = .75). At each wave, we also controlled for own and partner time-varying reports of depressive symptoms and chronic health conditions. Depressive symptoms were assessed in each wave using the 8-item Center for Epidemiologic Studies Depression Scale (CES-D). This widely used measure has produced responses with good reliability and validity among older adults (Karim et al., 2015; Steffick, 2000). Participants reported whether they had experienced the following symptoms much of the time in the past week: felt everything was an effort, had restless sleep, could not get going, felt depressed, felt lonely, felt sad, was happy, enjoyed life. The two positive items were reverse coded and summed scores were created (wives: α range = .77 to .81; husbands: α range = .71 to .77).

Statistical Analysis

We conducted dyadic growth curve models using MIXED in SPSS version 26 (Kenny, Kashy, & Cook, 2006). These multilevel models included the recommended two levels for longitudinal dyadic data, with the lower level representing variability pertaining to within-person repeated measures for wives and husbands and the upper level representing variability between couples. The models used robust standard errors and permitted correlated errors among individuals and between spouses in a given wave using an unstructured correlation matrix.

Actor effects in this study considered how wives' and husbands' own individual-level degree of chronic condition discordance was linked to their own initial level of and rate of change in health-related control and personal mastery. Over and above these links, partner effects considered how partners' individual-level degree of chronic condition discordance was associated with own initial level of and rate of change in health-related control and personal mastery. As a couple-level effect, we also considered how the degree of chronic condition discordance at the couple level was associated with initial levels of and rates of change in health-related control and personal mastery. The models controlled for age, minority status, education, own and partner baseline negative marital quality, and both partners' time-varying depressive symptoms and number of chronic conditions at each wave. All manipulations and measures used in the analysis are reported in this paper.

Separate models were conducted with health-related control and personal mastery as the outcomes. In the first model for each outcome, we focused on individual-level degree of chronic condition discordance as predictors. The second model added couple-level discordant conditions as a predictor. The first step of the models determined how own and partner individual-level degrees of chronic condition discordance (Model 1) and couple-level degree of chronic condition discordance at baseline (Model 2) were linked to initial health-related control and personal mastery. The second step examined how own and partner individual-level degrees of chronic condition discordance (Model 1) and couple-level degree of chronic condition discordance (Model 2) at baseline were linked to change in health-related control and personal mastery over time. Interaction terms (time × actor degree of discordance and time × partner degree of discordance in Model 1; time × couple-level degree of discordance was added in Model 2) tested whether baseline degrees of individual-level and couple-level chronic condition discordance were associated with rates of change in health-related control and personal mastery across the 8-year period.

The third step of the models tested the moderating effects of baseline age on associations between chronic condition discordance and initial health-related control and personal mastery. We entered interaction terms to test whether own age moderated how own and partner baseline discordant conditions (actor degree of discordance × actor age and partner degree of discordance × actor age in Model 1) and couple-level degree of chronic condition discordance (couple degree of discordance × actor age in Model 2) were associated with wives' and husbands' initial levels of health-related control and personal mastery. In the fourth step, three-way interaction terms (time × actor degree of discordance × actor age; time × partner degree of discordance × actor age in Model 1; time × couple degree of discordance × actor age was added in Model 2) tested whether own age moderated how own and partner baseline degree of chronic condition discordance (Model 1) and couple-level degree of chronic condition discordance (Model 2) were linked to wives' and husbands' rates of change in health-related control and personal mastery. We included a two-way interaction term (time × actor age in Models 1 and 2) to account for the effects of age over time. We used maximum likelihood estimation to allow for model comparison. We determined significant differences between model steps by subtracting the −2 log likelihood estimations of subsequent steps and examining differences on a chi-square distribution with degrees of freedom equaling the change in number of parameters (Singer & Willett, 2003).

We used a distinguishing variable to estimate separate intercepts and slopes for wives and husbands (1 = *wife*, −1 = *husband*). Continuous baseline covariates were grand mean centered and continuous time-varying covariates were person-level mean centered. We explored significant interactions between time and degrees of chronic condition discordance predicting health-related control and personal mastery by estimating simple slopes at high (i.e., sample maximum score of 4.5) and low (i.e., sample minimum score of 0) discordance. We used the Johnson-Neyman region of significance approach (Johnson & Fay, 1950; Preacher et al., 2006) to understand how age moderated the associations between chronic condition discordance within couples and reports of health-related control and personal mastery. This approach allowed us to determine the age range at which these associations were statistically significant at $p < .05$.

Results

Table 1 presents baseline characteristics and scores on major study variables. We used paired t-tests and McNemar tests to evaluate significant gender differences. Relative to husbands, wives were younger, reported higher negative marital quality and more depressive symptoms, had fewer chronic health conditions, and reported greater health-related control.

Table 2 presents the degrees of individual-level and couple-level chronic condition discordance for the 21 possible chronic condition pairs and their baseline prevalence. Compared with husbands, wives had significantly lower rates of arthritis-heart disease, cancer-heart disease, cancer-stroke, diabetes-heart disease, diabetes-hypertension, and heart disease-hypertension.

Table 3 shows bivariate correlations among key study variables at baseline. At the bivariate level, actor individual-level chronic condition discordance and couple-level chronic condition discordance were negatively correlated with health-related control among both wives and husbands. Actor individual-level chronic condition discordance was negatively correlated with personal mastery among wives only. Age was positively correlated with actor and partner individual-level discordance and couple-level discordance among both wives and husbands. For wives only, age was also negatively correlated with personal mastery. The positive correlation between health-related control and personal mastery was significant but moderate for both wives and husbands, which indicates that these constructs are conceptually distinct.

The dyadic growth curve model parameters for health-related control are shown in Tables 4 (individual-level degree of discordance) and 5 (couple-level degree of discordance). Dyadic growth curve model parameters for personal mastery are shown in Tables 6 (individual-level degree of discordance) and 7 (couple-level degree of discordance). In these tables, we include unstandardized coefficients, standard errors, and 95% confidence intervals (CI). We also report standardized coefficients in the text as estimates of effect size.

Individual-Level Chronic Condition Discordance and Health-Related Control: Actor Effects

Wives' health-related control.—Table 4, Step 1 shows that when wives had a greater degree of their own individual-level discordance at baseline, wives reported significantly

lower health-related control (b = −.175, SE = .032, β = −.152, p < .001, 95% CI [−.239, −.112]). There was also a significant interaction between wives' individual-level discordance and age in Step 3 of the model (b = .008, SE = .004, β = .055, p = .036, 95% CI [.001, .015]). As shown in Figure 1, the region of significance revealed that the simple slope was significant for wives aged 64 and younger. Among wives aged 64 and younger, a higher degree of individual-level discordance was significantly associated with lower initial health-related control. Wives' baseline degree of individual-level chronic condition discordance was not significantly linked to wives' rate of change in health-related control over time.

Husbands' health-related control.—Table 4, shows that when husbands had a greater degree of individual-level chronic condition discordance at baseline, they reported significantly lower initial health-related control (b = −.118, SE = .032, β = −.102, p < .001, 95% CI [−.181, −.055]; see Step 1) and also had a significantly faster rate of decline in health-related control (b = −.048, SE = .022, β = −.054, p = .025, 95% CI [−.091, −.006]; see Step 2). Figure 2 shows that the simple slope of husbands' baseline degree of individual-level discordance and rate of change in health-related control was significant at high discordance (b = −.218, SE = .067, β = −.199, p = .001, 95% CI [−.348, −.088]) but not at low discordance (b = −.025, SE = .063, β = −.021, p > .05, 95% CI [−.148, .100]). These associations were not moderated by age.

Individual-Level Chronic Condition Discordance and Health-Related Control: Partner Effects

Wives' health-related control.—Husbands' baseline degree of individual-level chronic condition discordance was not significantly associated with wives' initial level of health-related control or wives' rate of change in health-related control over time.

Husbands' health-related control.—Wives' degree of individual-level chronic condition discordance at baseline was not significantly linked to husbands' initial level of or rate of change in health-related control.

Couple-Level Chronic Condition Discordance and Health-Related Control

Wives' health-related control.—Table 5, Step 1 shows that when there was a greater degree of couple-level chronic condition discordance at baseline, wives reported significantly lower initial health-related control (b = −.131, SE = .043, β = −.093, p = .002, 95% CI [−.216, −.047]). This association was not moderated by age. Baseline degree of couple-level chronic condition discordance was not significantly associated with wives' rate of change in health-related control.

Husbands' health-related control.—The degree of couple-level chronic condition discordance at baseline was not significantly linked to husbands' initial level of or rate of change in health-related control.

Individual-Level Chronic Condition Discordance and Personal Mastery: Actor Effects

Wives' personal mastery.—As presented in Table 6, in Step 1 of the model, when wives had a greater baseline degree of individual-level chronic condition discordance, they

reported a significantly lower initial level of personal mastery ($b = -.063$, $SE = .014$, $\beta = -.113$, $p < .001$, 95% CI [−.091, −.035]). In Step 2, there was also a significant interaction between time and wives' degree of individual-level discordance ($b = .023$ $SE = .010$, $\beta = .053$, $p = .025$, 95% CI [.003, .042]). Analysis of the simple slopes revealed that the rate of decrease in personal mastery was stronger at low discordance ($b = -.155$, $SE = .030$, $p < .001$, $\beta = -.359$, 95% CI [−.214, −.096]) than at high discordance ($b = -.064$, $SE = .032$, $\beta = -.148$, $p = .046$, 95% CI [−.127, −.001]).

As presented in Table 5, there was a significant interaction between time, wives' own individual-level discordance, and age in Step 4 of the model ($b = -.003$, $SE = .001$, $\beta = -.057$, $p = .016$, 95% CI [−.005, −.001]). As depicted in Figure 3, the region of significance revealed that at high levels of individual-level degree of discordance, the simple slope for wives aged 57 or older showed significant decreases in personal mastery over time, whereas the simple slope for wives aged 44 or younger demonstrated significant increases in personal mastery over time. At low levels of individual-level degree of discordance, all wives in the sample experienced significant reductions in personal mastery over time.

Husbands' personal mastery.—Table 6, Step 1 shows that, when husbands had a greater baseline degree of individual-level chronic condition discordance, they reported a significantly steeper rate of decline in their own personal mastery ($b = -.049$, $SE = .012$, $\beta = -.113$, $p < .001$, 95% CI [−.071, −.026]). As presented in Figure 4, the simple slope was significant at high discordance ($b = -.174$, $SE = .036$, $\beta = -.176$, $p < .001$, 95% CI [−.244, −.104]) but not at low discordance ($b = .020$, $SE = .034$, $\beta = .019$, $p > .05$, 95% CI [−.046, .086]).

Individual-Level Chronic Condition Discordance and Personal Mastery: Partner Effects

Wives' personal mastery.—Table 6, Step 2 shows that when husbands had a greater baseline degree of individual-level chronic condition discordance, wives reported a significantly steeper reduction in personal mastery over time ($b = -.031$, $SE = .010$, $\beta = -.072$, $p = .003$, 95% CI [−.052, −.011]). Figure 5 shows that the simple slope was significant at high discordance ($b = -.184$, $SE = .032$, $\beta = -.169$, $p < .001$, 95% CI [−.247, −.120]) but not at low discordance ($b = -.058$, $SE = .031$, $\beta = -.051$, $p > .05$, 95% CI [−.119, .002]). This association was not moderated by age. Husbands' baseline degree of individual-level chronic condition discordance was not significantly linked to wives' initial level of personal mastery.

Husbands' personal mastery.—Wives' baseline degree of individual-level chronic condition discordance was not significantly linked to husbands' initial level of or rate of change in personal mastery.

Couple-Level Chronic Condition Discordance and Personal Mastery

Wives' personal mastery.—Couple-level degree of chronic condition discordance at baseline was not significantly associated with wives' initial level of or rate of change in personal mastery.

Husbands' personal mastery.—Couple-level degree of chronic condition discordance was not significantly linked to husbands' initial level of or rate of change in personal mastery.

Post Hoc Tests

We tested whether the pattern of findings changed when modeling maximum degree of individual-level and couple-level chronic condition discordance as predictors instead of mean degree of individual-level and couple-level chronic condition discordance. The findings from the main models remained the same; however there was one additional finding. When husbands had a higher baseline maximum degree of individual-level chronic condition discordance, they reported a significantly lower initial level of personal mastery (b = −.036, SE = .014, β = −.070, p = .009, 95% CI [−.063, −.009]).

We also tested the main models without own and partner time-varying depressive symptoms as covariates. The findings remained the same, which indicates that they were not significantly impacted by the level of own and partner depressive symptoms across waves.

Discussion

The present study indicates that chronic condition discordance within older couples may have negative implications for both health-related and global perceived control. This study extends previous research by showing that partner-level and couple-level health have distinct implications for perceived control among partnered women. Furthermore, among partnered women but not partnered men, there were age differences in how individual-level health was linked to perceived control. Overall, among wives, their own greater chronic condition discordance was linked to lower initial personal mastery; but links to their own initial health-related control and rate of change in personal mastery varied by age. Over and above these associations, greater couple-level chronic condition discordance was linked to wives' lower initial health-related control, and husbands' greater chronic condition discordance was linked to wives' faster declines in personal mastery. Among husbands, regardless of age, their own greater chronic condition discordance was associated with lower initial health-related control and faster declines in health-related control and personal mastery. This study builds on research showing that individual-level and couple-level measures of chronic condition discordance are linked to greater depressive symptoms (Polenick, Birditt, Turkelson, Bugajski, & Kales, 2021), higher functional disability (Polenick et al., 2020), and lower physical activity (Polenick, Birditt, Turkelson, & Kales, 2021) over time. Given the links between perceived control and a variety of health outcomes including an increased risk of mortality (e.g., Infurna & Gerstorf, 2013; Infurna et al., 2011; Turiano et al., 2014), these findings suggest the value of improving perceived control to potentially mitigate adverse health consequences.

Degrees of Individual-Level Chronic Condition Discordance and Perceived Control

Husbands reported lower initial health-related control when they had a greater degree of discordance in their own chronic conditions at baseline. Consistent with our hypothesis, this suggests that greater individual-level discordance may diminish husbands' feelings of

control over their own health. Among wives, however, this association was only significant for those aged 64 and younger. Middle-aged wives may view greater chronic condition complexity as less normative for their age, which in turn makes them feel less able to control their own health. Conversely, older wives may consider more complex chronic conditions to be normative and may use more effective emotion regulation and coping strategies to manage chronic illness (Berg & Upchurch, 2007; Charles, 2010; Charles & Carstensen, 2010), which might help preserve their perceptions of health-related control.

Also in partial support of our hypothesis, husbands (but not wives) with a greater baseline degree of individual-level chronic condition discordance showed significantly steeper decreases in health-related control over time. Health-related control may decline at a faster rate for husbands with more complex patterns of multimorbidity because men tend to rely more on their partners for health-related support (Monin & Clark, 2011; Thomeer et al., 2015) and may have less confidence in managing their own health than women (Pudrovska, 2018). Bolstering this potential explanation, in line with previous research (Pudrovska, 2015), husbands in this study reported significantly lower initial levels of health-related control relative to their wives. Counter to our prediction, partners' baseline degree of individual-level discordance was not significantly associated with initial levels of or rates of change in health-related control for wives or husbands. It therefore appears that one's own chronic condition discordance may be most impactful in shaping perceptions of health-related control during middle and later life. It is worth noting, however, that the measures of health-related control assessed in this study were specific to individuals' views of managing their own health. Partners' health conditions may have a greater impact on health-related control measures that capture perceptions of managing one's partner's health or of managing chronic conditions as a couple. In addition, partners' health conditions may have stronger implications for views of managing one's own health in collectivistic versus individualistic cultures. More fine-grained exploration of these dyadic associations will be an important area for future research.

In line with our hypothesis, wives who had a greater degree of discordance in their own chronic conditions at baseline reported significantly lower initial personal mastery. This indicates that greater individual-level chronic condition discordance may hinder wives' broader sense of control, regardless of age. Similar to previous research showing that greater perceived consequences of chronic illness (e.g., on physical, social, economic, and emotional domains) are associated with lower general self-efficacy (Lau-Walker, 2004), this finding suggests that wives with greater chronic condition complexity may benefit from intervention approaches to increase their global perceptions of control over their lives.

There were age differences, however, in the association between individual-level discordance and rates of change in personal mastery among wives. At low levels of discordance, all wives demonstrated significant declines in personal mastery over time. At high levels of discordance, however, wives aged 57 and older had significant declines in personal mastery but wives aged 44 and younger had significant increases in personal mastery. These findings suggest that long-term changes in wives' personal mastery may depend in part on age. That is, consistent with our hypothesis, older wives may be susceptible to declines in personal mastery when they manage more complex conditions

because of age-related vulnerabilities (Robinson & Lachman, 2017). By contrast, younger wives might have greater capacity to adapt to living with complex chronic conditions that contributes to gains in global perceptions of control. Additionally, whereas wives with a lower degree of individual-level chronic condition discordance showed declines in personal mastery regardless of age, the exposure to adversity that is likely to be perceived as non-normative or “off time” among wives who manage more complex chronic conditions at a younger age may foster the development of resilience over time that helps to maintain their sense of personal mastery. Supporting this tentative possibility, experiences of adversity involving health problems and serious medical conditions can lead to gains in personal growth and other aspects of psychological well-being (Barskova & Oesterreich, 2009; Helgeson et al., 2006). This finding suggests that wives aged 44 and younger with greater chronic condition discordance may develop resilience over time that ultimately contributes to increases in personal mastery. Among wives aged 57 and older with greater chronic condition discordance, however, age-related vulnerabilities may be intensified over time as conditions become more severe in ways that diminish feelings of personal mastery. Future research is needed to understand more proximal mechanisms that might explain this finding.

When husbands had a greater degree of discordance in their own chronic conditions at baseline, both husbands and their wives had significantly steeper reductions in personal mastery across the 8-year period. This mirrors previous findings using the same dataset that among couples in which husbands had a greater degree of chronic condition discordance at baseline, both husbands and wives demonstrated a faster rate of decline in moderate physical activity (Polenick et al., 2021). Thus, more complex multimorbidity patterns among husbands may erode global perceptions of control within couples that have a concomitant negative impact on their functioning. Notably, husbands’ greater degree of chronic condition discordance at baseline was not significantly linked to lower initial personal mastery, indicating that these effects might be gradual and emerge over time. Taken together, these findings suggest that early interventions to sustain and strengthen perceptions of personal mastery among older couples may be beneficial when husbands have little overlap in their own chronic illness self-management requirements.

When we considered the maximum degree of chronic condition discordance in post hoc tests, we found that husbands with a greater baseline degree of individual-level chronic condition discordance reported significantly lower initial personal mastery. Whereas the overall degree of discordance did not seem to be consequential for husbands, husbands with a pair of conditions that are particularly complex to manage may perceive less global control over their lives. This finding underscores the importance of considering multiple dimensions of chronic condition discordance and their implications for perceived control.

Degrees of Couple-Level Chronic Condition Discordance and Perceived Control

When there was a greater degree of couple-level chronic condition discordance at baseline, wives reported lower initial health-related control; however, this link was not found for husbands. In accord with our hypothesis, wives may feel less confident in their ability to control their own health when there is a low degree of overlap between spouses in chronic illness self-management requirements. One possible explanation for why this association

was not observed among husbands is that wives usually take more responsibility for managing their partners' health along with their own (Monin & Clark, 2011; Thomeer et al., 2015). As a consequence, more complex patterns of multimorbidity between spouses may reduce confidence in managing one's health among wives but not husbands. The degree of couple-level chronic condition discordance at baseline was not significantly linked to rates of change in health-related control, which indicates that wives may typically be able to adapt so that they avoid further reductions in their sense of control over time.

For both wives and husbands, the degree of couple-level chronic condition discordance at baseline was not significantly linked to levels of or rates of change in personal mastery. Aligned with the findings for health-related control, this suggests that individual-level chronic condition discordance may be relatively more consequential for perceptions of personal mastery.

Of note, there were no age differences in the association between the degree of couple-level chronic condition discordance and perceived control. This suggests that older individuals are not more susceptible to the adverse impact of greater chronic condition discordance between spouses, despite age-related challenges and limitations. This finding may be partly due to greater collaborative coping among older couples that can promote better dyadic adjustment to chronic illness (Berg & Upchurch, 2007).

Limitations and Future Directions

This study has four main limitations. First, chronic health conditions were self-reported, which may introduce bias. Second, our focus on the seven chronic health conditions that are regularly assessed in the HRS may have underestimated the degrees of individual- and couple-level chronic condition discordance. Future studies should use data from medical records and include a broader range of chronic health conditions. Third, couples in this study were married or cohabiting, heterosexual, and primarily White, which limits generalizability to more diverse couples. Fourth, couples in the present study differed from couples who were excluded, further limiting generalizability. More specifically, relative to couples who had complete data at baseline but did not have both partners participate in one or both follow-up waves, couples in this study were younger, had more education, were less likely to be a minority, reported lower negative marital quality and lower depressive symptoms, had fewer chronic conditions and lower degrees of individual-level and couple-level chronic condition discordance, and reported higher health-related control and personal mastery. Therefore, the findings may not apply to couples who are older, less educated, minorities, experience poorer mental and physical health, and have lower perceived control. Despite these shortcomings, the current findings highlight the need to gain a better understanding of chronic condition discordance patterns within couples and their enduring consequences for perceived control.

Future research should consider how individual-level and couple-level chronic condition discordance is linked to levels of and changes in perceived control across shorter timeframes. Evidence of within-person changes in control beliefs (e.g., Drewelies et al., 2017; Infurna & Okun, 2015; Neupert & Allaire, 2012) raises the question of whether short-term fluctuations may occur both within individuals and between spouses. Pinpointing

more proximal factors that have negative implications for health-related control and personal mastery among individuals and couples managing multiple chronic conditions would help to identify targets for personalized interventions. Previous research has found that control beliefs are positively associated between spouses (e.g., Howland et al., 2016; Lee et al., 2020), and that own and partner perceptions of control are linked to key health outcomes including depressive symptoms and adherence to diet and exercise regimens (e.g., Anderson et al., 2016; Windsor et al., 2009). Moreover, perceived control is often modifiable and has shown improvements over time among during individual-based (Lachman, 2006; French et al., 2014; Zautra et al., 2012) and couple-based (Li et al., 2015; Northouse et al., 2007) interventions. Devising ways to build and maintain strong feelings of health-related control and personal mastery may support long-term resilience among older individuals and couples as they manage ongoing health challenges.

Taken as a whole, the findings from this study support our dyadic concordance model of multimorbidity in that greater chronic condition discordance at the individual and couple levels is associated with lower perceived control. The current findings contribute to the literature suggesting that greater individual-level and couple-level chronic condition discordance is linked to poorer psychological well-being and self-management (Polenick, Birditt, Turkelson, Bugajski, & Kales, 2021; Polenick, Birditt, Turkelson, & Kales, 2021; Polenick et al., 2020). This line of work advances theory and research on chronic illness in the context of close relationships by examining how perceived control may be an important mechanism by which chronic condition discordance is linked to health and well-being over time. Future work is needed to investigate when and how greater chronic condition discordance contributes to gains or losses in health-related control and personal mastery for wives at different ages.

Conclusion

In sum, the present study shows that both individual-level and couple-level degrees of chronic condition discordance are associated with initial levels of and rates of change in perceived control. This study builds on extant research by demonstrating that partner-level and couple-level health indicators have unique implications for perceived control, and that these links vary in part by age and gender. Greater individual-level chronic condition discordance among husbands appears to have especially detrimental long-term consequences for personal mastery within couples and for husbands' own perceptions of health-related control. Discordance in chronic conditions within couples and concomitant reductions in perceived control may contribute to less effective illness management that results in greater and more severe symptoms, accelerated rates of chronic illness progression, and potentially the development of additional health problems. Future research should examine combinations of discordant chronic conditions (e.g., those affecting cardiovascular health versus those affecting mobility) that may be especially consequential for perceived control among individuals and within couples. Considering the importance of control beliefs in maintaining well-being during later life (Robinson & Lachman, 2017), strategies to preserve and leverage these psychosocial resources may afford numerous benefits among older individuals and couples managing complex patterns of chronic conditions.

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Public significance statement:

Chronic condition discordance (the extent that two or more conditions have non-overlapping self-management requirements) may increase care complexity and reduce perceived control over one's health and broader circumstances. Overall, this study suggests that chronic condition discordance among individuals and between spouses is linked to lower perceived control in middle and later life. Strategies to increase perceived control may improve well-being among individuals and couples living with complex chronic conditions.

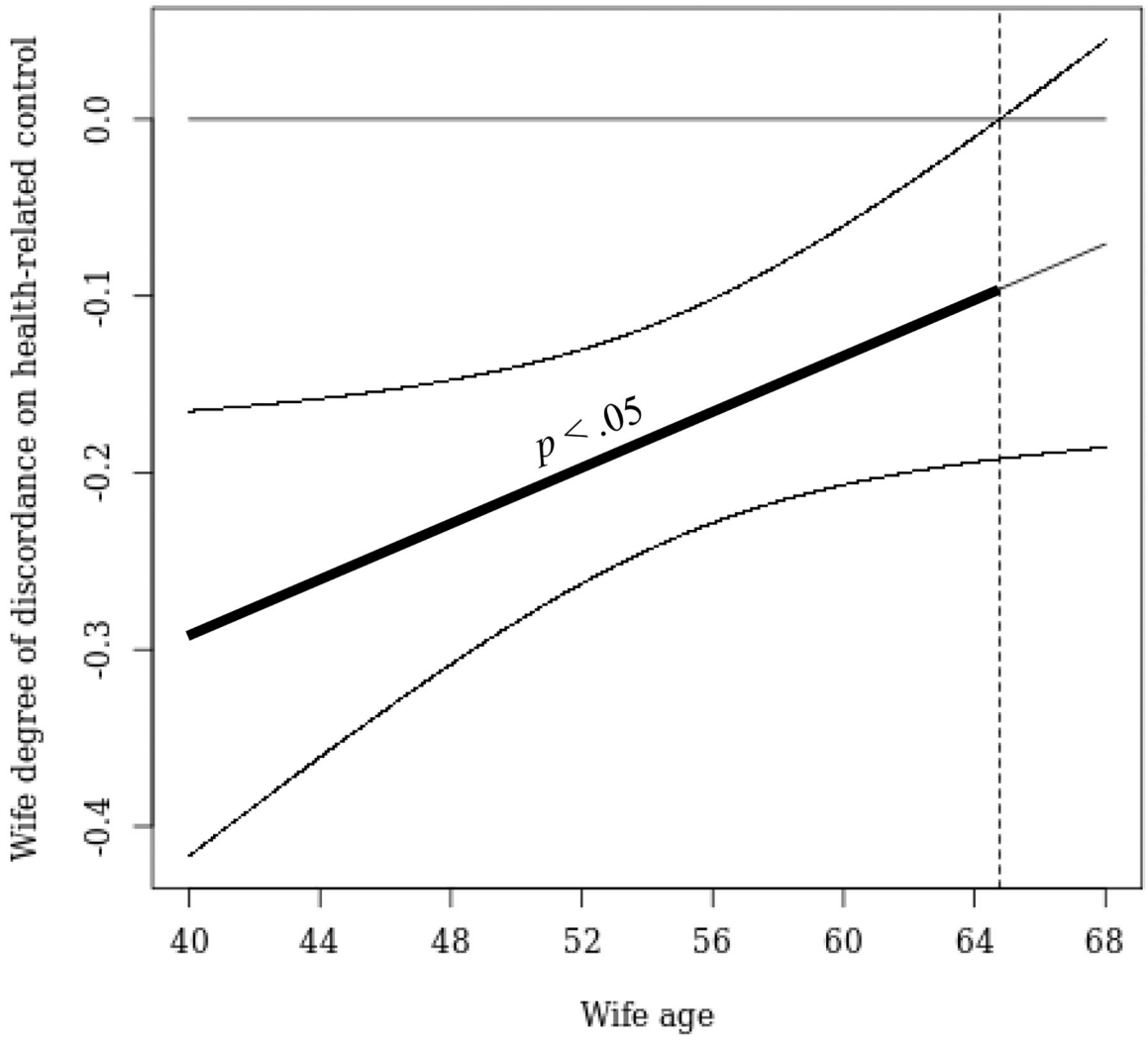

Figure 1.

Significant interaction of wives' individual-level degree of chronic condition discordance and age on their own initial level of health-related control. The confidence bands show the values of wives' age and the simple slope for wives' own individual-level degree of discordance on their own initial level of health-related control. The area to the left of the dashed vertical line is the region of significance. It represents the range of wives' age (64 and younger), where the association between wives' degree of discordance on health-related control is significant at $p < .05$. The values on the y-axis represent the unstandardized coefficients of those associations. When the confidence band area contains zero on the y-axis, the associations are no longer significant.

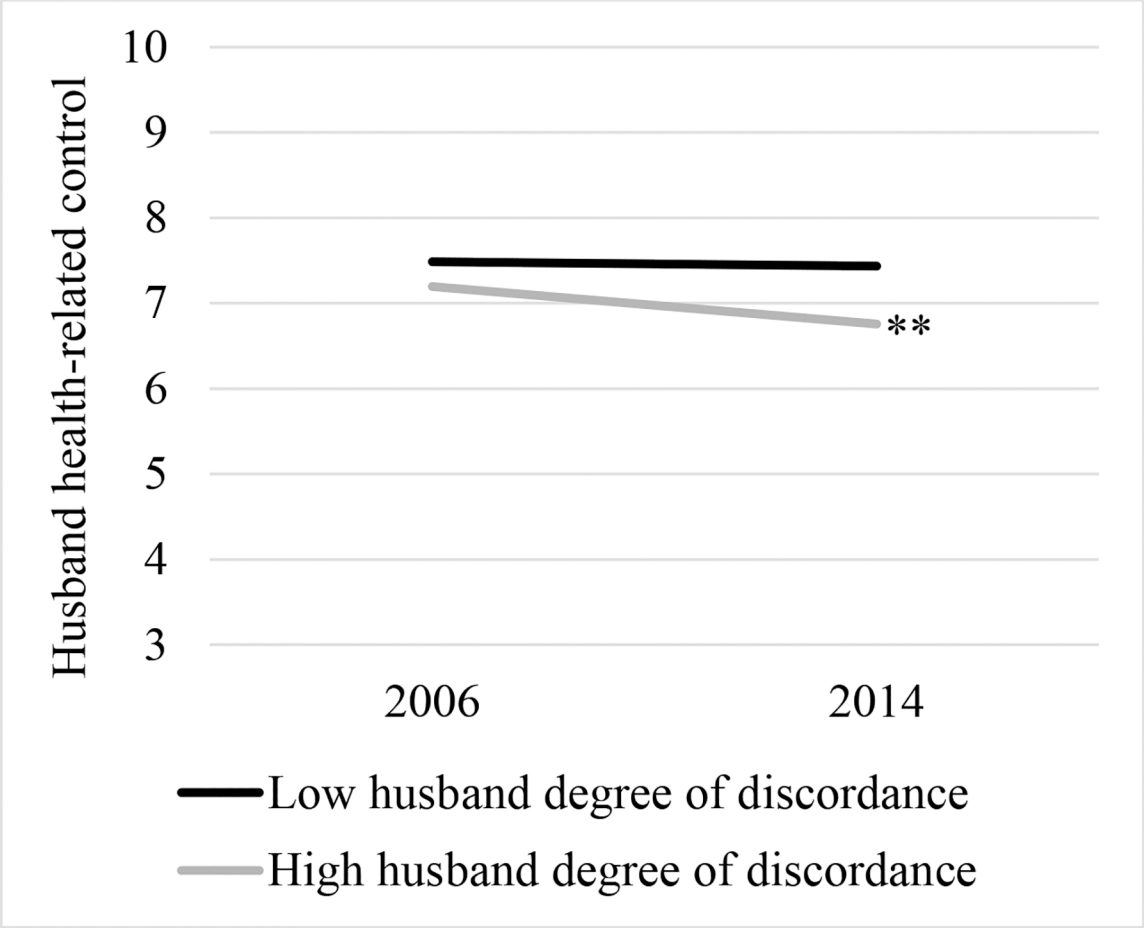

Figure 2.
Significant effect of husbands' individual-level degree of chronic condition discordance on their own rate of change in health-related control. The y-axis represents values for 90% of the sample. $^{**}p < .01$.

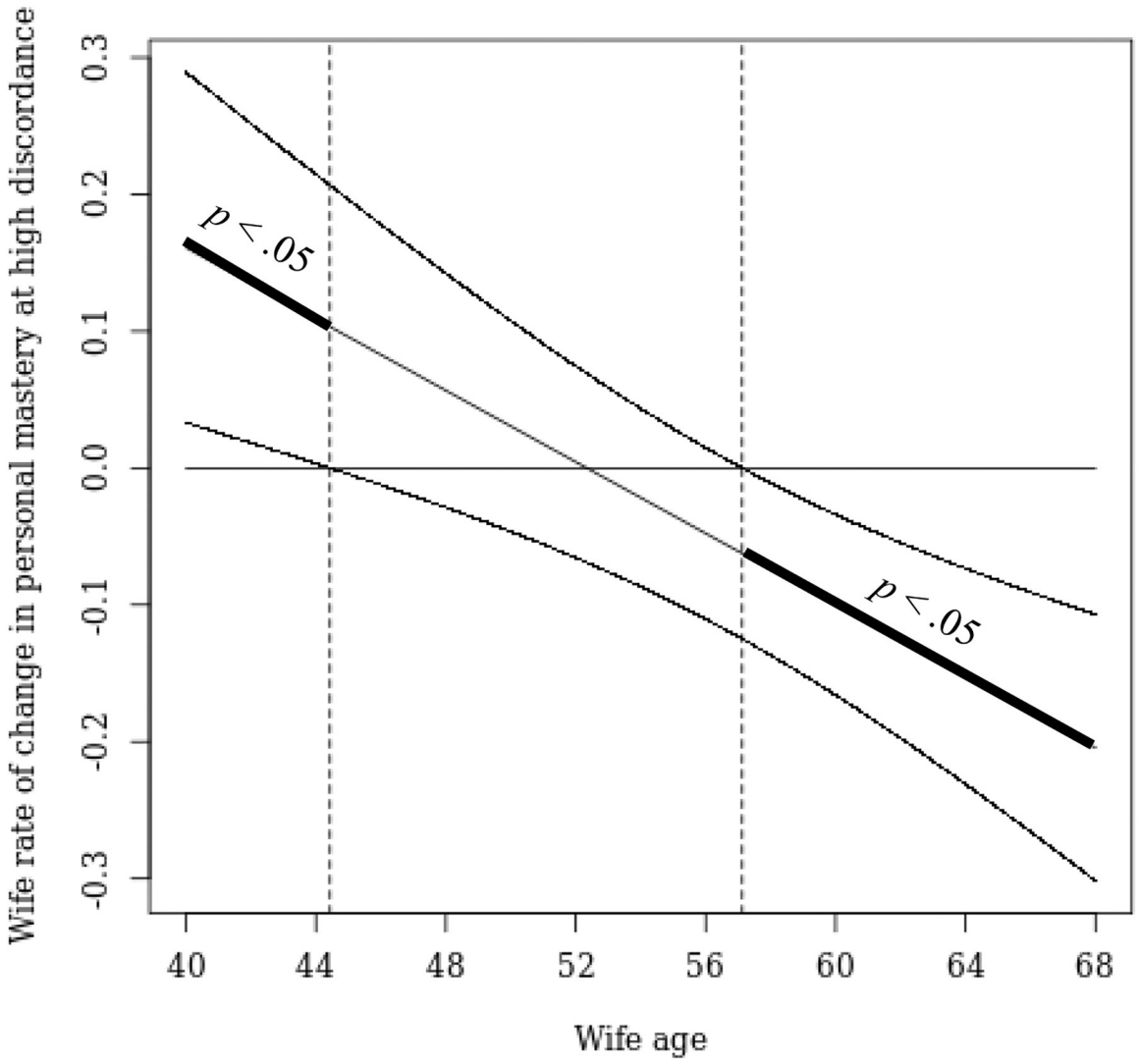

Figure 3.

Significant interaction of wives' individual-level degree of chronic condition discordance and age on their own rate of change in personal mastery. The confidence bands show the values of wives' age and the simple slope for wives' own rate of change in personal mastery at high discordance. The area outside the dashed vertical lines is the region of significance. It represents the range of wives' age (44 and younger; 57 and older), where the association between wives' age on rate of change in personal mastery is significant at $p < .05$. The values on the y-axis represent the unstandardized coefficients of those associations. When the confidence band contains zero on the y-axis, the associations are no longer significant.

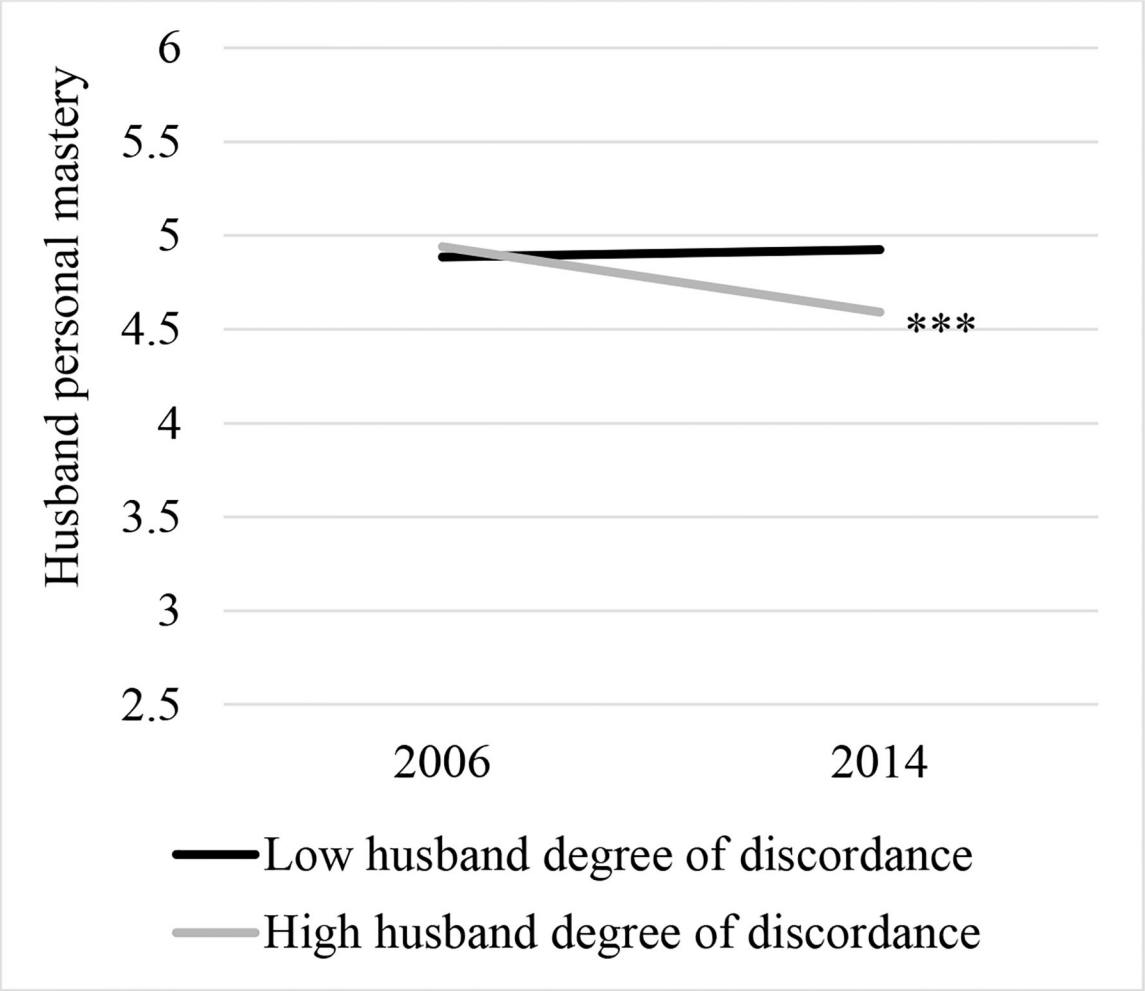

Figure 4.

Significant effect of husbands' individual-level degree of chronic condition discordance on their own rate of change in personal mastery. The y-axis represents values for 90% of the sample. ***$p < .001$.

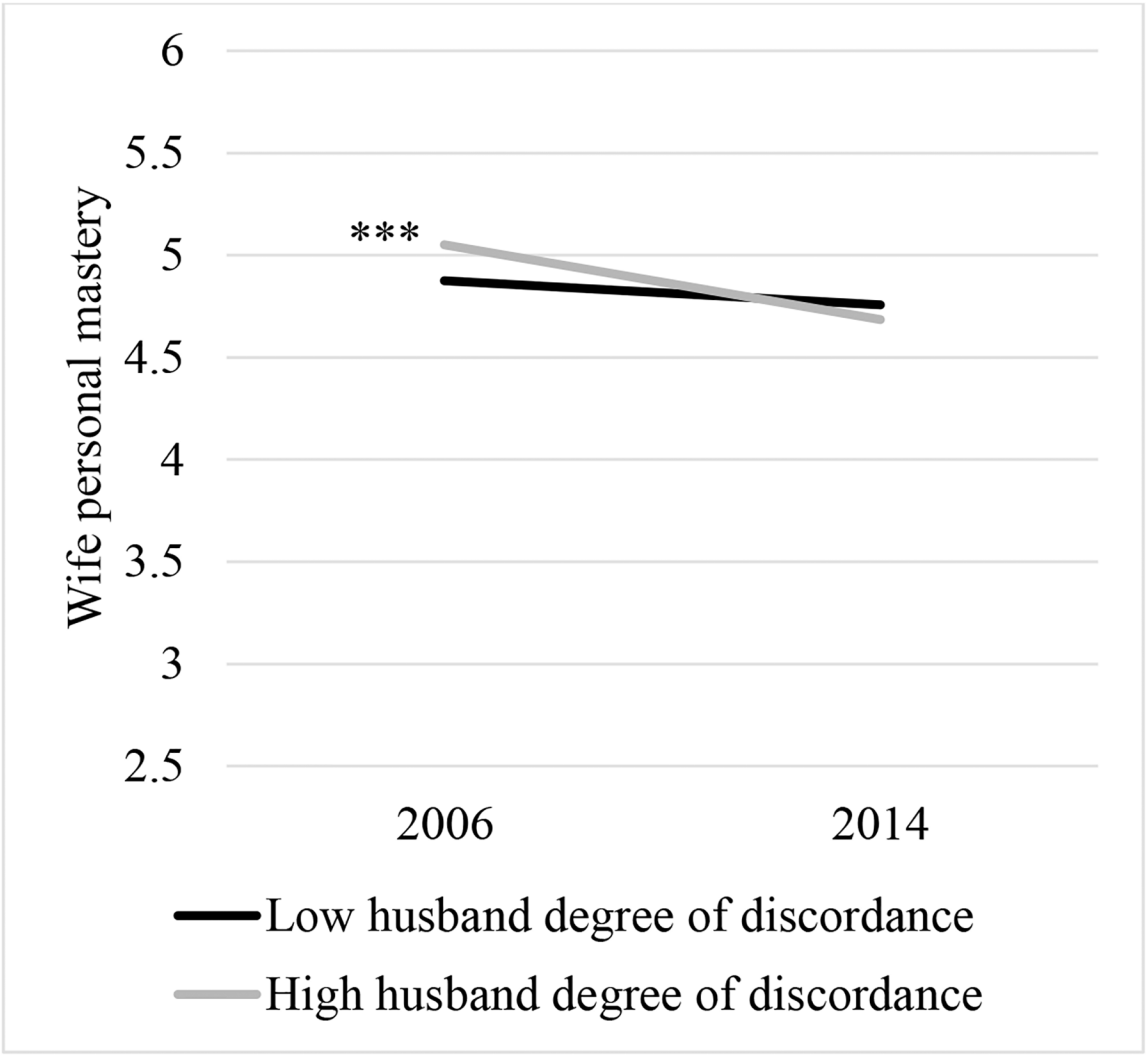

Figure 5.
Significant effect of husbands' individual-level degree of chronic condition discordance on wives' rate of change in personal mastery. The y-axis represents values for 90% of the sample. ***$p < .001$.

Table 1

Baseline Characteristics and Scores on Study Variables for Wives and Husbands

	Wives		Husbands	
Variable	***M***	***SD***	***M***	***SD***
Age	53.81***	8.69	57.19	7.91
Education in years	13.44	2.37	13.58	2.78
Negative marital quality	1.92*	0.64	1.87	0.58
Depressive symptoms	0.99**	1.60	0.82	1.39
Number of chronic health conditions	1.51**	1.14	1.68	1.23
Individual-level degree of discordance	1.74	1.91	1.78	1.84
Couple-level degree of discordance	1.93	1.54	1.93	1.54
Health-related control	7.68**	2.12	7.41	2.08
Personal mastery	4.95	0.99	4.90	1.06
	%		%	
Minority status	9.30		9.70	

Note. $N = 879$ couples.

*Significant gender difference at $p < .05$.

**Significant gender difference at $p < .01$.

***Significant gender difference at $p < .001$.

Table 2

Degree of Chronic Condition Discordance Scores and Baseline Prevalence of Chronic Condition Pairs at the Individual and Couple Level Among Wives and Husbands

	Degree of Discordance		Wife	Husband	Couple
Pairs of Conditions	***M***	***SD***	***%***	***%***	***%***
Cancer-Hypertension	4.5	0.5	6.0	7.6	14.2
Arthritis-Cancer	4.4	1.2	6.4	8.1	14.3
Arthritis-Stroke	4.4	0.8	1.7	3.0	4.0
Arthritis-Lung Disease	4.3	1.0	3.5	3.8	8.1
Cancer-Stroke	4.3	0.8	0.2*	1.4	1.1
Diabetes-Lung Disease	4.3	0.7	0.9	1.1	1.9
Cancer-Heart Disease	4.2	0.6	2.2*	4.3	4.2
Lung Disease-Stroke	4.2	0.7	0.3	0.3	0.5
Arthritis-Diabetes	4.1	0.8	8.6	11.3	17.5
Arthritis-Hypertension	4.1	0.8	32.1	29.7	46.1
Cancer-Diabetes	4.1	0.8	1.4	2.4	3.5
Cancer-Lung Disease	4.1	0.9	1.1	1.1	1.4
Arthritis-Heart Disease	4.0	0.9	10.4*	14.2	20.1
Hypertension-Lung Disease	3.8	0.7	3.4	3.5	6.4
Heart Disease-Lung Disease	2.8	0.5	1.0	1.8	1.9
Diabetes-Hypertension	1.9	1.0	9.8**	14.0	14.4
Diabetes-Stroke	1.8	1.1	0.6	1.4	1.4
Diabetes-Heart Disease	1.5	1.0	2.6**	5.5	5.5
Heart Disease-Stroke	1.5	1.0	0.7	1.6	1.4
Hypertension-Stroke	1.5	1.0	1.7	3.1	3.7
Heart Disease-Hypertension	1.3	0.7	8.8**	13.4	17.7

Note. Twenty-one possible pairs of discordant conditions are presented to show the mean degree of discordance for each condition pair as well as the baseline prevalence of each pair at the individual level (i.e., within wives and husbands) and the couple level (i.e., between wives and husbands). The degree of chronic condition discordance has a standard deviation because some individuals and couples had multiple discordance scores that were averaged.

$N = 879$ couples.

* Significant gender difference at $p < .05$.

** Significant gender difference at $p < .01$.

Table 3

Correlations Among Key Study Variables at Baseline for Wives and Husbands

	1	2	3	4	5	6
1. Age		*.33***	*.25***	*.32***	*−.02*	*.03*
2. Actor degree of discordance	.32***		*.19***	*.38***	*−.10***	*.01*
3. Partner degree of discordance	.26***	.19***		*.37***	*−.01*	*−.03*
4. Couple degree of discordance	.33***	.37***	.38***		*−.09***	*−.03*
5. Health-related control	−.04	−.17***	−.04	−.17***		*.27***
6. Personal mastery	−.07*	−.16***	.02	−.03	.33***	

Note. Wife correlations are below the diagonal in normal font and husband correlations are above the diagonal in italic font.

N = 879 couples.

* $p < .05$.

** $p < .01$.

Table 4

Dyadic Growth Curve Model Examining the Effects of Individual-Level Discordance on Health-Related Control

	Wives			Husbands		
Parameter	***b***	***SE***	***95% CI***	***b***	***SE***	***95% CI***
Step 1						
Time	−0.176***	0.050	−0.274, −0.078	−0.117*	0.048	−0.212, −0.022
Actor Age	−0.002	0.007	−0.016, 0.012	−0.004	0.008	−0.019, 0.011
Actor Minority status	0.197*	0.099	0.004, 0.391	−0.047	0.094	−0.232, 0.137
Actor Education in years	0.046	0.024	−0.001, 0.094	0.047*	0.020	0.008, 0.087
Actor Negative marital quality	−0.198*	0.097	−0.388, −0.008	−0.226*	0.103	−0.428, −0.024
Partner Negative marital quality	−0.149	0.107	−0.359, 0.060	−0.302**	0.094	−0.486, −0.119
Actor Depressive symptoms	−0.137***	0.033	−0.202, −0.072	−0.106**	0.036	−0.177, −0.036
Partner Depressive symptoms	0.008	0.037	−0.064, 0.081	−0.037	0.032	−0.099, 0.026
Actor Number of chronic conditions	−0.143	0.079	−0.299, 0.012	−0.107	0.071	−0.246, 0.032
Partner Number of chronic conditions	0.005	0.073	−0.139, 0.149	0.056	0.077	−0.095, 0.206
Actor Degree of discordance	−0.175***	0.032	−0.239, −0.112	−0.118***	0.032	−0.181, −0.055
Partner Degree of discordance	0.016	0.033	−0.048, 0.080	−0.006	0.030	−0.066, 0.054
−2 Log Likelihood	21796.433					
Step 2						
Time × Actor Degree of discordance	−0.015	0.022	−0.057, 0.027	−0.048*	0.022	−0.091, −0.006
Time × Partner Degree of discordance	0.033	0.022	−0.011, 0.077	−0.014	0.021	−0.055, 0.027
−2 Log Likelihood	21787.901					
Δ −2 Log Likelihood (from step 1)	8.532*					
Step 3						
Actor Degree of discordance × Actor Age	0.008*	0.004	0.001, 0.015	0.005	0.004	−0.003, 0.013
Partner Degree of discordance × Actor Age	0.003	0.004	−0.004, 0.010	0.004	0.004	−0.003, 0.012
−2 Log Likelihood	21788.455					
Δ −2 Log Likelihood (from step 1)	7.978*					
Step 4						
Time × Actor Degree of discordance × Actor Age	−0.004	0.003	−0.009, 0.001	−0.002	0.003	−0.007, 0.004
Time × Partner Degree of discordance × Actor Age	0.002	0.003	−0.004, 0.007	0.003	0.003	−0.002, 0.008
−2 Log Likelihood	21771.376					
Δ −2 Log Likelihood (from step 1)	25.057***					

Note. Unconditional model intercepts and slopes (Wives: Intercept: $b = 7.700$, $SE = 0.069$, $p < .001$; Slope: $b = -0.212$, $SE = 0.040$, $p < .001$; Husbands: Intercept: $b = 7.433$, $SE = 0.068$, $p < .001$; Slope: $b = -0.140$, $SE = 0.039$, $p < .001$). CI = confidence interval. Estimates are from each model step. Step 4 included a two-way interaction term (time × actor age).

$N = 879$ couples.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Dyadic Growth Curve Model Examining the Effects of Couple-Level Discordance on Health-Related Control

	Wives			Husbands		
Parameter	***b***	***SE***	***95% CI***	***b***	***SE***	***95% CI***
Step 1						
Time	−0.177***	0.050	−0.275, −0.078	−0.117*	0.048	−0.212, −0.022
Actor Age	0.002	0.007	−0.012, 0.016	−0.002	0.008	−0.017, 0.013
Actor Minority status	0.189	0.098	−0.004, 0.382	−0.051	0.094	−0.236, 0.133
Actor Education in years	0.048*	0.024	0.000, 0.095	0.047*	0.020	0.007, 0.086
Actor Negative marital quality	−0.199*	0.096	−0.387, −0.010	−0.217*	0.103	−0.419, −0.016
Partner Negative marital quality	−0.133	0.106	−0.342, 0.076	−0.304**	0.093	−0.487, −0.120
Actor Depressive symptoms	−0.137***	0.033	−0.201, −0.072	−0.107**	0.036	−0.177, −0.036
Partner Depressive symptoms	0.008	0.037	−0.064, 0.081	−0.037	0.032	−0.099, 0.026
Actor Number of chronic conditions	−0.142	0.079	−0.298, 0.013	−0.107	0.071	−0.246, 0.032
Partner Number of chronic conditions	0.006	0.073	−0.138, 0.150	0.056	0.077	−0.095, 0.206
Actor Degree of discordance	−0.147***	0.033	−0.213, −0.082	−0.102**	0.033	−0.168, −0.037
Partner Degree of discordance	0.047	0.034	−0.020, 0.113	0.010	0.032	−0.053, 0.072
Couple Degree of discordance	−0.131**	0.043	−0.216, −0.047	−0.069	0.042	−0.151, 0.012
−2 Log Likelihood	21786.284					
Step 2						
Time × Actor Degree of discordance	−0.025	0.023	−0.070, 0.020	−0.047*	0.023	−0.092, −0.002
Time × Partner Degree of discordance	0.022	0.024	−0.024, 0.069	−0.013	0.022	−0.056, 0.031
Time × Couple Degree of discordance	0.041	0.030	−0.017, 0.099	−0.005	0.029	−0.062, 0.052
−2 Log Likelihood	21775.834					
Δ −2 Log Likelihood (from Step 1)	10.45*					
Step 3						
Actor Degree of discordance × Actor Age	0.005	0.004	−0.003, 0.013	0.005	0.004	−0.004, 0.013
Partner Degree of discordance × Actor Age	0.002	0.004	−0.006, 0.009	0.003	0.004	−0.005, 0.011
Couple Degree of discordance × Actor Age	0.007	0.005	−0.003, 0.017	0.001	0.006	−0.010, 0.012
−2 Log Likelihood	21777.911					
Δ −2 Log Likelihood (from Step 1)	8.373					
Step 4						
Time × Actor Degree of discordance × Actor Age	−0.001	0.002	−0.005, 0.004	0.001	0.003	−0.004, 0.006
Time × Partner Degree of discordance × Actor Age	0.001	0.002	−0.003, 0.006	0.003	0.002	−0.002, 0.008
Time × Couple Degree of discordance × Actor Age	−0.001	0.004	−0.008, 0.006	−0.002	0.004	−0.010, 0.005
−2 Log Likelihood	21762.492					
Δ −2 Log Likelihood (from Step 1)	23.792**					

Note. CI = confidence interval. Estimates are from each model step. Step 4 included a two-way interaction term (time × actor age).

N = 879 couples.

*$p < .05$.

** $p < .01$.

*** $p < .001$.

Table 6

Dyadic Growth Curve Model Examining the Effects of Individual-Level Discordance on Personal Mastery

	Wives			Husbands		
Parameter	***b***	***SE***	***95% CI***	***b***	***SE***	***95% CI***
Step 1						
Time	−0.116***	0.024	−0.163, −0.070	−0.071**	0.026	−0.122, −0.020
Actor Age	−0.007*	0.003	−0.013, −0.001	−0.001	0.004	−0.008, 0.006
Actor Minority status	0.007	0.044	−0.080, 0.093	−0.006	0.044	−0.092, 0.081
Actor Education in years	0.020	0.011	−0.001, 0.042	0.011	0.009	−0.008, 0.029
Actor Negative marital quality	−0.153***	0.043	−0.237, −0.068	−0.278***	0.048	−0.372, −0.183
Partner Negative marital quality	−0.094*	0.048	−0.187, −0.000	−0.075	0.044	−0.161, 0.011
Actor Depressive symptoms	−0.010	0.016	−0.042, 0.021	−0.050*	0.019	−0.088, −0.012
Partner Depressive symptoms	0.039*	0.018	0.004, 0.075	0.004	0.017	−0.030, 0.037
Actor Number of chronic conditions	0.043	0.038	−0.032, 0.119	0.032	0.038	−0.043, 0.107
Partner Number of chronic conditions	0.029	0.036	−0.040, 0.099	−0.012	0.041	−0.093, 0.069
Actor Degree of discordance	−0.063***	0.014	−0.091, −0.035	−0.028	0.015	−0.058, 0.001
Partner Degree of discordance	0.017	0.015	−0.011, 0.046	0.000	0.014	−0.028, 0.028
−2 Log Likelihood	14461.492					
Step 2						
Time × Actor Degree of discordance	0.023*	0.010	0.003, 0.042	−0.049***	0.012	−0.071, −0.026
Time × Partner Degree of discordance	−0.031**	0.010	−0.052, −0.011	0.019	0.011	−0.003, 0.040
−2 Log Likelihood	14433.602					
Δ −2 Log Likelihood (from Step 1)	27.89***					
Step 3						
Actor Degree of discordance × Actor Age	0.002	0.002	−0.001, 0.005	−0.002	0.002	−0.005, 0.002
Partner Degree of discordance × Actor Age	0.002	0.002	−0.001, 0.006	−0.001	0.002	−0.004, 0.003
−2 Log Likelihood	14455.923					
Δ −2 Log Likelihood (from Step 1)	5.569					
Step 4						
Time × Actor Degree of discordance × Actor Age	−0.003*	0.001	−0.005, −0.001	0.001	0.002	−0.002, 0.004
Time × Partner Degree of discordance × Actor Age	−0.001	0.001	−0.003, 0.002	0.000	0.001	−0.003, 0.003
−2 Log Likelihood	14415.078					
Δ −2 Log Likelihood (from Step 1)	46.414***					

Note. Unconditional model intercepts and slopes (Wives: Intercept: $b = 4.951$, $SE = 0.031$, $p < .001$; Slope: $b = -0.096$, $SE = 0.019$, $p < .001$; Husbands: Intercept: $b = 4.924$, $SE = 0.033$, $p < .001$; Slope: $b = -0.064$, $SE = 0.021$, $p = .002$). CI = confidence interval. Estimates are from each model step. Step 4 included a two-way interaction term (time × actor age).

$N = 879$ couples.

*$p < .05$.

**$p < .01$.

*** $p < .001$.

Table 7

Dyadic Growth Curve Model Examining the Effects of Couple-Level Discordance on Personal Mastery

	Wives			Husbands		
Parameter	***b***	***SE***	***95% CI***	***b***	***SE***	***95% CI***
Step 1						
Time	−0.116***	0.024	−0.163, −0.070	−0.071**	0.026	−0.122, −0.020
Actor Age	−0.007*	0.003	−0.013, −0.001	−0.000	0.004	−0.007, 0.007
Actor Minority status	0.007	0.044	−0.080, 0.093	−0.006	0.044	−0.093, 0.081
Actor Education in years	0.020	0.011	−0.001, 0.042	0.010	0.009	−0.008, 0.029
Actor Negative marital quality	−0.153***	0.043	−0.237, −0.068	−0.276***	0.048	−0.370, −0.182
Partner Negative marital quality	−0.093	0.048	−0.187, 0.000	−0.075	0.044	−0.161, 0.010
Actor Depressive symptoms	−0.010	0.016	−0.042, 0.021	−0.050*	0.019	−0.088, −0.012
Partner Depressive symptoms	0.039*	0.018	0.004, 0.075	0.004	0.017	−0.030, 0.037
Actor Number of chronic conditions	0.043	0.038	−0.032, 0.119	0.032	0.038	−0.043, 0.107
Partner Number of chronic conditions	0.029	0.036	−0.040, 0.099	−0.012	0.041	−0.093, 0.069
Actor Degree of discordance	−0.062***	0.015	−0.091, −0.033	−0.025	0.016	−0.056, 0.005
Partner Degree of discordance	0.018	0.015	−0.012, 0.048	0.003	0.015	−0.026, 0.033
Couple Degree of discordance	−0.002	0.019	−0.040, 0.035	−0.014	0.019	−0.053, 0.024
−2 Log Likelihood	14460.908					
Step 2						
Time × Actor Degree of discordance	0.028*	0.011	0.007, 0.049	−0.046***	0.012	−0.070, −0.022
Time × Partner Degree of discordance	−0.026*	0.011	−0.048, −0.004	0.021	0.012	−0.002, 0.044
Time × Couple Degree of discordance	−0.020	0.014	−0.047, 0.007	−0.011	0.015	−0.041, 0.020
−2 Log Likelihood	14430.796					
Δ −2 Log Likelihood (from Step 1)	30.112***					
Step 3						
Actor Degree of discordance × Actor Age	0.002	0.002	−0.002, 0.006	−0.001	0.002	−0.005, 0.003
Partner Degree of discordance × Actor Age	0.002	0.002	−0.001, 0.006	−0.000	0.002	−0.004, 0.003
Couple Degree of discordance × Actor Age	0.000	0.002	−0.004, 0.005	−0.002	0.003	−0.007, 0.003
−2 Log Likelihood	14454.377					
Δ −2 Log Likelihood (from Step 1)	6.531					
Step 4						
Time × Actor Degree of discordance × Actor Age	−0.002	0.001	−0.004, 0.000	−0.000	0.001	−0.003, 0.002
Time × Partner Degree of discordance × Actor Age	0.000	0.001	−0.002, 0.002	−0.001	0.001	−0.003, 0.002
Time × Couple Degree of discordance × Actor Age	0.001	0.002	−0.003, 0.004	0.002	0.002	−0.002, 0.006
−2 Log Likelihood	14420.014					
Δ −2 Log Likelihood (from Step 1)	40.894***					

Note. CI = confidence interval. Estimates are from each model step. Step 4 included a two-way interaction term (time × actor age).

N = 879 couples.

* $p < .05$.

** $p < .01$.

*** $p < .001$.