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Age Variations in Cohort Differences in the United States: Older Adults Report Fewer Constraints Nowadays Than Those 18 Years ago, but Mastery Beliefs Are Diminished Among Younger Adults

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Life Span psychological and life course sociological perspectives have long acknowledged that individual functioning is shaped by historical and sociocultural contexts. Secular increases favoring later-born cohorts are widely documented for fluid cognitive performance and well-being (among older adults). However, little is known about secular trends in other key resources of psychosocial function such as perceptions of control and whether historical changes have occurred in young, middle-aged, and older adults alike. To examine these questions, we compared data from two independent national samples of the Midlife in the United States survey obtained 18 years apart (1995/96 vs. 2013/14) and identified case-matched cohorts (per cohort, n = 2,223, aged = 23–75 years) based on age and gender. We additionally examined the role of economic resources for cohort differences in perceived mastery and constraints. Results revealed that older adults in later-born cohorts reported perceiving fewer constraints than did matched controls 18 years ago, with such positive secular trends being particularly pronounced among women. In contrast, younger adults reported perceiving more constraints in later-born cohorts than those 18 years ago and also reported perceiving lower mastery. We conclude from our national U.S. sample that secular trends generalize to central psychosocial resources across adulthood, such as perceptions of control, but are not unanimously positive. We discuss possible underlying mechanisms and practical implications.

Keywords: perceptions of control, mastery beliefs, constraints, cohort differences, MIDUS

Life Span psychology and life-course sociology have long noted the importance of historical and sociocultural contexts for shaping individual functioning and development (Baltes, 1987; Bronfenbrenner, 1993; Elder, 1974). There is accumulating evidence for secular increases favoring later-born cohorts across many different domains, including cognition (Flynn, 1999), well-being (Sutin et al., 2013), and physical health (Crimmins, & Beltrán-Sánchez, 2011). However, little is known about secular trends (i.e., long-term historical changes) in further key resources of psychosocial function such as perceived control and whether these have occurred in young, middle-aged, and older adults alike. Historical changes such as more and better education, improved living conditions, and better health (Schaie, 2005) may have all contributed to people currently perceiving more control over their lives than did same-aged adults earlier in historical time. Yet there also could be negative effects given other historical changes such as the economic recession. To examine these questions, we compare data from two independent national samples of the Midlife in the United States survey (MIDUS) obtained 18 years apart (1995/96 vs. 2013/14), using case-matched cohorts and controlling for relevant individual and cohort difference factors.

Perceived Mastery and Constraints Across Adulthood and Old Age

Following conceptual perspectives noting that perceived control is multidimensional (Skinner, 1996), we distinguish perceived mastery and perceived constraints. Perceived mastery refers to beliefs about one's abilities to bring about a given outcome, whereas perceived constraints indicate beliefs that there are obstacles beyond one's control that interfere with reaching desired goals. Acknowledging multidirectional dynamics, we draw from

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Lachman's integrative model of control (Lachman, 2006) as theoretical framework, which considers perceived mastery and constraints to also be an outcome of resources and adaptation in the health, social, and well-being domains. For example, poor health such as chronic conditions or functional limitations may undermine and destabilize perceived control. Although perceived mastery and constraints have often been examined together, both conceptual considerations and empirical reports have long shown that these differ in the nature of their age-related trajectories and in their sources (Caplan & Schooler, 2003; Lachman & Weaver, 1998). In particular, perceived constraints often exhibit pronounced age-related changes (i.e., increases), whereas perceived mastery is typically more stable (Lachman & Firth, 2004). Similarly, perceived constraints are often more closely tied to people's mental and physical health than is perceived mastery (Infurna & Mayer, 2015). We thus consider it important to examine separately whether and how perceived mastery and constraints show historical trends.

Historical Trends in Perceived Mastery and Constraints

Following sociological concepts of "individualization" (Beck, 1992), individuals in this day and age need to be increasingly active in constructing their own professional pathways, lifestyles, and identities, which to some extent necessitates perceptions of mastery. In turn, concepts of "de-traditionalization" (Allan, 2008) suggest that life currently is more fluid, less socially rooted, and less societally structured than in the past. As a consequence, one's life may be perceived as being less controlled by external forces. On the other hand, changes in modern communication technology facilitate independence, but also make it difficult to escape social contact. Such population-level processes are expected to operate through various individual difference factors, including sociodemographic, religious, economic, and health characteristics. Below, we document secular trends in such characteristics and summarize associations with perceived control so as to use this combination to derive specific expectations about the nature and direction of cohort differences in facets of perceived control.

First, it is well documented that socioeconomic resources are higher in later-born cohorts and that later-born cohorts have received more and better-quality education (Schaie, 2005). Studies have also repeatedly shown that higher socioeconomic status and better education are both associated with more perceived mastery and fewer constraints (see Ross & Mirowsky, 2013), presumably because such life conditions indeed facilitate exerting control over one's life. As a consequence, we assume that later-born cohorts report perceiving more mastery and fewer constraints than same-aged adults born earlier. Second, gender disparities in many areas of life have become less pronounced over the last decades (Shockley & Shen, 2015). Studies have long shown that women often report perceiving less mastery and more constraints (Ross & Mirowsky, 2013), among other factors, because of gender differences in education and labor force participation, which have weakened women's opportunities to exert control over their lives. Thus, we expect that gender gaps in perceived control are narrowing, with both stronger historical increases in perceived mastery and stronger historical declines in perceived constraints among women.

Third, historical changes in marital status are well known, with lower rates of marriages and reduced genuine benefits of marriages for women in later-born cohorts (Newton, Ryan, King, & Smith, 2014). Empirical studies have documented that perceiving less mastery and more constraints among women is partially explained by lower income and autonomy and higher responsibility for household chores that undermine women's autonomy beliefs (Ross & Mirowsky, 2013). Thus, we expect that differences in perceived mastery and constraints by marital status are smaller today than in the past. Fourth, over the last decades, religious attendance and beliefs have declined as a result of secularization and reductions in the social significance of religion (Stark & Iannaccone, 1994), with later-born cohorts less often adhering to religious denominations (Lalive d'Epinay, Maystre, & Bickel, 2001). Empirical findings on perceived control are rather inconclusive, with some studies showing that religious individuals likely believe in fate and relinquish control to God, and thus often perceive lower mastery (Fiori, Brown, Cortina, & Antonucci, 2006), whereas other studies report that religion can enhance certain forms of perceived control (i.e., secondary control; Morling & Evered, 2006; Rothbaum, Weisz, & Snyder, 1982; Sasaki & Kim, 2011). As a consequence, examining religiosity might help better understand relevant sources of cohort differences in perceived control. Fifth, more people today are faced with chronic conditions and multimorbidity than in the past, but physical functioning has improved and common diseases have become less disabling (Crimmins & Beltran-Sanchez, 2011). Morbidity and limitations operate as risk factors for dealing with the challenges of everyday life and thus are often associated with perceiving less mastery and more constraints (Heckhausen, Wrosch, & Schulz, 2013). To comprehensively describe secular changes in perceived control, it is thus pivotal to take into account the role of health.

Finally, the 2008–2009 recession can be expected to have created a downturn of economic resources and an abundance of experiences and life conditions that may have shaped cohort differences in perceived mastery and constraints. To illustrate, economic hardship (e.g., increased financial and job insecurity) has been shown to foster feelings of powerlessness (Kirsch & Ryff, 2016), which might in turn undermine perceived mastery and increase perceived constraints. As a consequence, examining economic resources might help to further illuminate relevant sources of cohort differences in facets of control.

To our knowledge, only two studies have examined these questions in adulthood and old age, and they have revealed partly conflicting results. First, comparing cohorts of the 1992–1993 and 2002–2003 Longitudinal Aging Study Amsterdam (aged 55–64 years) revealed that adults without health problems in later-born cohorts reported more mastery than earlier-born cohorts (Deeg & Huisman, 2010). Second, Hülür et al. (2016) compared data obtained 20 years apart in the Berlin Aging Studies (1990–1993 vs. 2013–2014) for participants who were primarily in their early to mid-70s. Perceived internal control (aka mastery) did not differ between cohorts, but older adults in the more recent cohort perceived their lives to be less under the control of others than same-aged peers 20 years ago, an effect that amounted to a full standard deviation.

Age Differences in Historical Trends in Perceived Mastery and Constraints

For several reasons, cohort differences in perceived control may be primarily discernible among older adults. To begin with, later adulthood and old age are today perceived as productive phases of life (Gilleard & Higgs, 2002), with older adults being less dependent upon external circumstances. Thus, one may expect older adults in later-born cohorts to perceive fewer constraints over their lives. Similarly, the epidemiological literature suggests that old age in later-born cohorts is often characterized by autonomous lifestyles (Christensen, Doblhammer, Rau, & Vaupel, 2009). Pursuing and exploiting one's economic, political, and social potential could impact older adults' self-concepts in two possible ways. First, older adults in later-born cohorts could feel less restricted when identifying with the current more multifaceted and autonomous societal age norms and therefore feel less dependent on external circumstances (North & Fiske, 2013). Second, when confronted with limitations and health problems, age norms could lead to perceiving one's own aging as less favorable, probably because people perceive themselves to be in contrast with societal expectations about healthy aging. As a result, older adults might perceive less mastery today and more constraints than those in earlier historical times. On the contrary, the economic downturn may have destabilized perceived economic security particularly among young and middle-aged adults (Olsen, Kallenberg, & Nesheim, 2010), suggesting that these age groups nowadays report perceiving more constraints than did same-aged peers in the past. In sum, historical changes in age-related norms and opportunity structure might have shaped historical trends in perceived mastery and constraints in age-specific ways.

The Present Study

We examine secular trends in perceived mastery and constraints as key components of psychosocial resources among young, middle-aged, and older adults. To do so, we compare data obtained 18 years apart in the MIDUS (1995/96 vs. 2013/14) and identify case-matched cohort groups based on age, gender, cohort-normed education, marital status, religiosity, multimorbidity, and functional limitations. We note that our matching assures a common ground for directly comparing representatives of the two cohorts with one another on other variables, but it does not mean that the relevance of individual differences in the matching variables would be fully controlled for (Foster, 2010). To illustrate, by "equating" cohorts on education, we make cohorts reasonably comparable in levels of education and by means of regression analyses statistically account for the fact that the relevance of a given level of education may vary depending upon the time people graduate (e.g., having received 12 years of education may have opened more job opportunities 20 years ago than today)—which is not affected by the matching procedure (Cutler, Huang, & Lleras-Muney, 2015).

Drawing from Lachman's (2006) integrative model and generalizing from empirical evidence obtained in other domains of life, we expect later-born participants to generally report perceiving more control over their lives and fewer constraints relative to earlier-born participants. One reason could be that both education and socioeconomic conditions have improved (Schaie, 2005), thereby providing later-born cohorts with more opportunities to exert control and mastery. Initial empirical evidence partly exists to support these considerations (Deeg & Huisman, 2010; Hülür et al., 2016). However, there could also be negative effects given historical changes such as the economic recession. Our study corroborates and substantially expands these earlier findings by using a large national sample from the United States, testing whether historical changes have occurred in young, middle-aged, and older adults alike, and taking into account key health (multimorbidity, functional limitations), social (marital status), and well-being indicators (income, financial distress) that are known to have changed historically and are established correlates of perceived mastery and constraints.

Method

We used data from subsamples of the MIDUS (obtained 1995/96; Brim, Ryff, & Kessler, 2004) and MIDUS–Refresher (MIDUS-R, obtained 2013/14; Kirsch & Ryff, 2016) surveys. The study was approved by the institutional review boards involved with MIDUS study. Select details relevant to this report are given below.

Participants and Procedure

In 1995/96, 7,108 participants were recruited for MIDUS from a nationally representative random-digit-dialing sample of noninstitutionalized adults aged 25 to 75 years. Once potential participants consented to the study, they completed a 30-min telephone survey and were mailed questionnaires that took approximately two hours to complete before being sent back to the study team. All 6,273 initial MIDUS participants who had provided data on relevant study variables were eligible for inclusion in the matched sample for our report. For MIDUS-R, an independent and new national probability sample of 3,577 adults aged 23 to 74 years was recruited in 2013/14, designed to parallel the age distribution of the sample and the assessments employed in the original MIDUS study. For our report, all 2,592 participants with valid data on relevant study variables were eligible for inclusion in the matched sample. Data collection consisted of a 30-min phone interview followed by two 50-page mailed self-administered questionnaires. In both samples, demographic, psychosocial, and health data were collected.

Measures

Perceived mastery and constraints. *Perceived mastery* was assessed with 4 items (e.g., "I can do just about anything I really set my mind to"), and perceived constraints were assessed with 8 items (e.g., "What happens in my life is often beyond my control"), using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Reliabilities for both scales were good ($\alpha \geq .85$).

Correlates. *Age* was assessed as a continuous variable, that is, as self-reported time since birth in years. *Gender* was assessed with a single item (1 = men, 2 = women). *Cohort-normed education* indexed the number of years spent in formal schooling, standardized by cohort (e.g., ≥60-year-olds in MIDUS: M = 13.85 years, SD = 2.62; ≥60-year-olds in MIDUS-R: M = 14.84 years, SD = 2.55). *Marital status* indexed whether or not partic-

ipants were married (1 = yes; 2 = no). *Religiosity* was assessed with a single item ("*How religious are you?*", 1 = *very* to 4 = *not at all*). *Multimorbidity* indexed the self-reported number of chronic medical conditions from a comprehensive list of 29 conditions (e.g., asthma, stroke, depression) participants had experienced or been treated for in the past year (Gerstorf, Röcke, & Lachman, 2011). *Functional limitations* were assessed as the sum of limitations in seven instrumental activities of daily living (e.g., climbing stairs, carrying groceries). We additionally examined two indicators of economic resources: Self-reported *household income* per year from wage, pension, social security, and other sources and *financial distress* as measured with the question "How difficult is it for you (and your family) to pay your monthly bills?" (possible range 1–4).

Data Preparation

To minimize possible confounds and equate the cohort samples as closely as possible on relevant background variables, we used propensity score matching (Foster, 2010; Thoemmes, & Kim, 2011). Calculating a logistic regression, we used 1:1 matching methods to select for each participant from MIDUS (n = 6,273) a "twin" participant from MIDUS–R (n = 2,592) who was the same or as similar as possible on age and gender. To calculate a between-groups distance matrix, the propensity score was logit-transformed as recommended in the matching literature (Rosenbaum & Rubin, 1985). We matched nearest neighbors with a caliper-matching algorithm that has been shown to increase precision with only little bias (Austin, 2014). The caliper (maximum allowable distance between matched participants) was continuously increased by steps of 0.001 until cohort differences in all matching variables were no longer reliably different from 0 at $p <$ .05. Each participant in MIDUS was allocated the nearest neighbor from MIDUS–R only if the neighbor fell within the caliper distance. With a caliper of c $<$ 0.04 *SD*, the matched cohorts no longer differed on the matching variables. A suitable neighbor in MIDUS–R could be identified for 2,223 MIDUS participants. Figure 1 shows standardized mean differences between both cohorts on the matching variables before and after applying propensity score matching. Descriptive statistics for study measures are given in Table 1 separately for the matched cohorts (for cohorts matched on age, gender, cohort-normed education, marital status, religiosity, multimorbidity, and functional limitations, see Appendix.). As can be obtained, the propensity score procedure was successfully applied.

We used hierarchical regression models to examine the role of cohort for perceived mastery and perceived constraints, while accounting for well-known correlates. First, we included our main predictor of interest. Next, we ran a second model, adding 2-way interactions. We also tested quadratic (e.g., for chronological age) and interaction effects with the cohort variable. In the final models reported, we retain only those interactions that had emerged as statistically significant.

Results

Table 1 reports intercorrelations for the variables under study, separately for the two matched cohort samples. Commonalities and differences between the cohorts are of note. Beginning with similarities, in both cohorts functional limitations and multimorbidity were associated with lower perceived mastery (MIDUS: r = –.19, and r = –.21; MIDUS-R: r = –.20, and r = –.20; all ps ≤ .001) and more perceived constraints (MIDUS: r = .28, and r = .30; MIDUS-R: r = .29, and r = .27; all ps ≤ .001). More education was also associated with fewer perceived constraints consistently across cohorts (r = –.20, and r = –.21, both ps ≤ .001), and both perceived mastery and constraints were not associated with religiosity. Two sets of cohort differences emerged. First, perceived mastery and constraints were more independent from one another in 1995/96, r = –.39, $p \leq .001$, than in 2013/14, r = –.57, $p \leq .001$, z = 7.85, two-tailed $p \leq .001$. Second, education tended to be linked with perceived mastery nowadays, r = .10, $p \leq .001$, but not in 1995/96, r = .03, p = .212, z = 2.34, two-tailed $p \leq .001$.

Cohort Differences in Perceived Mastery and Constraints

Table 2 presents results from hierarchical regression analyses with perceived mastery and perceived constraints, respectively, as the dependent variable, cohort (MIDUS vs. MIDUS–R), and each of the correlates along with significant interaction terms as independent variables. Findings revealed that of the correlates tested and when all other variables had been included (Model 2), for those aged 70 (our centering age), being married (β = 0.04, p = .018), less multimorbidity (β = −0.13, $p \leq .001$), suffering from fewer functional limitations (β = −0.12, $p \leq .001$), and experiencing less financial distress (β = −0.11, $p \leq .001$) were each associated with perceiving higher mastery. In a similar vein, for those aged 70, lower education (β = −0.11, $p \leq .001$), multimorbidity (β = 0.18, $p \leq .001$), suffering from functional limitations

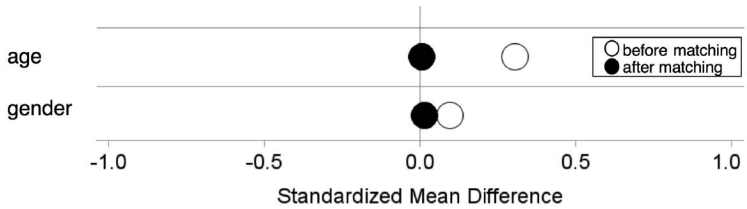

Figure 1. Standardized mean differences between the earlier-born MIDUS cohort (tested 1995–1996) and the later-born MIDUS–R cohort (tested 2013–2014) in age and gender. Negative (positive) numbers signify greater scores for MIDUS (MIDUS-R) participants. After the matching, cohort differences were small and not reliably different from zero at $p <$ .05.

Table 1
Intercorrelations for the Variables Under Study, Separately for the Two Cohort Samples Matched on Age and Gender

	Intercorrelations										
	1	2	3	4	5	6	7	8	9	10	11
Variable											
1. Perceived mastery (1.00–7.00)		−.57*	−.03	−.02	.10*	−.04	−.01	−.20*	−.20*	.11*	−.17*
2. Perceived constraints (1.00–7.00)	−.39*		−.02	−.02	−.21*	.12*	−.01	.29*	.27*	−.20*	.30*
Covariates											
3. Age (23–75)	−.07*	.08*		−.02	−.07*	.02	−.11*	.35*	.19*	−.06*	−.16*
4. Women (1 = men; 2 = women)	−.06*	.09*	−.02		−.05*	.21*	−.12*	.14*	.12*	−.13*	.10*
5. Cohort-normed education (−1.78–3.55)	.03	−.20*	−.11*	−.09*		−.10*	.09*	−.27*	−.17*	.40*	−.26*
6. Married/partnered (1 = yes; 2 = no)	.01	.08*	−.04	.16*	−.02		.05*	.20*	.17*	−.38*	.15*
7. Religiosity (1.00–4.00)	−.02	−.03	−.16*	−.19*	.11*	.07*		−.09*	−.04*	.08*	−.06*
8. Functional limitations (1.00–4.00)	−.19*	.28*	.32*	.12*	−.20*	.09*	−.09*		.49*	−.26*	.22*
9. Multimorbidity (.00–27.00)	−.21*	.30*	.18*	.09*	−.12*	.08*	−.02	.43*		−.14*	.14*
10. Household income (0–300,000)	.01	−.06	−.01	−.01	.08	−.12*	−.02	−.05*	−.05*		−.34*
11. Financial Distress (1.00–4.00)	−.13*	.26*	−.25*	.02	−.11*	.11*	−.01	.13*	.08*	−.11*	

Note. N = 2,223 participants per cohort. Intercorrelations for the earlier-born MIDUS cohort (data obtained in 1995/96) presented below the diagonal and those for later-born MIDUS-R cohort (data obtained in 2013/14) above the diagonal. Participants in the earlier-born MIDUS cohort (data obtained in 1995/96) were born 1921 through 1971 (M = 1945; SD = 14.07 years) and those in the later-born MIDUS-R cohort (data obtained in 2013/14) born 1940 through 1991 (M = 1963; SD = 13.97 years).
* $p < .05$.

(β = 0.15, $p \leq .001$), and experiencing more financial distress (β = 0.12, $p \leq .001$) were each associated with perceiving more constraints.

Our analyses revealed cohort differences in perceived mastery and constraints. For perceived mastery (see left-hand portion of Table 2), the main effect of cohort at age 70 was statistically significant in Model 1 (β = −0.07, $p \leq .001$) but not in Model 2 when all significant interaction terms have been taken into account (β = −0.03, $p = .277$). Most important for our research question, however, the cohort by linear age interaction was positive and statistically significant on perceived mastery (β = 0.05, $p = .029$). For perceived constraints (see right-hand portion of Table 2), cohort membership at age 70 was consistently associated with perceived constraints (Model 1: β = −0.05, $p \leq .001$; Model 2: β = −0.04, $p \leq .001$), and in addition a negative and statistically significant interaction with the linear age component emerged (β = −0.07, $p \leq .001$). Figure 2 illustrates the nature and direction of these effects: Among older adults, there were no cohort differences in perceived mastery, whereas both middle-aged and younger adults in later-born cohorts reported perceiving less mas-

Table 2
Standardized Prediction Effects (β) From Regression Analyses of Perceived Mastery and Constraints by Cohort and the Correlates in the Sample Matched on Age and Gender

	Perceived mastery		Perceived constraints	
Predictor	Model 1	Model 2	Model 1	Model 2
Age linear	−.01	−.02	−.02	−.02
Women	−.02	−.02	−.02	−.02
Cohort-normed education	−.002	−.004	−.11*	−.11*
Married/partnered	.04*	.04*	.02	.03
Religiosity	−.04	−.04*	.01	.01
Multimorbidity	−.13*	−.13*	.17*	.18*
Functional limitations	−.12*	−.12*	.15*	.15*
Household income	.002	.002	−.01	−.01
Financial Distress	−.11*	−.12*	.12*	.20*
Cohort	−.07*	−.03	−.05*	−.04*
Cohort × Age Linear	—	.05*	—	−.07*
Cohort × Women	—	.03*	—	−.07*
Cohort × Multimorbidity	—	—	—	−.04*
Total R^2	.07	.07	.17	.19
F	34.57*	29.60*	93.50*	77.84*
($df1$, $df2$)	(10; 4,427)	(13; 4,424)	(10; 4,427)	(12; 4,425)

Note. N = 2,223 participants per cohort. Participants in the earlier-born MIDUS cohort (data obtained in 1995/96) were born 1921 through 1971 (M = 1945; SD = 14.07 years) and those in the later-born MIDUS-R cohort (data obtained in 2013/14) born 1940 through 1991 (M = 1963; SD = 13.97 years). Age centered at 70 years.
* $p < .05$.

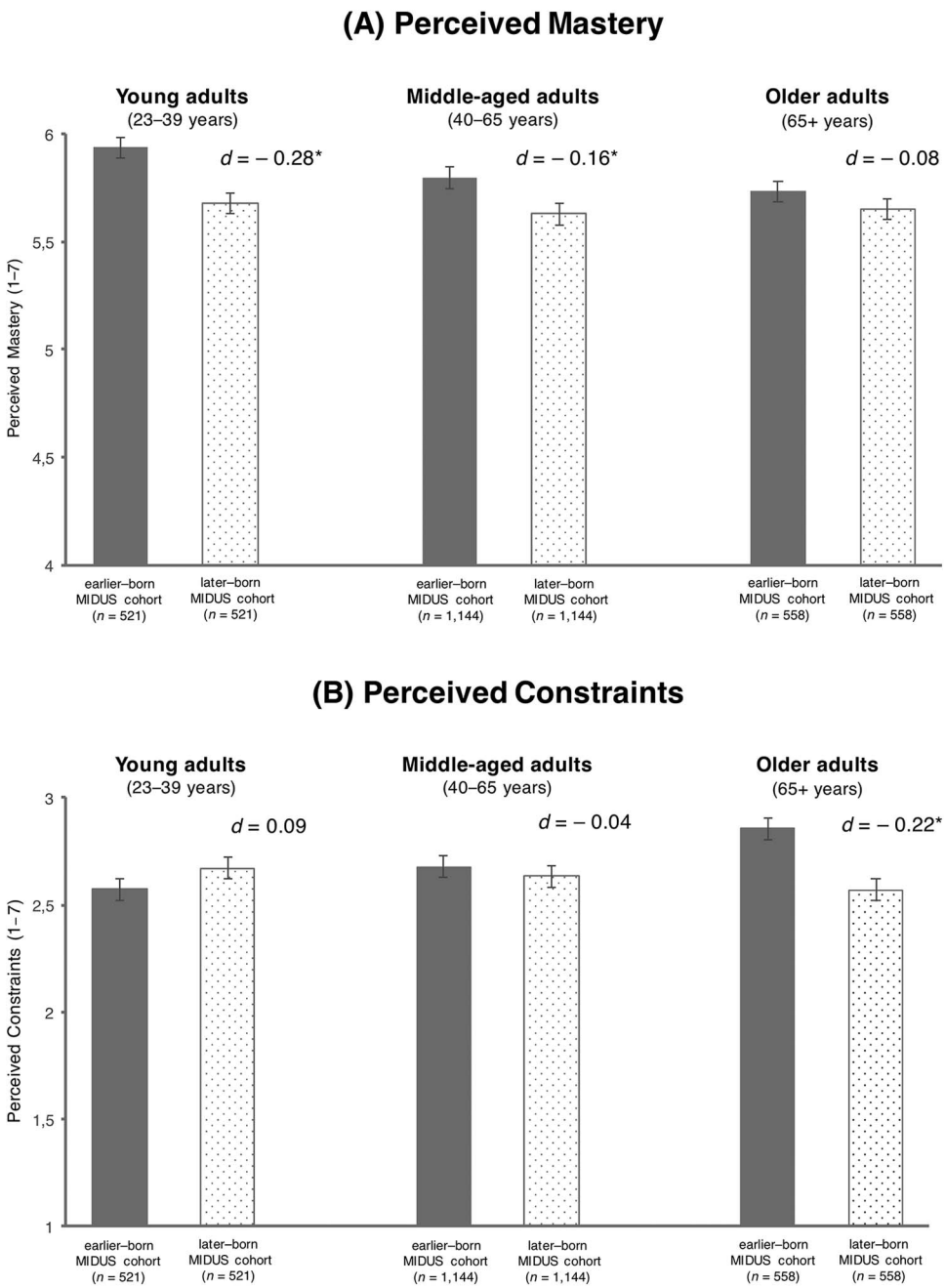

Figure 2. Sample means and standard errors on perceived mastery (upper Panel A) and perceived constraints (lower Panel B) separately for the matched earlier-born MIDUS cohort (data obtained in 1995/96) and the matched later-born MIDUS–R cohort samples (data obtained in 2013/14). Significant interaction effects with age and cohort indicated that among older adults, there were no cohort differences in perceptions of mastery, whereas both middle-aged and younger adults in later-born cohorts reported perceiving less mastery than did matched controls 18 years ago (upper Panel A). In contrast, older adults in later-born cohorts report perceiving fewer constraints than did matched controls 18 years ago, whereas such historical trends were minor among middle-aged adults and reversed in sign for younger adults among whom those in later-born cohorts reported more constraints in later-born cohorts than their matched peers 18 years ago (lower Panel B). Please note that age was used as a continuous variable in our analyses and categorized into three groups for graphical illustration only. * $p < .01$.

tery in the more recent years than did matched controls 18 years ago (upper Panel A). In contrast, older adults from later-born cohorts report perceiving fewer constraints than did matched controls 18 years ago, whereas such historical trends were minor among middle-aged adults and reverse in sign for younger adults among whom those in later-born cohorts reported more constraints than their matched peers 18 years ago (lower Panel B).

Results of our regression analyses also indicate several additional interaction effects involving cohort (Model 2). First, the cohort by gender interaction on perceived mastery ($\beta = 0.03$, $p = .035$) indicates that both men and women perceived less mastery today than in the past, but the effect was more pronounced among men than among women. In contrast, the cohort by gender interaction on perceived constraints ($\beta = -0.07$, $p \leq .001$) indicates that among men, no cohort differences were found, whereas women report fewer perceived constraints in later-born cohorts than those 18 years ago. Both gender by cohort interaction effects are graphically illustrated in Figure 3.

Second, the cohort by morbidity interaction on perceived constraints ($\beta = -0.04$, $p = .014$) suggests that secular reductions in perceived constraints were stronger among individuals suffering from multimorbidity (Panel B in Figure 4) than among those with few illnesses (Panel A in Figure 4).

The figures also report the standardized mean differences between (subgroups of) MIDUS and MIDUS-R cohorts using Cohen's *d* metric. It can be obtained that effect sizes were in the small range.

Finally, we have calculated (reductions in) the *semipartial eta squared* as a measure of explained variance for the cohort variable in the zero-order model and when (a given set of) predictors were included in the regression analyses. Results revealed that the correlates included in our study reduced the size of the cohort effect in part substantially (e.g., by 37% for perceived constraints among older adults). Particularly the socioeconomic variables education, household income, and financial distress emerged as highly relevant. For example, among young men, literally the entire reduction of the cohort effect on perceived mastery by 4.6% achieved through the correlates included in our report was driven by education, household income, and financial distress. In a similar vein, the lion's share of the reduction of the cohort effects among older adults on perceived constraints (32% out of the noted 37%) were carried by socioeconomic variables. We also note that among older adults the cohort effects on perceived constraints explained unique variance (partial eta squared = 2.9%) in the ballpark of, or even exceeding in size, the unique effects associated with physical illness (partial eta squared = 2.3%) and financial distress (partial eta squared = 2.4%).

Discussion

The major objective of our study was to examine cohort differences in perceived mastery and constraints and whether such cohort differences exist in young, middle-aged, and older adults alike. To do so, we applied propensity score matching to data obtained 18 years apart in the MIDUS (1995/96 vs. 2013/14) and identified case-matched cohort groups based on age and gender. We additionally examined the role of cohort-normed education, marital status, religiosity, two central markers of health (multimorbidity and functional limitations), and economic resources for cohort differences in perceived mastery and constraints. Results revealed that younger adults among later-born cohorts reported perceiving less mastery than did matched controls 18 years ago. In contrast, older adults in later-born cohorts report perceiving fewer constraints than those earlier in historical time. Interaction effects indicated that such positive secular trends in constraints were not found among young and middle-aged adults. Effect sizes were in the small range. We conclude from our national U.S. sample that secular trends generalize to central psychosocial resources across adulthood such as perceived control, yet are not unanimously positive. We take our findings to highlight the importance of separating perceived mastery from perceived constraints and discuss underlying mechanisms and practical implications.

Historical Trends in Perceived Mastery and Constraints

Sociocontextual models of life span research have long highlighted the contextual embedding of adult functioning and development (Bronfenbrenner, 1993). In our study, we substantiate this line of research using data from two independent cohorts of a heterogeneous and nationwide adult sample of young, middle-aged, and older individuals in the U.S. As another step forward, we provide a comprehensive picture by considering two distinct facets of perceived control, perceived mastery, and constraints. Results indicate that older adults in the U.S. perceive fewer constraints today than matched peers 18 years ago. This is consistent with reports from Germany demonstrating that 70-year olds in later-born cohorts perceive less external control than earlier-born cohorts (Hülür et al., 2016). One explanation could be that the biographies of the earlier-born are to a greater extent shaped by pervasive historical events over which the majority of them had no or little direct personal control, but that had profoundly shaped their lives, such as the major economic crisis in the early 1930s or the World Wars. Of note is also that older age is often characterized by multifaceted loss experiences, making it necessary to adjust to changing developmental opportunities and constraints. With improving living conditions and medical treatment, older adults might perceive fewer constraints than earlier-born cohorts. Also, consistent with the report from Germany, we did not find cohort differences among older adults in mastery beliefs (Hülür et al., 2016). Such differential pattern of cohort differences underscores conceptual notions and empirical evidence that the two facets of perceived control tap into distinct sources of information (see Infurna & Mayer, 2015). We note also that perceived mastery and constraints were more independent of one another in the mid-1990s than in later-born cohorts. Of course, these initial findings would need to be corroborated, but it is possible that sources of perceived mastery and control might have changed and become more similar over time.

Our findings that more recent cohorts of young adults perceive less mastery and more constraints may reflect secular trends in one's ability to attain desired outcomes particularly in domains relevant to younger adults. To illustrate, "individualization" processes might become more relevant for younger individuals (Beck, 1992) because one developmental task of young adulthood is to define and construct one's own professional pathway, lifestyle, and identity. Thus, secular trends in mastery in younger adults might reflect that life is becoming less predictable and less stable

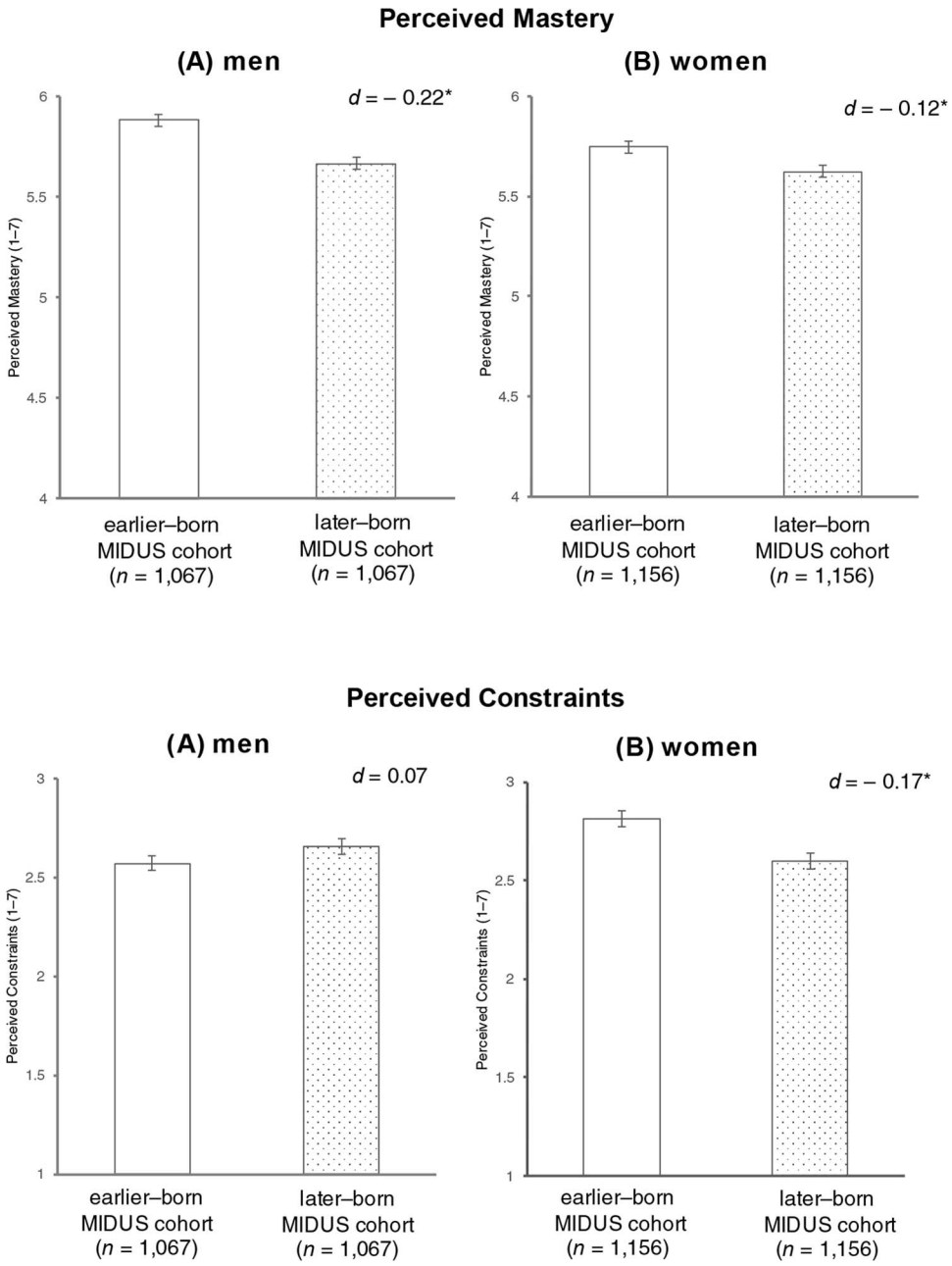

Figure 3. Sample means and standard errors on perceived mastery by gender (upper panel) and perceived constraints (lower panel) separately for the matched earlier-born MIDUS cohort (data obtained in 1995/96) and the matched later-born MIDUS-R cohort samples (data obtained in 2013/14). Significant interaction effects with gender and cohort indicate that men reported considerably less perceived mastery in later-born cohorts when compared with women 18 years ago (upper right-hand Panel A), whereas among women, no cohort differences in perceived mastery were observed (upper left-hand Panel B). Significant interaction effects indicate that among men, no cohort differences in perceived constraints were observed (lower left-hand Panel A), whereas women reported considerably fewer perceived constraints in later-born cohorts when compared with women 18 years ago (lower right-hand Panel B). * $p < .01$.

in crucial areas of life, including finance and family. Acknowledging that control beliefs are shaped by sociocultural and historical influences, we hope that our conceptual reasoning forms one stepping stone toward developing an overarching theoretical framework that helps embed and structure empirical findings on cohort differences in central biopsychosocial outcomes. What is needed is an integrative theoretical perspective that moves from the current overly descriptive accounts to structuring the specific

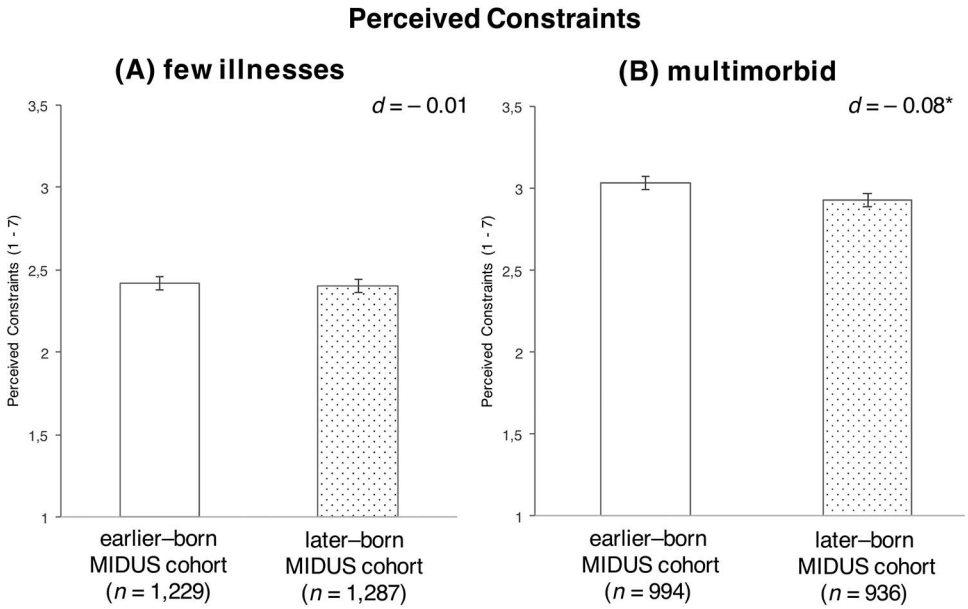

Figure 4. Sample means and standard errors on perceived constraints by multimorbidity separately for the matched earlier–born MIDUS cohort (data obtained in 1995/96) and the matched later-born MIDUS–R cohort samples (data obtained in 2013/14). As one would expect, people suffering from multimorbidity reported more perceived constraints in both cohorts than those with few illnesses, but the significant interaction effects of multimorbidity and cohort indicate that those who suffer from multimorbidity today reported considerably fewer constraints than their peers 18 years ago (right-hand Panel B), whereas no cohort differences were seen among those with few illnesses (left-hand Panel A). * $p < .01$.

mechanisms and pathways by which historical change operates to shape aging-related outcomes and that permits researchers to derive a priori hypotheses that can directly be tested empirically. In addition, our findings also have implications for the design of interventions aimed at maintaining health into older age. In particular, our results suggest that health-control interventions designed at earlier points in time might not necessarily be transferable to later-born cohorts.

The Role of Sociodemographic, Physical Health, and Economic Factors

In the present study, we have targeted cohort differences in perceived mastery and constraints and have taken the role of a comprehensive number of relevant factors into account that are known to differ between individuals and cohorts, including sociodemographic characteristics as well as religiosity, key indicators of health (comorbidity, functional limitations), and economic hardship. Our findings demonstrate the relevance of these individual difference characteristics to better understand cohort differences in perceived mastery and constraints. To begin with, men perceive less mastery in later-born cohorts when compared with men 18 years ago. We can only speculate about possible reasons. For example, it could be that societal expectations toward men (such as succeeding in fulfilling multiple roles at the same time) have increased in later born-cohorts. Such an interpretation would be in line with previous studies showing that especially in highly qualified individuals the combination of high work pressure combined with the lack of time to engage with family has been linked to lower levels of mastery (Schieman & Narisada, 2014). We also note that this gender-differential pattern did not replicate in the comprehensively matched sample (see Appendix), indicating that the noted gender-differential cohort effects in perceived mastery might have been driven by differences in other individual differences characteristics, such as economic hardship.

Interestingly, women perceive considerably fewer constraints when from later-born cohorts in comparison to women 18 years ago. Again, these findings could reflect overall societal changes in gender-specific social roles and expectations (Newton et al., 2014). To illustrate, women in later-born cohorts might experience less gender inequality because of better access to higher education, increasing institutionalization of family work policies, more control over fertility, and increasing occupational possibilities, all of which might result in perceiving overall less constraints over life (Artis & Pavalko, 2003).

Finally, our results indicate that perceived constraints have already been at a very low level for those in good health and that these low levels were maintained historically. Of those population segments for whom historical declines in perceived constraints were noted, such reductions were most pronounced among those who suffer from multimorbidity. This is in line with previous research highlighting the role of health for perceived constraints (Infurna & Mayer, 2015). We can only speculate about potential reasons, but one possibility could be that historical improvements in medical care, nutrition, and (health) technology use allow older adults to better compensate for existing losses in physical functioning and thus perceive less constraints over their lives (Schaie, 2005).

We acknowledge that not all results from the full model square with earlier reports (e.g., age and religiosity; Fiori et al., 2006). We note, however, that this is probably due to the comprehensive number of variables we have included in our conjoint analyses. When examining the role of these correlates separately, our analyses corroborate the typical findings that older age was associated with perceiving more constraints ($\beta = .03$, $p < .05$).

Limitations and Outlook

We note several limitations of our study. As a limitation of our study design, it was not possible to examine whether and how cohorts differ in both levels of functioning and rates of developmental change (Hülür, Infurna, Ram, & Gerstorf, 2013). As a consequence of historical improvements in health, one may expect that well-known age-related increases in perceived constraints will be less pronounced among later-born cohorts. If health is indeed more closely tied to perceived constraints than to perceived mastery (Infurna & Mayer, 2015), health-related historical trends in perceived mastery should supposedly be weaker. We also note that our approach to the identifiability problem of age-period-cohort effects (for overview, see Schaie, 2005) was to largely ignore differences attributable to the period of testing. Thus, independent replication of our findings is thus needed before firm conclusions are warranted. Given our use of cross-sectional data, we cannot draw strong inferences about mechanisms that lead to cohort differences in perceived mastery and constraints and the role that individual difference characteristics play. When longitudinal data for both cohorts become available, longitudinal and more mechanisms-oriented research is needed to examine possible underlying factors more comprehensively.

There are some limitations of our measures, in that all data including our health measures were self-reports. Even though self-report measures of health are reliable (Katz, Chang, Sangha, Fossel, & Bates, 1996), it is well known that systematically different standards of both health and reference group comparisons might bias self-report measures and that this might also be affected by historical time (Dowd & Todd, 2011). It would thus have been highly informative to pinpoint the role of cohort differences in performance-based indicators of physical functioning or of medical diagnoses. Similarly, our selection of indicators was restricted by the measures available from the MIDUS study assessment protocol. To illustrate, religiosity was measured using only a single item asking participants how religious they were. A more comprehensive account of religiosity could shed additional light onto cohort differences in perceived mastery and constraints. Also, our analysis was one attempt to account for objective control potential on relevant factors such as education and health. However, it is not possible to draw firm conclusions about cohort differences in actual control and whether perceived mastery and constraints are adaptive or not (Skinner, 1996). We also cannot say whether or not our results generalize to domain-specific measures of perceived control (Lachman & Firth, 2004). For example, perceived mastery in the health domains may be particularly pronounced among older adults in later-born cohorts because of better health care, healthier lifestyles, and rapid medical advances. In contrast, current younger adults may report particularly low mastery in financial domains resulting from effects of the great recession and increased economic insecurity.

As limitations of the sample, only limited data were available for participants older than age 70. It thus remains an open question whether our results generalize to very old age. Drawing from empirical evidence focusing on late life (Hülür et al., 2013), one could expect that the general picture found across adulthood and old age may not necessarily generalize to very old age. In addition, we had made use of propensity score matching so as to make the samples more comparable and reduce possible differences in sample characteristics. It is also an open question whether our findings generalize to disadvantaged population segments. For example, future inquiry needs to thoroughly investigate how historical changes in perceived mastery and constraints may have widened gaps that exist for people who cannot draw from social security safety nets (Medicare, Social Security; Moffitt, 2013). We acknowledge that our selection of matching variables only reflects a small fraction of possible relevant correlates. Although it is well established that the omission of potentially relevant matching variables can result in increased estimation bias, it is also well known that unreliable correlates do not contribute to the reduction of bias as much as reliable correlates do (Austin, 2014). We are thus convinced that our theory-based broad selection of correlates represents a comprehensive approach (see Rosenbaum & Rubin, 1985). To guard against the possibility that the cohort differences reported here are a byproduct of the specifics of the matching procedure and the correlates included, we also present results from follow-up analyses (see Tables A1, A2, and A3; Figures A1–A5 in the Appendix).

Finally, as a limitation of our analytic approach, we follow in the footsteps of Foster (2010); Rutter (2007); Stuart (2010) and others and argue that matching can be considered as a conservative test of cohort differences because any (mean-level) differences between cohort samples on a comprehensive number of variables known to be associated with cohort and perceived control would be eliminated. Results reported in the Appendix are based on a broader and more comprehensive number of correlates, including age, gender, cohort-normed education, marital status, religiosity, and two central markers of physical health, multimorbidity and functional limitations. Findings indicate that cohort differences in perceived master and constraints still exist. The different sets of analyses presented conjointly indicate that our findings are robust, do not represent an artifact of the matching procedure itself, and cannot be entirely reduced to individual and cohort differences in physical health and socioeconomic status. We take these results to suggest that additional factors are of relevance and that, for example, cohort differences in education not only encompass years of exposure, but probably also qualitatively better education and differences in how education operates and in the implications arising from a given level of education attained.

Conclusions

Taken together, our analyses of cohort data from the MIDUS indicate multifaceted secular trends in perceived mastery and constraints extending numerous reports about cohort effects in cognitive, health, and well-being domains to another central psychosocial resource. Our results also provide initial evidence from a nationwide sample in the U.S. that several population segments that have been disadvantaged earlier (older adults and women) in their perceived control have caught up, whereas the gap appears to

increase for other population segments in that, for example, younger adults have experienced steep historical drops in perceived mastery. More mechanism-oriented research is needed to better understand underlying pathways.

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Appendix

Follow-Up Analyses

Table A1

Intercorrelations for the Variables Under Study, Separately for the Two Cohort Samples Matched on Age, Gender, Cohort-Normed Education, Marital/Partner Status, Religiosity, Multimorbidity, and Functional Limitations

Variables under study	1	2	3	4	5	6	7	8	9	10	11
1. Perceived mastery (1.00–7.00)		−.57*	−.01	−.03	.10*	−.04	.01	−.18*	−.16*	.10*	−.17*
2. Perceived constraints (1.00–7.00)	−.47*		−.04	−.02	−.21*	.11*	−.02	.29*	.22*	−.20*	.31*
Covariates											
3. Age (23–75)	−.06*	.09*		.02*	−.05*	.00	−.15*	.32*	.18*	−.04	−.16*
4. Women (1 = men, 2 = women)	−.03	.03	−.01		−.05*	.21*	−.13*	.14*	.11*	−.13*	.09*
5. Cohort-normed education (−1.78–3.55)	.00	−.19*	−.03	−.10*		−.09*	.09*	−.26*	−.13*	.39*	−.26*
6. Married/partnered (1 = yes, 2 = no)	−.02	.07*	−.09*	.08*	.01		.04*	.19*	.13*	−.38*	.15*
7. Religiosity (1.00–4.00)	−.01	−.01	−.03	−.15*	.13*	.10*		−.13*	−.05*	.10*	−.07*
8. Functional limitations (1.00–4.00)	−.18*	.30*	.26*	.13*	−.24*	.07*	−.03		.39*	−.25*	.22*
9. Multimorbidity (.00–27.00)	−.21*	.24*	.13*	.14*	−.11*	.10*	.04	.31*		−.13*	.15*
10. Household income (0–300,000)	.07*	−.09*	.09*	−.06*	.09*	−.14*	.00	−.07*	−.07*		−.34*
11. Financial distress (1.00–4.00)	−.16*	.31	−.14*	.06*	−.18*	.07*	−.04	.22*	.12*	−.16*	

Note. $N = 2{,}141$ participants per cohort. Intercorrelations for the earlier-born MIDUS cohort (data obtained in 1995/96) presented below the diagonal and those for later-born MIDUS-R cohort (data obtained in 2013/14) above the diagonal. Participants in the matched earlier-born MIDUS cohort (data obtained in 1995/96) were born 1921 through 1971 ($M = 1945$; $SD = 14.07$ years) and those in the matched later-born MIDUS-R cohort (data obtained in 2013/14) born 1940 through 1991 ($M = 1963$; $SD = 13.97$ years).

* $p < .05$.

(*Appendix continues*)

Table A2

Standardized Prediction Effects (β) From Step-Wise Regression Analyses of Perceived Mastery and Constraints by Cohort and the Correlates in the Sample Matched on Age, Gender, Cohort-Normed Education, Marital/Partner Status, Religiosity, Multimorbidity, and Functional Limitations

Predictor	Perceived mastery			Perceived constraints		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Age	−.01	−.01	−.01	−.01	−.003	−.002
Women	−.002	−.004	−.003	−.04*	−.04*	−.04*
Cohort-normed education	−.03*	−.03	−.03	−.09*	−.10*	−.10*
Married/partnered	.03*	.03*	.03*	.01	.02	.02
Religiosity	−.02	−.02	−.02	.02	.01	.01
Functional limitations	−.11*	−.11	−.11*	.15*	.14*	.14*
Multimorbidity	−.12*	−.12*	−.12*	.18*	.18*	.18*
Household income	.05*	.05*	.05*	−.04*	−.04*	−.04*
Financial distress	−.10*	−.10*	−.10*	.20*	.20*	.20*
Cohort	−.09*	−.04	−.04	−.03*	−.15*	−.15*
Cohort × Age Linear	—	.05*	.06*	—	−.15*	−.15*
Cohort × Women	—	.01	.01	—	−.05*	−.05*
Cohort × Cohort-Normed Education	—	.03*	.04*	—	—	—
Cohort × Married/Partnered	—	.002	−.001	—	—	—
Cohort × Multimorbidity	—	.02	.01	—	−.05*	−.06*
Cohort × Functional Limitations	—	—	—	—	.02	.02
Cohort × Financial Distress	—	—	—	—	−.02	−.02
Women × Cohort-Normed Education	—	.03	.03	—	—	—
Married/Partnered × Multimorbidity	—	−.02	−.02	—	—	—
Functional Limitations × Financial Distress	—	—	—	—	.01	.01
Cohort × Women × Cohort-Normed Education	—	—	.04*	—	—	—
Cohort × Married/Partnered × Multimorbidity	—	—	.04*	—	—	—
Cohort × Functional Limitations × Financial Distress	—	—	—	—	—	.03*
Total R^2	.07	.07	.08	.18	.19	.19
F	30.59*	19.06*	17.86*	91.68*	62.35*	58.98*
(*df*1, *df*2)	(10; 4,216)	(17; 4,209)	(19; 4,207)	(10; 4,216)	(16; 4,210)	(17; 4,209)

Note. $N = 2{,}141$ participants per cohort. Participants in the matched earlier-born MIDUS cohort (data obtained in 1995/96) were born 1921 through 1971 ($M = 1945$; $SD = 14.07$ years) and those in the matched later-born MIDUS-R cohort (data obtained in 2013/14) born 1940 through 1991 ($M = 1963$; $SD = 13.97$ years). Age centered at 70 years.

* $p < .05$.

(*Appendix continues*)

Table A3
Standardized Prediction Effects (β) From Regression Analyses of Perceived Mastery and Constraints by Year of Birth and the Correlates in the Sample Matched on Age and Gender

Predictor	Perceived mastery	Perceived constraints	
		Model 1	Model 2
Age linear	−.142*	−.053*	−.048*
Women	−.002	−.043*	−.043*
Cohort-normed education	−.033*	−.093*	−.091*
Married/partnered	.034*	.012	.008
Religiosity	−.023	.015	.018
Multimorbidity	−.111*	.150*	.142*
Functional limitations	−.122*	.175*	.179*
Household income	.049*	−.041*	−.028
Financial distress	−.101*	.199*	.212*
Year of birth	−.157*	−.056*	−.139*
Age Linear × Year of Birth	—		−.099*
Women × Year of Birth	—		−.050*
Cohort-Normed Education × Year of Birth	—		.052*
Total R^2	.068	.179	.187
F	30.59*	91.68*	74.45*
(*df*1, *df*2)	(10; 4,216)	(10; 4,216)	(13; 4,213)

Note. $N = 2{,}223$ participants per cohort. Participants in the earlier-born MIDUS cohort (data obtained in 1995/96) were born 1921 through 1971 ($M = 1945$; $SD = 14.07$ years) and those in the later-born MIDUS-R cohort (data obtained in 2013/14) born 1940 through 1991 ($M = 1963$; $SD = 13.97$ years). Age centered at 70 years. As one way to operationally define time of measurement effects, we added a quadratic term for birth year. In both sets of analyses, the quadratic term for birth year was not statistically different from zero, suggesting that the secular trends seen were consistent in one direction over the range of birth years considered.
* $p < .05$.

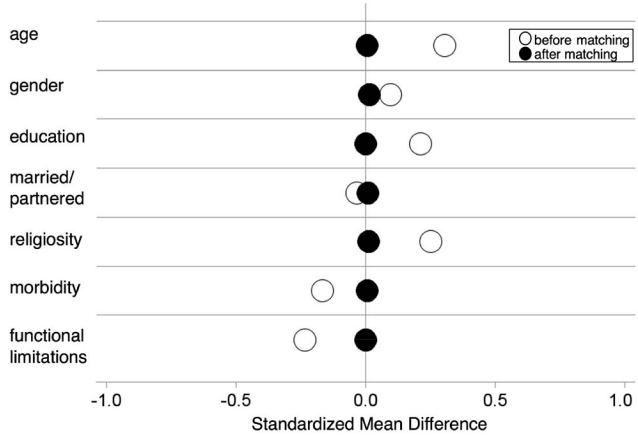

Figure A1. Standardized mean differences between the earlier-born MIDUS cohort (tested 1995–1996) and the later-born MIDUS-R cohort (tested 2013–2014) in sociodemographic variables (age, gender, cohort-normed education, marital status), religiosity, and two central markers of physical health (multimorbidity and functional limitations) before (white circle) and after (black circle) applying the propensity matching procedure. Negative (positive) numbers signify greater scores for MIDUS (MIDUS-R) participants. After the matching, cohort differences were small and not reliably different from zero at $p < .05$.

(*Appendix continues*)

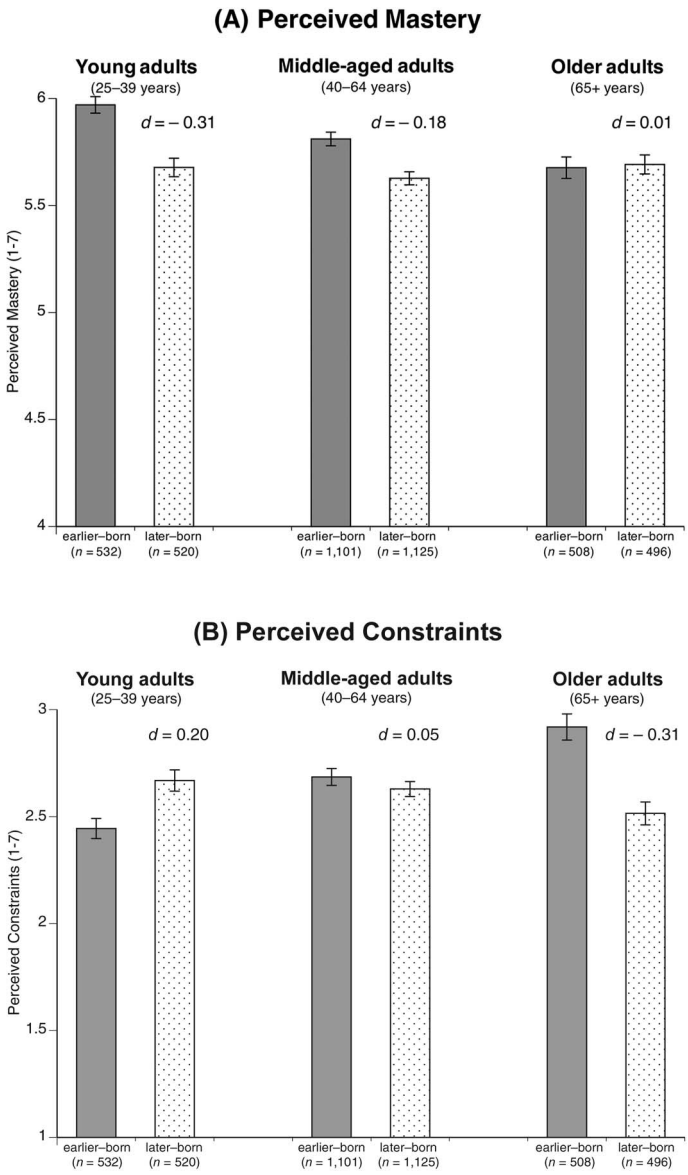

Figure A2. Sample means and standard errors on perceived mastery (upper Panel A) and perceived constraints (lower Panel B) separately for the matched earlier-born MIDUS cohort (data obtained in 1995/96) and the matched later-born MIDUS-R cohort samples (data obtained in 2013/14). Significant interaction effects with age and cohort indicated that among older adults, there were no cohort differences in perceptions of mastery, whereas both middle-aged and younger adults in later-born cohorts reported perceiving less mastery than did matched controls 18 years ago (upper Panel A). In contrast, older adults in later-born cohorts report perceiving fewer constraints than did matched controls 18 years ago, whereas such historical trends were minor among middle-aged adults and reversed in sign for younger adults among whom those in later-born cohorts reported more constraints in later-born cohorts than their matched peers 18 years ago (lower Panel B). Please note that age was used as a continuous variable in our analyses and categorized into three groups for graphical illustration only.

(*Appendix continues*)

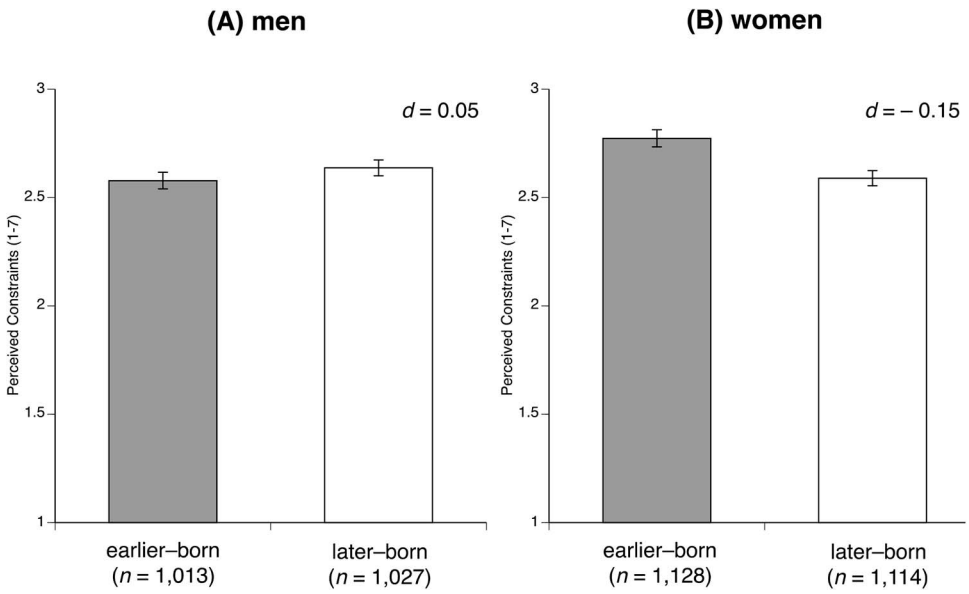

Figure A3. Significant interaction effects with gender and cohort indicate that among men, no cohort differences in perceived constraints were observed (left-hand Panel A), whereas women reported considerably fewer perceived constraints in later-born cohorts when compared with women 18 years ago (right-hand Panel B).

(*Appendix continues*)

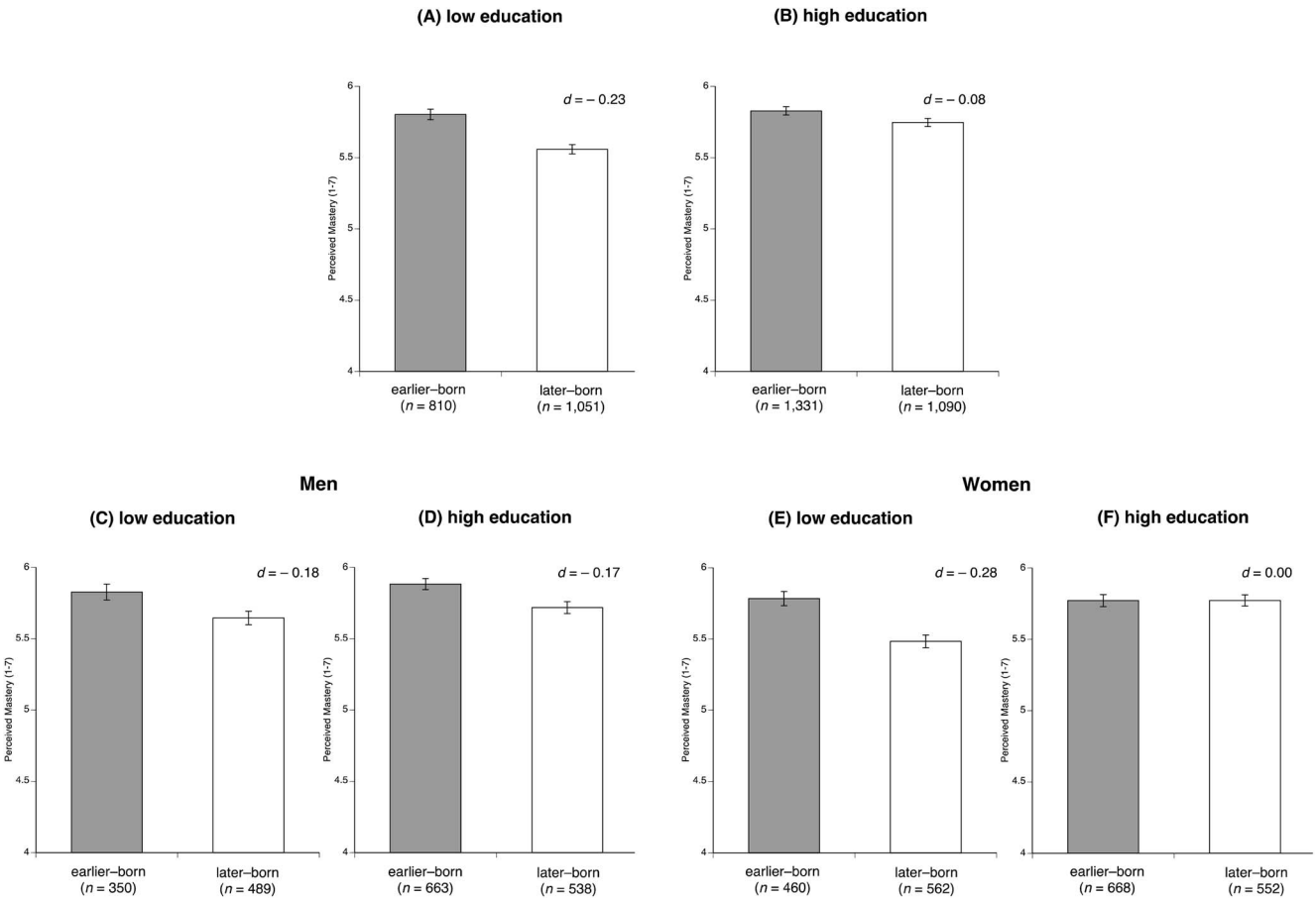

Figure A4. The Cohort × Education interaction conjointly with the Cohort × Education × Gender interaction indicates that secular reductions in perceptions of mastery were particularly pronounced among low-educated population segments (upper Panels A vs. B), whereas highly educated women were the ones who did not experience such historical decrements (lower Panel F vs. Panels C, D, and E).

(*Appendix continues*)

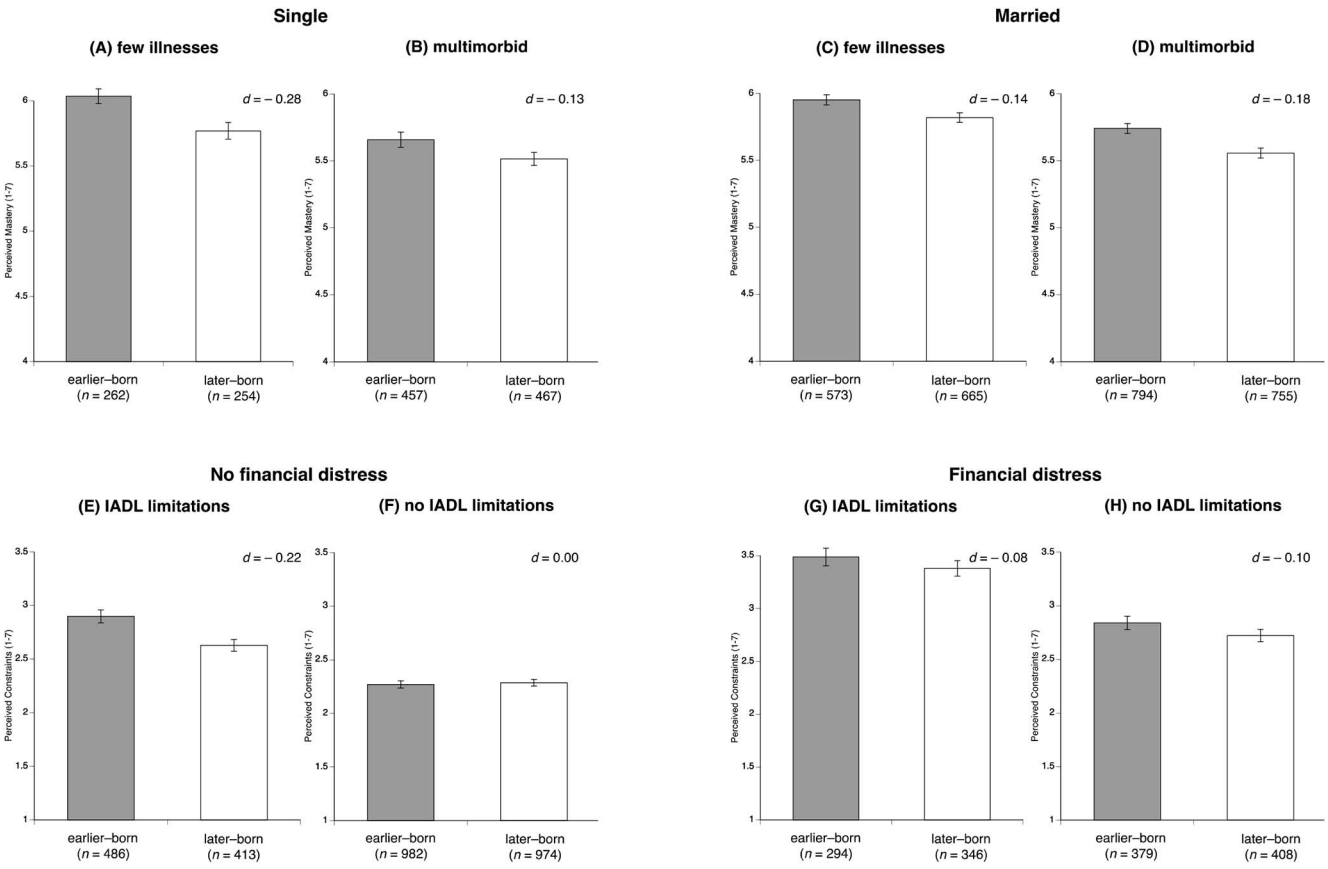

Figure A5. The Cohort × Multimorbidity × Being Married or Partnered interaction shows that reductions in perceived mastery were an overarching phenomenon across all groups considered and were even relatively stronger among those who were not partnered or married and in good physical health (for upper left-hand Panel A vs. Panels B, C, and D). The cohort by functional limitations by financial distress interaction shows that perceived constraints have already been at a very low level for those in good physical health and with no financial worries and that these low levels were maintained historically (see Panel F). Of those population segments for whom historical declines in perceived constraints were noted, such reductions were most pronounced among those who suffer from functional limitations but were not affected by financial distress (see Panel E vs. Panels F, G, and H).

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